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# GLENWOOD SPRINGS MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY FINAL REPORT

**August 2021**

GLENWOOD SPRINGS COLORADO

RFTA

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# ACKNOWLEDGEMENTS


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# EXECUTIVE SUMMARY

## Introduction

**MOVE PROJECT VISION:**

*A community with safe, multimodal and efficient connection options that makes Glenwood Springs a city of great vitality and quality of life.*

The Roaring Fork Transportation Authority (RFTA) and the City of Glenwood Springs (City) have initiated a study to develop a long-term vision and program for transportation improvements within and through Glenwood Springs, focusing on the I-70 and SH-82 corridors, recognizing the transportation, land use, environmental, economic and social needs of the City and the region. The Multimodal Options for a Vibrant Economy (MOVE) study investigates various aspects of mobility for the City, including but not limited to transit, parking, and internal circulation.

While the entire Garfield-Pitkin County region is anticipated to grow over the next 20 years, population and employment growth will be most acute between Glenwood Springs and Parachute. Glenwood Springs lies at the heart of this region and will likely bear the benefits and impacts this growth. Since State Highway (SH) 82 is the major route through Glenwood, traffic is also expected to increase. The City and RFTA realize that now is the time to plan for this growth, which is one of the main reasons for this study.

Creating efficient and reliable BRT service and other multimodal transportation improvements between West Glenwood Springs and 27th Street can provide Glenwood Spring's residents, visitors, shoppers, employees and through travelers with effective ways to reduce congestion within and through the City, particularly as SH82 traffic volumes increase.

The overall study area includes the SH 82 corridor from 27th Street through the downtown/Confluence area to West Glenwood Springs and the I-70 corridor. Strategies to be studied include regional and local transit services, pedestrian and bicycle facilities, traffic circulation and safety, and parking issues. **Figure ES-1** shows the study area.

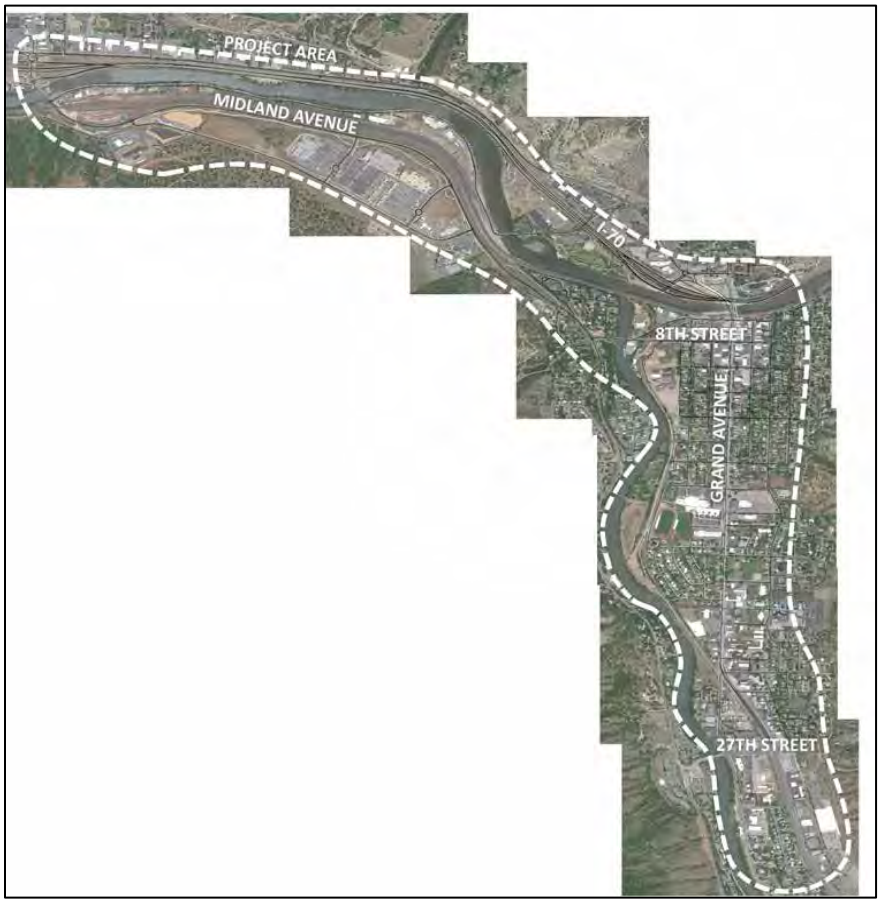


FIGURE ES-1. STUDY AREA


The purpose of this analysis is to provide an unbiased evaluation of the critical components of this multimodal transportation system and offer technical recommendations for potential implementation, including:

- BRT extension alignment
- Locations for additional in-line BRT stations in downtown Glenwood Springs.
- Transit center scope and location west of downtown, as a terminus for BRT layover and a connecting point for routes to western I-70 communities.
- Complementary improvements in pedestrian/bicycle infrastructure, parking facilities, Transportation Demand Management (TDM) measures, and traffic operations/safety/signal optimization to enhance the transit operations and overall mobility in the City.

The recommended multimodal improvements that emerge from this study are intended to benefit the mobility, economic vitality, economic sustainability and quality of life of the City and the entire region.

## Process and Modes

Project needs and goals were identified and multimodal alternatives were developed to address them, beginning with:

- BRT extension options from 27th Street station to downtown Glenwood Springs
  - Grand Avenue alignment
  - Rio Grande corridor alignment
  - Blake Avenue alignment
  - Cooper/Colorado one-way couplet alignment
  - Pitkin Avenue alignment
- Downtown transit center and in-line station options
  - 8th Street and Rio Grande Corridor alignment
  - Confluence area
  - SH6 area

Each of the initial alternatives was enhanced and/or made possible by a program of improvements in the following areas:

- Regional and local bus integration improvements
- Pedestrian facilities improvements
- Bicycle facilities improvements
- Parking facilities improvements
  - Downtown
  - 27th Street RFTA station
  - West Glenwood RFTA station
- Traffic operations and safety improvements

**Figure ES-2** illustrates the multi-tiered screening process used to evaluate the multimodal alternatives considered.

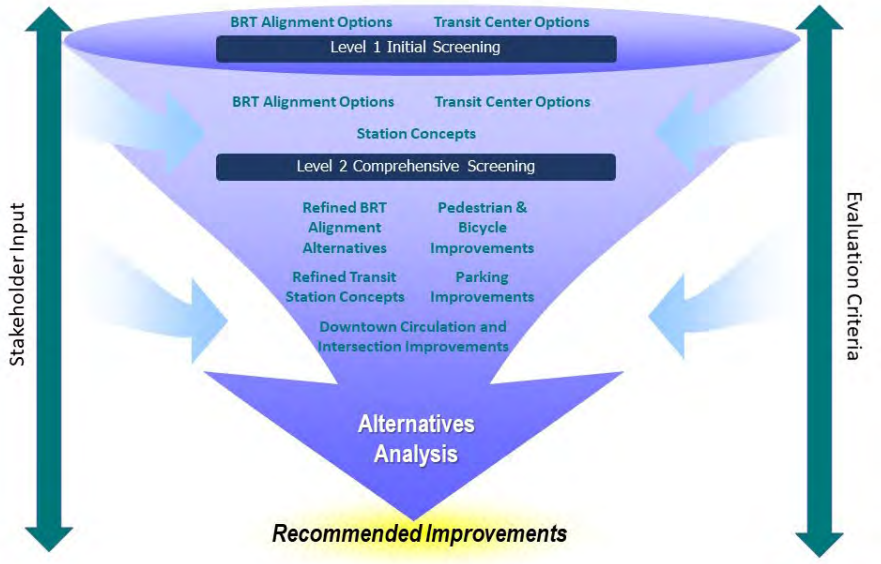


FIGURE ES-2. ALTERNATIVES DEVELOPMENT AND EVALUATION PROCESS


## Key Recommendations

The Study included a comprehensive analysis effort to identify, evaluate, and prioritize numerous recommendations that were developed through input from previous planning efforts, the Study Technical Advisory Committee (TAC), Focus Group, and public. Further information regarding these recommendations, including key implementation strategies and potential funding sources, are detailed in this Study.

Two BRT extension options that scored the highest in the process were the semi-dedicated bus lanes on Grand Avenue and BRT lanes along the Rio Grande Corridor. The Rio Grande BRT alignment allows for a revitalization of the currently undersized multimodal trail. In this alternative, dedicated BRT lanes are added at the location of the current trail alignment, and the multimodal trail is widened and relocated closer to the Roaring Fork River with opportunities for new trail connections to the river and revitalized park areas along the corridor. A new BRT station at 8th Street is envisioned to anchor the proposed development on 8th Street and park redevelopment providing an opportunity for complete integration and connectivity from the neighborhood to the river.

The Grand Avenue BRT improvements create an efficient transportation improvement serving downtown users and reducing traffic for visitors. Streetscape improvements can create context sensitive design improvements through natural stone paving and colored concrete techniques, benches, lighting and site furnishings can provide a unique detail within the historic downtown area.

Both options have additional advantages and disadvantages that are described in this Study. RFTA and the City will determine the preferred alternative to carry forward to the next steps of refinement and implementation. This study includes the pieces needed for the next phase for either alternative, including conceptual level design and cost estimates in potential year-of-expenditure dollars.

This study highlighted many transportation improvements that can be made prior to and independent of the BRT extension, as summarized in **Table ES-1 below**. Parking, pedestrian, bicycle, traffic and safety, and local transit improvements can be implemented immediately to benefit mobility, economic vitality, economic sustainability and quality of life for the City and the entire region.

There are several recommended improvements that can be made to the walking and cycling network in Glenwood Springs, ranging in complexity, cost, and their dependency on a future BRT alignment. Improvements listed in **Table ES-1** are the key to encouraging active transportation in Glenwood Springs and will make traveling as safe and comfortable as possible for people walking and biking. Increasing the frequency and consistency of wayfinding signs and pavement markings will help people walking and biking feel informed and confident navigating to and from transit and destinations.

Opportunities and recommendations to improve parking management in the study area were divided into three general categories: parking and curb space downtown, parking at the RFTA park and rides (PnRs), and parking considerations/potential impacts as part of evaluating alternatives for extending the BRT into downtown. The parking recommendations in **Table ES-1** include short term parking management and enforcement concepts to longer term implementation of paid parking recommendations.

There are several improvements that can be made to the downtown street network to improve traffic and safety in the area. As outlined in **Table ES-1**, converting existing portions of 8th and 9th Street to a pair of one-way couplets and constructing a mini-roundabout at 8th Street/Pitkin Avenue could improve intersection improvement and reduce queue lengths in the future.

Opportunities to explore modifications to existing local transit service to better serve Glenwood Springs was considered. Analysis was based on review of ridership data, previous studies, public feedback and input from RFTA and the City of Glenwood Springs. Recommendations in Table **ES-1** focus on improved service for the Grand Avenue Corridor, improved coverage of North and South Glenwood, and opportunities for alternative service delivery.


FIGURE ES-3. CROSS SECTION RENDERING OF GRAND AVENUE SEMI-DEDICATED BRT LANES


FIGURE ES-4. RIO GRANDE CORRIDOR BRT RENDERING


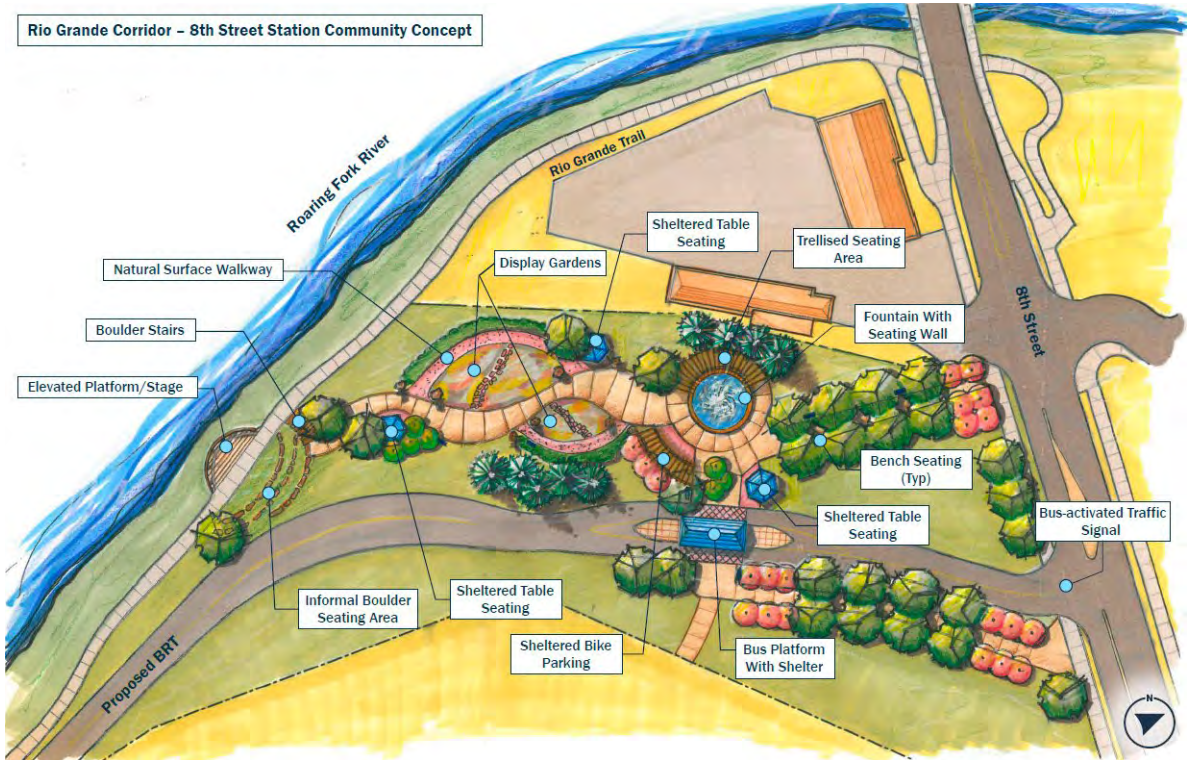


FIGURE ES-5. RIO GRANDE CORRIDOR 8TH STREET STATION COMMUNITY CONCEPT


TABLE ES- 1 - RECOMMENDATIONS BY PHASE AND MODE

| MODE | RECOMMENDATIONS |
|---|---|
| **PHASE 1 IMPROVEMENT RECOMMENDATIONS (Low/No Cost Immediate Recommendations)** | |
| Pedestrian and Bicycle | Ongoing maintenance of existing sidewalks and trails, improve network wayfinding, add bicycle parking and storage at major transit stations, improve existing network connections |
| Downtown Parking | Establish a truck loading zone plan, manage the 700-block of Cooper, increase fines for parking violations, improve curb space signage and striping |
| RFTA Parking | Better connect existing overflow lot, establish a more robust parking enforcement program |
| Traffic and Safety | Remove north leg crosswalk at Grand Avenue and 8th Street, restripe 8th Street to provide center left turn lane from Pitkin Avenue to Grand Avenue |
| **PHASE 2 IMPROVEMENT RECOMMENDATIONS (Higher Cost Recommendations)** | |
| Pedestrian and Bicycle | Improve sidewalks on 27th Street, improve off street bicycle facilities, identify and fill in gaps in the sidewalk network |
| Local Transit | Implement one of three concepts developed in the study to improve coverage of North Glenwood. Thin number of stops along Grand Avenue for BRT and Hogback or consider a deviation of RGS to serve Blake Avenue instead of Grand Avenue. |
| Downtown Parking | Add weekend parking enforcement, leverage parking enforcement technology, install bike corrals, implement paid parking, plan for TNCs and AVs, evaluate increasing parking capacity |
| RFTA Parking | Lease additional parking, purchase land for additional parking, formalize a kiss & ride area at the 27th Street station, improve multimodal connections |
| Traffic and Safety | Convert 8th and 9th Street into 2-lane one-way couplets from Cooper Ave to Colorado Ave and remove east-west stop control at 8th Street and Colorado Avenue, construct a roundabout at 8th Street and Pitkin Avenue, provide access management measures on SH-82, Implement Transit Signal Priority on SH-82. |
| **PHASE 3 IMPROVEMENTS - RECOMMENDATIONS NEEDED FOR BRT EXTENSION (Grand Avenue BRT Extension Alignment)** | |
| Pedestrian and Bicycle | Sidewalks should be a minimum of 6' wide; if the sidewalk is intended to serve as a multi-use facility for pedestrians and cyclists, it should be a minimum of 8' wide and designated and maintained as a trail facility. Evaluate bicycle routes that parallel the BRT alignment and navigate to bus stops and destinations. Additional routes should be evaluated to create a connected network of comfortable bicycle routes with a complete and consistent wayfinding program. |
| Local Transit | Option 1: Move local service to Blake Avenue, split Ride Glenwood Springs into two loops serving West Glenwood and South Glenwood. Option 2 same as Option 1 except Ride Glenwood Springs increases existing vehicles to increase coverage. |
| Parking | Ensure advance communication prior to implementation, include clear and visible signage, allow time for driver adjustment, have a towing plan. |
| Traffic and Safety | Install queue jump lane signal heads at northbound terminal of BAT lane on Grand Avenue |
| **PHASE 3 IMPROVEMENTS - RECOMMENDATIONS NEEDED FOR BRT EXTENSION (Rio Grande Corridor BRT Extension Alignment)** | |
| Pedestrian and Bicycle | Physical and perceived separation between the trail and BRT alignment should be maintained. Where space allows the trail or BRT alignment should be laid out to provide the greatest amount of horizontal separation. Create a sense of separation with landscaping, fencing, and/or by raising the BRT alignment slightly above the trail corridor. The locations where pedestrians and bicyclists need to cross the Rio Grande BRT corridor should also be carefully considered and planned to allow for maximum visibility; crossing signage, striping, and signals where appropriate; and accessibility. |
| Local Transit | Ride Glenwood Springs restructured to better penetrate West Glenwood Springs |
| Traffic and Safety | Install bus activated traffic signal on 8th Street where buses will enter/leave RFTA property and Rio Grande corridor |


# INTRODUCTION TO THE PROJECT

## Context and Project History

The Roaring Fork Transportation Authority (RFTA) and the City of Glenwood Springs (City) have initiated a study to develop a long-term vision and program for transportation improvements within and through Glenwood Springs, focusing on the I-70 and SH-82 corridors, recognizing the transportation, land use, environmental, economic and social needs of the City and the region. The Multimodal Options for a Vibrant Economy (MOVE) study investigates various aspects of mobility for the City, including but not limited to transit, parking, internal circulation, and safety.

The City of Glenwood Springs was incorporated in 1885 and is both the county seat for Garfield County and the most populated city in the county. It is located at the confluence of the Colorado and Roaring Fork Rivers, approximately 180 miles west of Denver. The population of the City was 9,962 in 2017 and the main streets in the study area are generally flat and rolling.

At the north end of the city, Interstate 70 (I-70) moves east-west along the Colorado River. State Highway 82 (SH-82) begins at the intersection of I-70 and stretches south along the Roaring Fork River and is the key north-south connection from Glenwood Springs to the resort towns south of the City. Glenwood Springs is known for its medicinal hot springs, outdoor recreation, and scenic beauty. Large numbers of tourists visit year-round, with the busiest months in the summer as evidenced by Figure 4 that shows the monthly accommodations tax collections. The major destinations for visitors include the Glenwood Hot Springs, Glenwood Caverns Adventure Park, downtown areas, the Rio Grande Trail, Snowmass Village and the other resort towns south of Glenwood Springs.

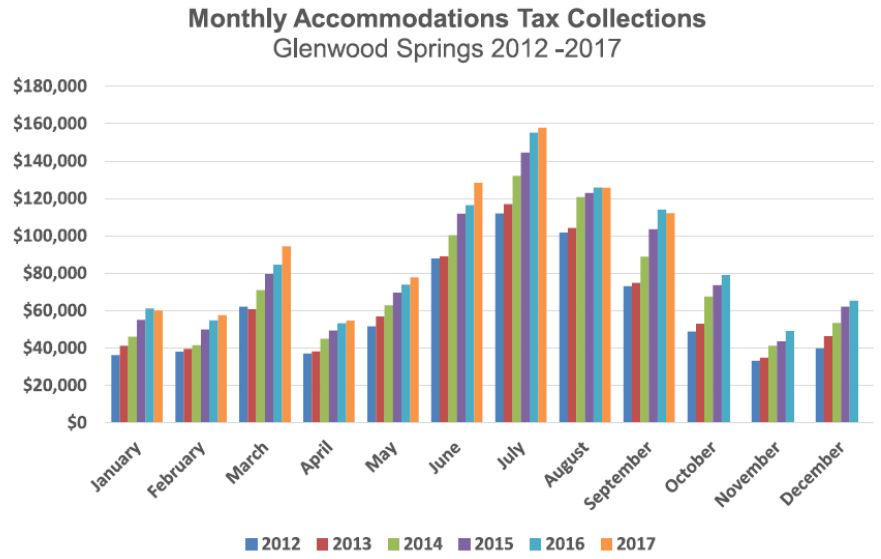


FIGURE 1. SEASONALITY ANALYSIS FOR GLENWOOD SPRINGS (SRC: GWS PREPARED BY STROMBERG/GARRIGAN & ASSOCIATES)

Glenwood Springs is 5.69 square miles. The gentle terrain, number of visitors to the area, and geographic size are indicative of high potential for active transportation modes including walking, bicycling, and transit use. While the entire Garfield-Pitkin County region is anticipated to grow over the next 20 years, population and employment growth will be most acute between Glenwood Springs and Parachute. Glenwood Springs lies at the heart of this region and will likely bear the benefits and impacts of this growth, as seen in **Figure 2** and **Figure 3**. Since State Highway 82 is the major route through Glenwood, traffic is also expected to increase, as shown in **Figure 4**. The City and RFTA realize that now is the time to plan for this growth, which is one of the main reasons for this study.


Creating efficient and reliable BRT service between West Glenwood Springs and 27th Street can provide Glenwood Spring's residents, visitors, shoppers, employees and through travelers with an effective alternative to creating additional congestion within and through the City, particularly as SH82 traffic volumes increase.

The purpose of this analysis is to provide an unbiased evaluation of the critical components of this multimodal transportation system and offer a technical recommendation for potential implementation, including:

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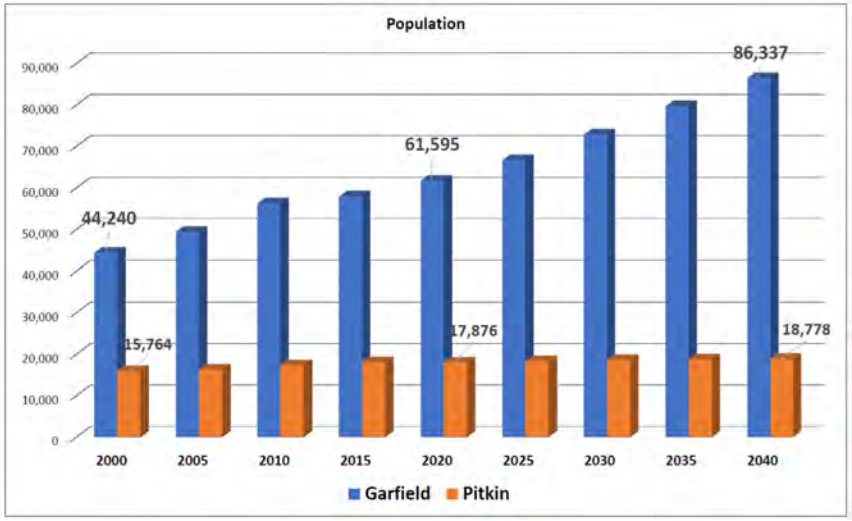



FIGURE 2 - GARFIELD AND PITKIN COUNTY POPULATION PROJECTIONS

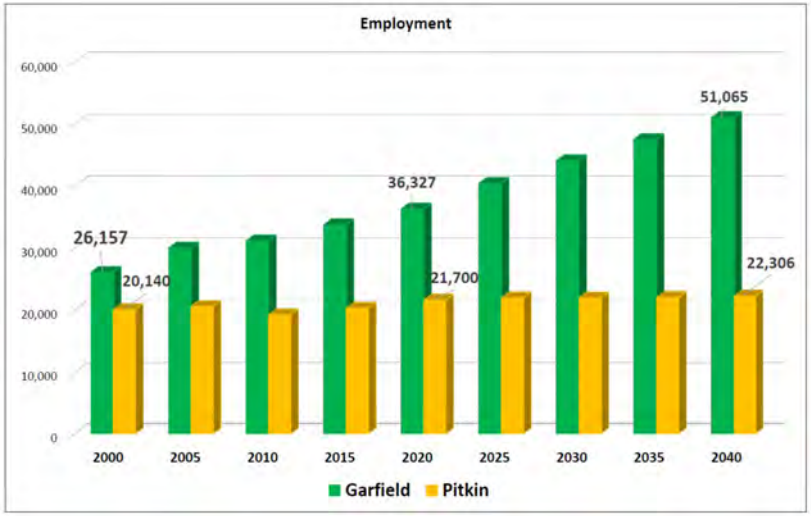



FIGURE 3 – GARFIELD AND PITKIN COUNTY EMPLOYMENT PROJECTIONS

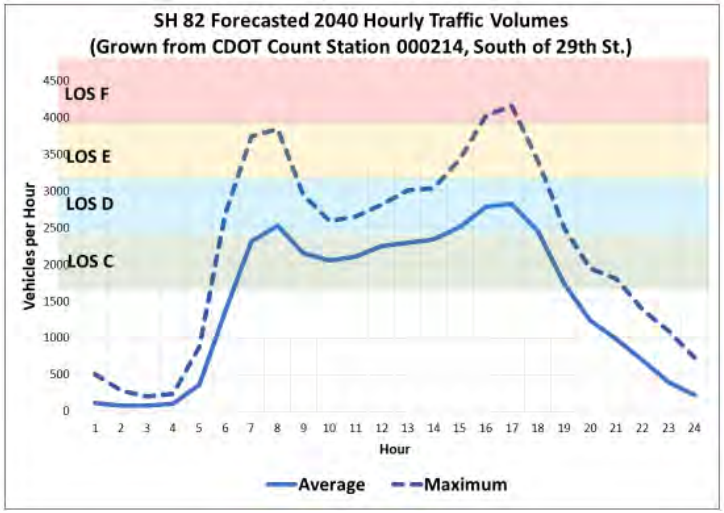




FIGURE 4. 2040 CONGESTION IN GLENWOOD SPRINGS

## Previous Studies

There are several recent plans and documents that have been prepared for both RFTA and the City. It is important to understand the recent and past goals, objectives, and efforts from these studies to help develop the framework for future planning. These previous efforts' findings and recommendations were used to further inform the project team about the corridor while subsequently refining this Study's alternatives and eventual recommendations.

### RFTA Corridor Investment Study (*May 2003*)

This document discusses the process that compared long-range transportation alternatives for the RFTA corridor, from Glenwood Springs to Aspen, that preceded both the current BRT system along the corridor as well as the Rio Grande Trail. It notes the critical part of solving congestion throughout the Valley by providing attractive alternative transportation choices. The purpose of the Corridor Investment Study (CIS) process was to develop a regional transportation solution that addresses the mobility needs and respects the quality-of-life concerns of the citizens residing within the project corridor. The CIS was a planning tool created by RFTA in consultation with its member jurisdictions: the Colorado Department of Transportation (CDOT), Federal Transit Administration (FTA), and the Federal Highway Administration (FHWA). In addition, the CIS served to provide the local community a comparative analysis of bus and rail technologies with long-range transportation alternatives in the RFTA service area through the year 2025. The study found overall that projections indicated an anticipated increase in transit demand (10.1 to 11.4 percent increase for the BRT and Rail Alternatives, respectively) and annual boardings (75 percent to 125 percent increase), while vehicle miles traveled (VMT) projections indicated a slight increase.

The alternatives developed were evaluated using a multi-tiered screening approach which involved a collaborative process with the local communities and stakeholders. The alternatives included a No Action/Committed Projects Alternative, Bus Rapid Transit (BRT)/Light Rail Transit (LRT) + Trail which included either a BRT or LRT from Buttermilk to Aspen, and a Rail Alternative + Trail with commuter rail from Glenwood Springs to Aspen; all were analyzed in detail within the CIS using the tiered screening approach. With the identified funding sources summarized in the study, it was found that the BRT/LRT alternative is expected to require the lowest amount of additional federal, state and local funding resources when compared to the rail alternative.

### SH 82 Corridor Optimization Study (*March 2007*)

The purpose of the *SH 82 Corridor Optimization Study* (COS) was to identify feasible alternatives for addressing the regional travel and local mobility needs of SH 82 by evaluating environmental concerns, capacity, mobility, safety, cost of improvements, and potential funding options for each of the developed alternatives.

Alternatives for SH 82 included improvements to the existing alignment, signal timing, limited turns, and additional interchanges. Other alternatives included an additional bridge south of the Glenwood Springs Airport and various alternatives for Midland Avenue. From a multimodal (bike-pedestrian)


perspective, three of the alternatives performed best in the evaluation: the East Alignment option is best in terms of local impact to ped/bike, community cohesiveness, and safety; the South Glenwood Bridge is best for local impact to ped/bike but worst for community cohesiveness and safety; and the Traffic Calming option is nearly best for local impact to ped/bike and community cohesiveness, and rates in the middle for safety.

## 2030 Garfield County Comprehensive Plan (*Amended October 2013*)

The Garfield County Comprehensive Plan projected land use needs to the year 2030 intended to provide a steady, predictable direction over the next 20 years. The plan was adopted in November 2010 but later amended in 2013. Each of the plan elements (such as housing, transportation, etc.) contains five components that include a vision statement, identified primary issues, goals, policies, and strategies and actions.

For transportation specifically, the goals aim to ensure that county roads are constructed and maintained on a safe and fiscally sustainable basis and that public transit services as well as alternative modes are supported when and where feasible. To accomplish these goals, the following strategies and actions were recommended:

1. Assure the interconnectivity of the county roadway system, to provide multiple routes to reduce congestion and provide for emergency access.
2. Focus infrastructure improvements (and road maintenance) in a cost-effective pattern, in areas where growth is appropriate.
3. Create and maintain a map of existing road conditions and ownerships and establish road standards.
4. Adopt a Road Master Plan to help guide the Capital Improvement Plan.
5. Convene a work session of regional stakeholders to share information about current plans, projections, issues and potential solutions.
6. Work with RFTA, or other transit entities, to address transit throughout Garfield County and how to connect with Eagle County's ECO-Transit system.
7. Explore mechanisms for the County to address increased traffic from new development.

## City of Glenwood Springs Downtown Parking Study Update (*July 2013*)

The Downtown parking study update provides an assessment of current downtown parking supply and demand conditions, evaluates future parking needs, and includes recommendations for potential parking management strategies. It largely concluded that parking in downtown was sufficient, though some may need to walk an acceptable distance of 1-2 blocks from a parking space to their destination in town.

It is mentioned in the study that "signage, wayfinding, bike parking, and event parking were mentioned frequently" in public comments as issues that impact residents and business owners in downtown.

The study recommends continuing to promote City bike trails and commuter programs to encourage commuting to downtown via alternative modes and utilizing the 25+ bike racks that the City maintains in town. Appendix D of the study notes bicycle parking best practices and cites that adequate bicycle parking, along with pedestrian facilities and amenities, can reduce demand for parking. It is recommended that Glenwood Springs consider supporting a full-service bike station or similar amenities in combination with another type of project, such as a transit station or public parking garage. Bike Share is briefly mentioned in the study, although it does not make any recommendations as to whether it would be successful in Glenwood Springs.

Improved wayfinding – for vehicles, bikes, and pedestrians – is discussed to aid in navigating to and from destinations and parking areas. Many stakeholders for the project mentioned a goal for the downtown area to be more pedestrian friendly, even at the expense of some parking.


## 2014 Local and Regional Travel Patterns Study (*September 2015*)

The purpose of the Regional Travel Patterns Study was to provide local jurisdictions and planning agencies with information on travel demand within the study area that includes the Roaring Fork and Colorado River Valleys between Aspen and Parachute. The study included two rounds of surveys in 2014, a winter (targeted employees and employers) and summer survey (residents). The survey highlights topics such as where people live and work, mode of travel, employer policies, walking and biking transit use, and demographic information.

Some key takeaways for multimodal behavior: Winter commuting by bus is about 35% (2014) in the Roaring Fork Valley.

- **Glenwood Springs, along with Rifle, Aspen, Carbondale and Snowmass, has the highest percentage of commuters walking or biking to work.**
- **37% of workers in the study commute 5 miles or less.**
- **47% of surveyed Glenwood Springs residents live within 5 blocks of a bus stop with an additional 31% more than one mile from a stop.**

The study revealed a 10% mode shift from driving to walking and biking between winter and summer months, i.e., more people walk or bike in the summer months. The summer active mode share was more than double the winter mode share: 17% (regionally) walking and biking in the summer, compared to 7% in the winter months. Glenwood Springs, specifically, had a 20% summer active mode share and 15% winter active mode share in 2014. The 7% who bike commuted in the winter months in Glenwood Springs was the highest in the region.

In 2014, the average commute distance for Glenwood Springs residents was 13 miles, down from 15 miles in 2004. The regional average distance from a resident's home to the nearest RFTA bus stop was 1.7 miles, with 43% of residents living within 5 blocks of a bus stop and 34% living more than a mile from the nearest stop.

Once the decision to take the bus has been made, more than half of Garfield County residents walked or biked to the bus (56% winter, 55% summer). After arriving at their final bus stop in Garfield County, the majority of commuters walk to work (90% winter, 81% summer), and some use a personal bike for the "last mile" to work (7% winter, 8% summer). The rest of the commuters drive, both getting to the bus and then getting to work.

The percent of regional employers offering non-driving commute incentives in 2014 was 29%, which is the same as 2004. However, more of these incentives are for biking in particular. 45% of employers reported that showers were available for active commuters, and 52% reported that bike parking was available.

## Glenwood Springs Comprehensive Plan (*March 2011, revised 2014*)

The Glenwood Springs Comprehensive Plan serves as a guide for making land use decisions that are based on the community's values and vision for the future. The plan update is based on the vision, and other concepts proposed in previous plans that have been confirmed by the public and decision makers. The plan outlines community goals for transportation and mobility that include the following:

1. Maintain Glenwood Springs role as a regional center
2. Preserve the small-town character and maintain the livability
3. Preserve and increase the vibrancy and commercial success of the Downtown
4. Promote sustainable economic diversity
5. Address transportation needs and provide multiple convenient travel choices
6. Preserve access to natural areas and the Colorado and Roaring Fork rivers.

**SH 82 Relocation Alternative**

In terms of transportation and mobility, the plan provides a vision that supports regional travel needs with a balanced multimodal transportation system. Key objectives for transportation and mobility included maximizing effective traffic movement


on Grand Avenue to the extent that it is consistent with maintaining pedestrian friendliness, increase the connectivity of local streets, trails and walkways to provide multiple routes for circulation through town, continue to assess and plan for an alternative alignment of SH-82, and provide convenient alternatives to automobile circulation within the city limits for local residents and visitors.

The plan recommends strategies and actions to promote transportation and mobility which includes: Continue planning for a relocated route for SH-82; Improve interconnectivity of the road network to provide alternative routes through and around town; Encourage reduction of single-occupant vehicles and encourage alternate travel modes through land use planning and community design; Strengthen transit and plan for transit hubs; Expand and connect the trail system and other walking and bicycle routes; Create complete streets to encourage alternative modes of travel; Work with CDOT on the replacement of the Grand Avenue Bridge.

## RFTA Regional Bicycle, Pedestrian and Transit Access Plan (*July 2014*)

The existing conditions identified in the RFTA Regional Bicycle, Pedestrian, and Transit Access Plan state that the Roaring Fork Valley's regional facilities generally offer convenient and safe connections between communities and destinations but indicate that existing bicycle and pedestrian access to RFTA BRT stations is variable and that many stations rely on vehicle access.

In Glenwood Springs, seven priority projects and nine constraints were identified to improve bicycle, pedestrian, and transit; of which the following relate to the Grand Avenue Alternatives Analysis project:

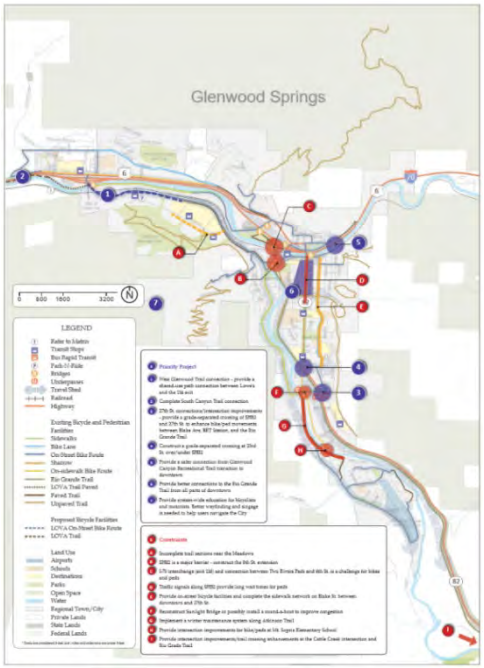
**Priority Projects**

1. Improve SH-82 & 27th St intersection to enhance bicycle and pedestrian connectivity between Blake Ave, Rio Grande Trail, and RFTA BRT station – **High Priority**
2. Grade-separated pedestrian crossing at 23rd St over/under SH-82 – **Medium Priority**
3. Better connections from Rio Grande Trail to downtown – **Medium Priority**
4. System-wide education for cyclists and motorists. Better wayfinding and signage to navigate the city – **Medium Priority**

Constraints

1. SH-82 is a major barrier
2. I-70 interchange and connection between Two Rivers Park and 6th St is a challenge for bikes and peds
3. Traffic signals along SH-82 provide long wait times for bikes and peds
4. Incomplete on-street bicycle and sidewalk networks between downtown and 27th St

Additionally, public input identified the following as top factors that discourage walking and biking: dangerous crossings, disconnected pathways, missing or narrow sidewalks, lack of bicycle parking, system connectivity (lacking), high traffic volumes, lack of dedicated bicycle facilities.




## Glenwood Springs Long Range Transportation Plan 2015-2035

The Glenwood Springs Long Range Transportation Plan (LRTP) builds upon the Glenwood Springs 2003 Long Range Transportation Plan. The vision of the LRTP is to create a multimodal transportation system that safely and efficiently moves people and goods, enhances the quality of life, promotes economic vitality, and exemplifies the historic community character of Glenwood Springs. Based on existing conditions and input from the community, this plan establishes objectives for Glenwood Springs to focus on and prioritize recommendations to develop a complete multimodal transportation network. Every project outlined in the plan considered each of the following goals:

- Connectivity
- Safety
- Accessibility
- Convenience
- Sustainability
- Accountability
- Livability

The plan acknowledges that while the City has great regional trails that are generally safe and convenient, there are on-street network gaps (for bicycles and pedestrians) and multi-use conflict zones that need to be addressed.

The City currently (2015) has 2.5 miles of on-street bike lanes, 13 miles of bike routes, 4 miles of on-sidewalk bike routes, 7.5 miles of paved and 10 miles of unpaved trails. Most of these bike routes are not designated with wayfinding signage or route information.

The City's shared-use paths allow local and regional travel but have limited access points to downtown and neighborhoods. Sidewalks are present in downtown but are lacking in residential areas and vary in width and condition.

8th Street & Grand Avenue, 9th Street and Grand Avenue, and 7th Street & Cooper Avenue reported the largest pedestrian volumes (2015).

The Plan recommends a number of bicycle and pedestrian infrastructure projects, including the following that relate to the Grand Avenue Alternatives Analysis project:

- On-street bicycle facilities on 6th, 7th, 8th, and 10th Streets
- Rio Grande Trail connection at 10th, 11th, 14th Streets
- SH-82 shared-use path to commercial areas

## Glenwood Springs Confluence Area Redevelopment Plan (*2017*)

The Confluence Area Redevelopment Plan provides an implementation framework with strategies for moving redevelopment efforts forward. The Confluence area is located adjacent to Glenwood's historic downtown and sits a few blocks west of Grand Avenue (SH-82). A strong emphasis was put forth on the community engagement process that included techniques for crafting a shared vision, goals, design solutions, and implementation steps. To meet the community goals, a placemaking framework was used that consists of four key strategies that include: (1) Improve Connectivity, (2) Redevelop Vogelaar Park, (3) Redevelop the Riverfront, and (4) Redevelop the 7th Street Corridor.

A strong emphasis on building partnerships among stakeholders was included in the community engagement process. This included techniques such as a goal-setting workshop, urban design charrette, community feedback, and the establishment of a Project Advisory Team (PAT).

The success of the Confluence Area Plan relies on creating safe, multimodal connections and notably, the redevelopment of the 7th Street corridor recommends the exploration of integration of a transit center that will require further study and discussion between the City, Garfield County and RFTA. In addition, further study to explore integration of shared parking of the off-street parking lots along 7th street is recommended. The plan outlines recommended key next steps that fall within each of the four key strategies.


## 6th Street Corridor Master Plan (*June 2017*)

The 6th Street Corridor Master Plan serves as a blueprint for both public and private investment by outlining both a vision and action plan for the corridor. The plan was envisioned as a way to prioritize public investment, as a tool to evaluate future development proposals, and for landowners contemplating new development or redevelopment to ensure that development concepts are in-sync with the vision and goals of this plan. The goals set by the plan include:

1. 6th Street should serve as an extension of Downtown
2. Enhance the identity of 6th Street
3. Improve connectivity
4. Create nodes of activity with a mixture of new uses
5. Beautify the edges;
6. Engage the river.

Specific mobility goals were also developed to promote Glenwood Springs as an outdoor recreation destination. These goals include: facilitate walking and biking as viable transportation options by implementing comfortable and easy-to-use facilities; connect the major activity centers within GWS to one another; connect the two major regional trails – Glenwood Canyon Trail and the Rio Grande Trail; provide better circulation within the study area by breaking up the mega-blocks along West 6th Street with pathways, streets, or private drives; supplement walking, biking and driving with an efficient transit system; and support redevelopment by implementing a public parking structure and other parking mechanisms.

A master list of recommended projects was provided for implementation in the order of their priority which includes Short-Term Projects (0-5 years), Mid-Term Projects (5-10 years), and Long-term Projects (10+ years). The plan identifies a key next step that recommends a 6th Street Corridor Task Force be organized to ensure transparency and inclusion.

Specific multimodal improvements to the existing conditions in the 6th Street corridor include:

- Continuous, wide, and buffered sidewalks on both sides of the street in the Village Core
- Enhanced crosswalks
- Two-way protected bike lane from Olive to Laurel – this has been installed since the plan was produced

## Ride Glenwood Springs Transit Operations Plan (*May 2018*)

This plan is the City of Glenwood Springs' five-year planning, service, and implementation blueprint for the City's Ride Glenwood Springs transit service. The primary goal of the plan was to update the City's most recent 2010 Five-Year Transit Operations Plan to better respond to existing conditions and possible changes to travel patterns following the completion of the new Grand Avenue Bridge. The objective of the plan was identified to streamline RGS operations and promote full integration into and synchronization with regional Roaring Fork Transportation Authority (RFTA) services.

Outreach efforts were included for this plan that involved meetings with the transportation commission, Key Business Leaders, RFTA operations staff including RGS drivers, and the general public to gain feedback on the existing service including thoughts and perceptions on operational challenges and opportunities for enhancements. A community survey about the service


indicated that the top three modes of transportation utilized in Glenwood Springs are private vehicles, walking, and biking. When public transit is used within Glenwood Springs, it is primarily for social and/or recreational purposes. Top reasons that people do not use Ride Glenwood Springs include proximity to desired destinations, not knowing which bus to take, duration of travel time, or preferring alternative modes (car, walk, bike).

Transit improvements to be considered, related to multimodal activity, include installing more shelters or benches, bike racks on RGS buses, and bike parking at bus stops.

Planned improvements include a preferred phased approach for the City to advance a restructuring of RGS transit services and provide enhanced mobility for residents and visitors. Phase 1 includes working with RFTA to address fare integration and logistical issues relating to realigning local valley bus via North Glenwood Springs. Phase 2 includes realigning local valley bus via North Glenwood and City-Wide Ride-Hailing services.

## RFTA Destination 2040

The RFTA Destination 2040 provides a plan that addresses the region's current and future mobility needs. This plan comes with the expectation that population, employment growth and housing development in the region will continue to increase over the next 20 years. With this, RFTA foresees a need to increase multimodal transportation options to help the region address expected traffic demand and congestion increases and implement new technology for traffic management and electric buses to meet the community's environmental goals.

Proposed improvements identified in the plan fall within the categories of improved mobility, environment, sustainability, and safety that utilize funds from a 2.65 mill levy ballot measure that was passed in 2018. In order to establish a financial plan for the developed multimodal and transit service alternatives and projects, a four-stage process was completed. The first stage of the process included defining the vision which included assessing plans, inventory of existing assets, and communicating with residents. The second stage included determining the future needs by analyzing future land use and transit ridership. The options were analyzed in the third stage with a financial plan developed during the fourth stage.

## "Glenwood: Moving Forward Together" Project – U.S. EPA Brownfields Area-Wide Plan (*February 2019*)

The Brownfields Area-Wide Plan (AWP) advances recent planning efforts to address long-term redevelopment planning needs of the defined area that includes three catalyst brownfields properties. The grant was awarded to the City of Glenwood Springs in partnership with the Downtown Development Authority (DDA). The plan advances initiatives that integrate land use, transportation, and economic development elements to create a comprehensive urban redevelopment strategy. The AWP serves as a guide to decision-makers in the redevelopment of the study area.

The guiding principles for reuse were defined through the community engagement process in addition to utilizing the goals from the 2017 Confluence Area Redevelopment Plan. The guiding principles included the development overall design, building type, scale, form, and massing, and public and open spaces.

Three site reuse plan alternatives were developed (Alternatives A-C). Each alternative consisted of unique key parameters such as RFTA ROW, structured parking, and street pattern/vehicular circulation as examples. Each of the plan alternatives consider opportunities to increase transit service, facilities, and ridership. In addition, specific transportation improvements were explored for the critical connector streets and intersections within the study area as well as connectivity enhancement of the existing Rio Grande Trail.


# Vision and Goals

## MOVE PROJECT VISION:

*A community with safe, multimodal and efficient connection options that makes Glenwood Springs a city of great vitality and quality of life.*

The ultimate vision for this project stated above will incorporate a multitude of multimodal transportation elements to meet the project **purpose**: to optimize the efficiency and utility of the transportation system within and through Glenwood Springs by developing, evaluating, and selecting transportation strategies and opportunities that align with the City's goals for mobility, land use, economic vitality and sustainability, and quality of life.

The City has multi-faceted project **needs** to be addressed including the following:

- Need to integrate and optimize the local and regional transit systems to make them more attractive, convenient, reliable, effective and efficient.
- Need to improve pedestrian access throughout the Downtown area including connections with transit stations, as well as improving ADA access and SH-82 pedestrian crossings.
- Need to facilitate bicycling as a connection to transit.
- Need to improve traffic safety, circulation and operations particularly during the morning and afternoon peak periods and considering growth over the next 20 years.
- Need recommendations for priority parking locations, facilities, phasing plans and policies for City-owned facilities and RFTA's 27th Street BRT station, and improved parking management to minimize searching for parking which contributes to traffic congestion and additional greenhouse gas (GHG) emissions.

## Project Goals

### City of Glenwood Springs Strategic Vision:

*The City of Glenwood Springs desires to maintain its small-town character and to preserve its cultural and natural resources. Implementing a proactive plan that achieves directed and balanced development, social and economic diversity, and addresses transportation needs will move the City forward.*

The goals follow from the purpose and need for the project and will in turn lead to evaluation criteria and measures of effectiveness. The project goals include:

- Improve mobility, connectivity, safety, and accessibility
- Determine effective and affordable transportation solutions with strong community support
- Provide reliable BRT access to the downtown/Confluence area of Glenwood Springs
- Improve travel time for auto travel and local transit
- Reduce congestion in the corridor
- Improve service efficiency (e.g., higher transit ridership, riders per trip, riders per hour of service)
- Meet current and future person-trip demand
- Encourage a shift of auto trips to attractive and reliable alternative modes
- Support local livability, development, and sustainability plans and policies
- Improve transit connections and accessibility to affordable housing


# Public Process and Involvement

COVID-19 posed a unique challenge for the project team to gather public input from stakeholders. However, the project team was able to virtually engage with a large number of residents and stakeholders to gather input and opinions. The project team held three virtual focus group meetings, two public outreach campaigns, used multiple surveys, and provided a fully interactive recommendations maps to gather input and refine recommendations.

## Focus Group

The focus group meetings engaged a smaller, more targeted group who served as ambassadors for their community. A smaller group allowed for more open discussions and engagement, which led to the development of a set of issues to focus on and recommended future improvements throughout the Study area. The project team collaborated with the focus group to identify issues and proposed recommended solutions through an interactive polling exercise. The review of the Level 1 screening results with the focus group helped guide continued analysis with proposed refined alternatives. The full list of focus group members is included on the Acknowledgements page of this Study.

## Public Outreach

The MOVE team created an entirely digital, interactive experience for the public to contribute their opinions on the future of transportation for Glenwood Springs. Digital advertising directed the public to learn about the project and actively participate. The Study's first outreach effort was held April 10, 2020 through May 10, 2020 to gather information on the participants' relation to the study area as well as feedback on various multimodal improvements. A survey, open ended comment box, and virtual interactive map to were used to solicit input from the participants. The Study's second outreach opportunity was held August 20, 2020 through September 11, 2020 with a virtual open house live webinar on August 27th, 2020. This outreach served to introduce the project and the proposed design alternatives and gather feedback. Results of the surveys, the advertising materials, engagement plan, and presentations used for the outreach can be found in **Appendix B. Figures 5 and 6** summarize the advertising and participation during the project and **Figures 7, 8, and 9** are examples of three of the numerous advertisements that were used.

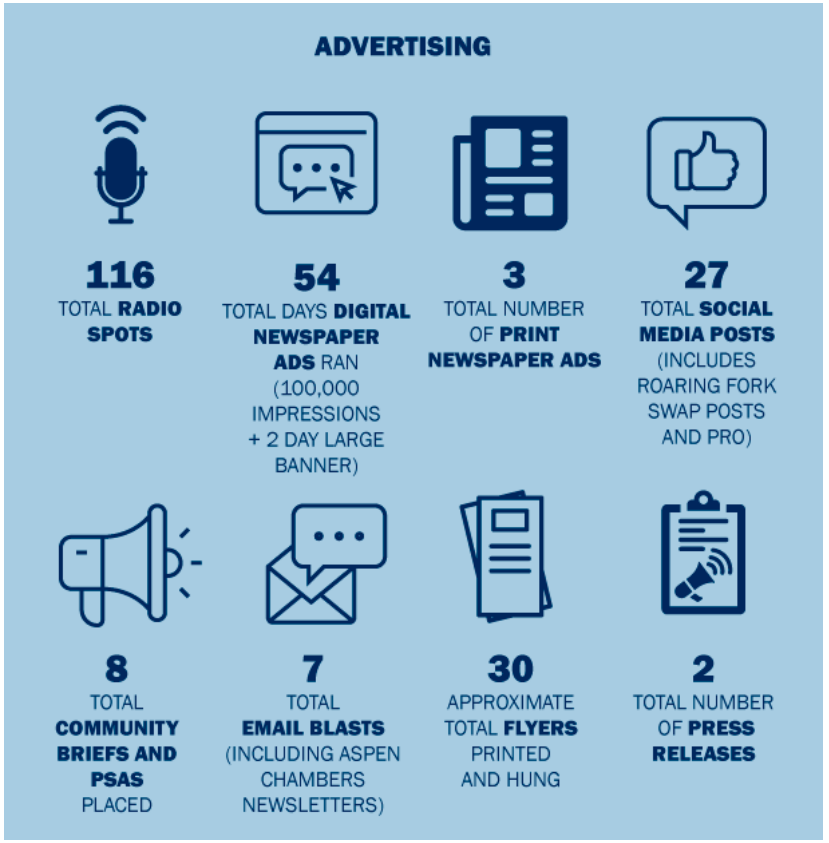



FIGURE 5. ADVERTISING SUMMARY



FIGURE 7 - PROJECT FLIER

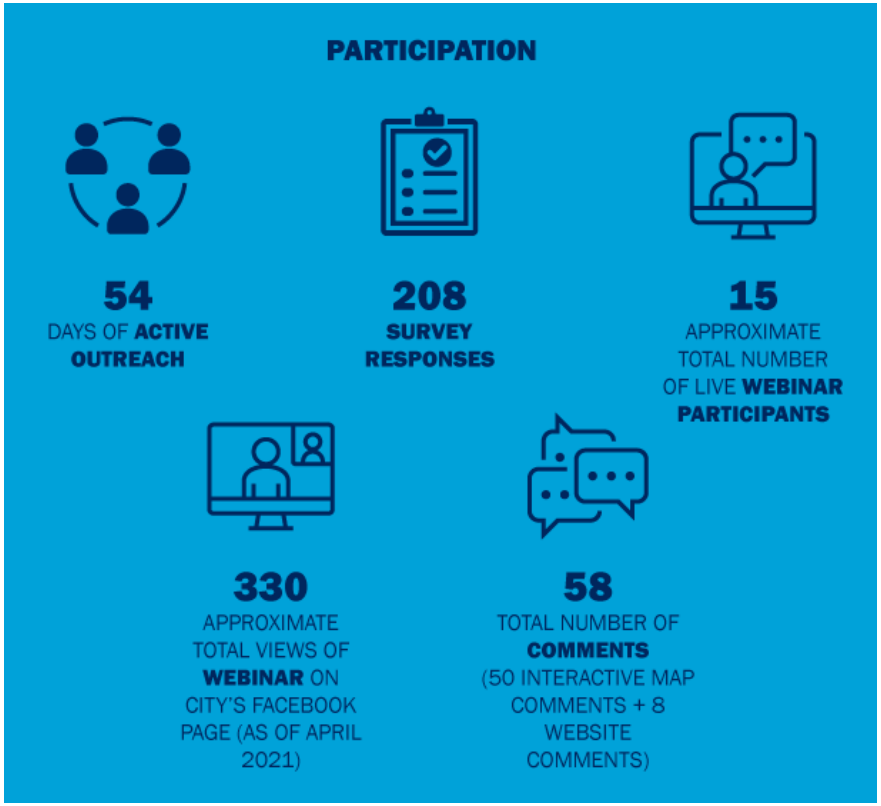



FIGURE 6 - PARTICIPATION SUMMARY



FIGURE 8 - PROJECT ADVERTISEMENT


FIGURE 9 - PROJECT ADVERTISEMENT


# RECOMMENDATIONS FOR MOVE

## Multimodal Alternatives Development

**Create an equitable and connected multimodal network to move more people by walking, biking, and taking transit as part of their everyday lives.**

Multimodal alternatives were developed to address the identified project needs and goals beginning with:

- BRT extension options from 27th Street station to downtown Glenwood Springs
  - Grand Avenue alignment
  - Rio Grande corridor alignment
  - Blake Avenue alignment
  - Cooper/Colorado one-way couplet alignment
  - Pitkin Avenue alignment
- Downtown transit center and in-line station options
  - 8th Street and Rio Grande Corridor alignment
  - Confluence area
  - SH6 area

Each of the initial alternatives was enhanced and/or made possible by a program of improvements in the following areas:

- Regional and local bus integration improvements
- Pedestrian facilities improvements
- Bicycle facilities improvements
- Parking facilities improvements
  - Downtown
  - 27th Street RFTA station
  - West Glenwood RFTA station
- Traffic operations and safety improvements

**Figure 10** illustrates the multi-tiered screening process used to evaluate the multimodal alternatives considered.

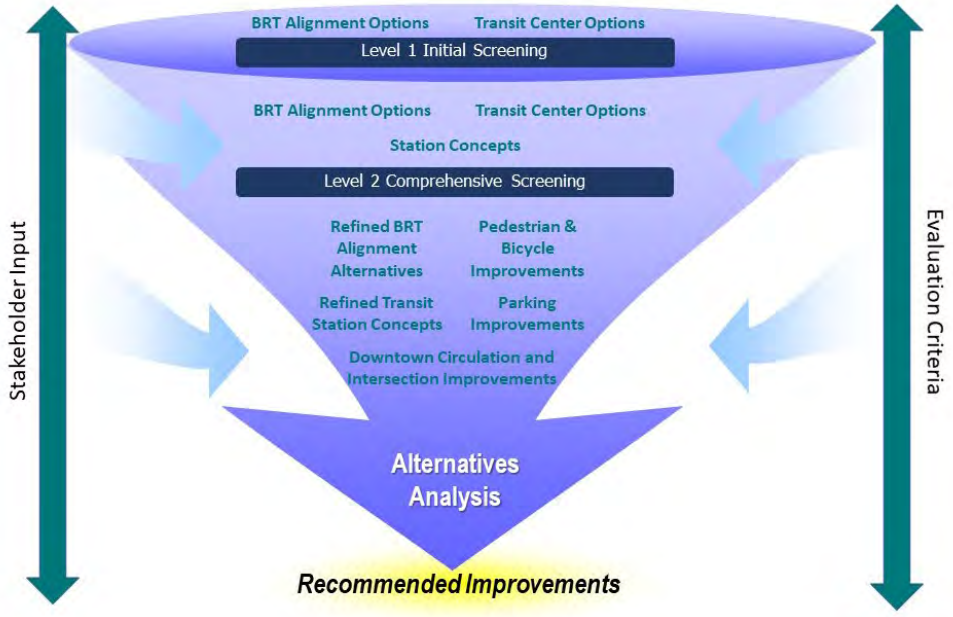



FIGURE 10. ALTERNATIVES DEVELOPMENT AND EVALUATION PROCESS


## Study Area and Modes

The overall study area includes the SH 82 corridor from 27th Street through the downtown/Confluence area to West Glenwood Springs and the I-70 corridor. Strategies to be studied include regional and local transit services, pedestrian and bicycle facilities, traffic circulation and safety, and parking issues. **Figure ES-1** shows the study area.

Within this area, intersection operations analysis was conducted at the following key intersections.

**Critical Intersections**

1. 8th and Grand Avenue
2. 9th and Grand Avenue
3. 14th and Grand Avenue
4. 8th and Midland Avenue
5. 8th and Colorado Avenue
6. 8th and Pitkin Avenue

Further information about the study area and regional and local context can be found in the Existing Conditions Report in **Appendix A**.

The analysis and recommendations developed through the Study process are generally categorized by mode and discussed in detail in the following sections:

1. Transit
    a. Local Transit
    b. Regional Transit (Bus Rapid Transit Extension)
2. Pedestrian and Bicycle
3. Parking
4. Traffic and Safety

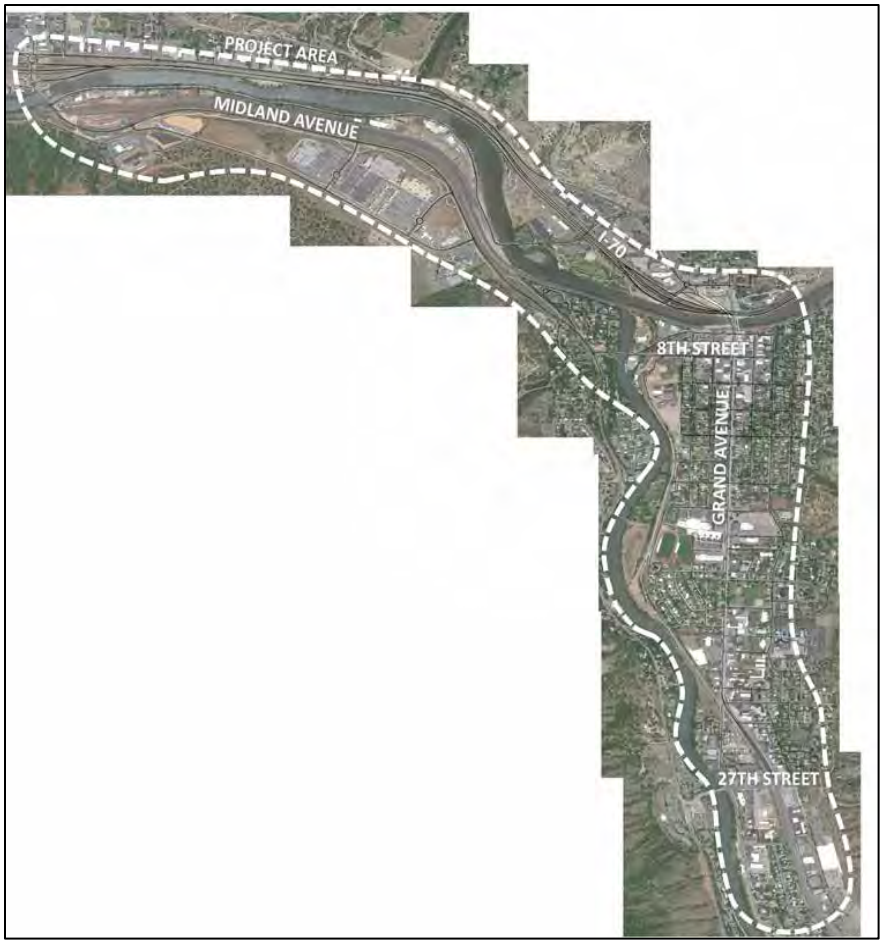



FIGURE 11. STUDY AREA


# Transit

## Existing Conditions

The City of Glenwood is served by four main transit routes as shown in **Figure 12**. Three of these routes – VelociRFTA Bus Rapid Transit (BRT), Valley Local, and Grand Hogback -- link Glenwood Springs to other communities in the Roaring Fork region. The fourth route, Ride Glenwood Springs, focuses on service within Glenwood Springs.

**VelociRFTA BRT ("BRT")** serves Glenwood Springs to/from Aspen and travels mostly along SH-82, offering frequent service. RFTA's VelociRFTA BRT was the first rural bus rapid transit system in the nation. During peak periods, the bus operates every 10 minutes or less. Many BRT buses end at the 27th Street South Glenwood station, with less than half of buses continuing to the West Glenwood PnR in mixed traffic. Most transit users that want to access downtown Glenwood Springs need to transfer to a local RFTA or Ride Glenwood Springs bus to complete their journey. **Table 1** summarizes BRT service frequencies, trips per day, and span of service.

| BRT SERVICE CHARACTERISTICS | SUMMER/ WINTER | SPRING/FALL |
|---|---|---|
| Weekday peak service frequencies | 10 min or less | 10-12 minutes |
| Weekday off-peak service frequencies | 15 minutes | 15-30 minutes |
| Average trips per direction per weekday | 75 | 53 |
| Weekday span of service | 20 hours | 15 hours |
| Weekend peak service frequencies | 15 minutes | 10-12 minutes |
| Weekend off-peak service frequencies | 15 minutes | 15-30 minutes |
| Average trips per direction per weekend day | 63 | 53 |
| Weekend span of service | 19 hours | 15 hours |

TABLE 1 -BRT SERVICE CHARACTERISTICS (27TH STREET TO RUBEY PARK)

A key element of system performance is the distribution of ridership across the network by location of the route, day of the week, and service type. **Figure 13** shows the RFTA and Ride Glenwood average stop activity by route. More information about transit operations can be found in the Transit and Multimodal Alternatives Plan for this study in **Appendix C** and includes existing service demand, current and anticipated future needs of the community as well as analysis of the existing services' efficiency and effectiveness.



FIGURE 12. EXISTING TRANSIT ROUTES SERVING GLENWOOD SPRINGS (NOTE: ALL BRT TRIPS SERVE 27TH STREET, WHILE 40%-55%, DEPENDING ON SEASON, CONTINUE AS LOCAL SERVICE TO WEST GLENWOOD PNR)

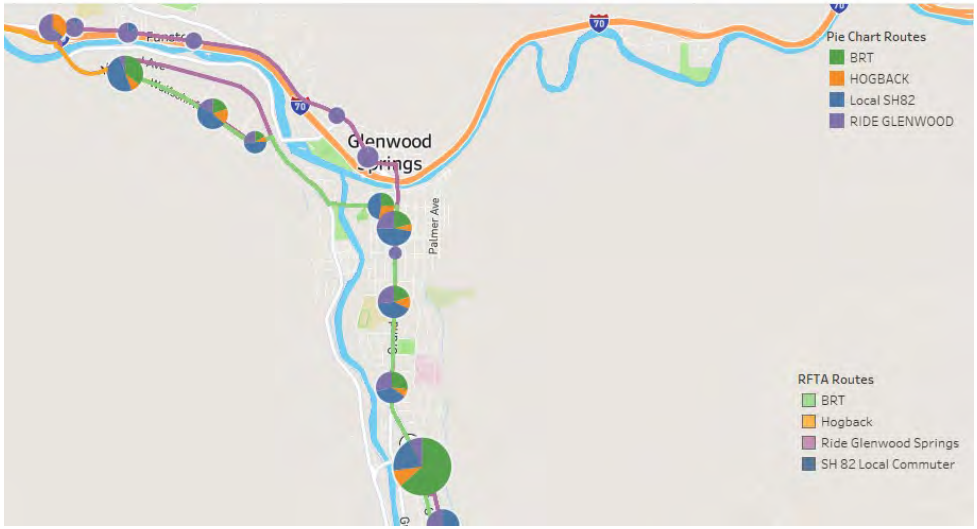



FIGURE 13. TRANSIT AVERAGE STOP ACTIVITY BY ROUTE


## Regional Transit Analysis (BRT Extension)

The alternatives development and evaluation process for extending BRT beyond 27th Street was conducted in two levels. Level 1 initial screening criteria were based on elements such as meeting corridor vision and needs for mobility improvements, station accessibility, parking impacts and operational criteria such as travel time savings. The Level 2 comprehensive screening criteria were placed in an evaluation matrix to measure the qualitative and quantitative values associated with each alternative.

### ALTERNATIVES

The six initial BRT extension alignment options and the three initial downtown transit center location options are shown in **Figure 14** and described in **Appendix G.**

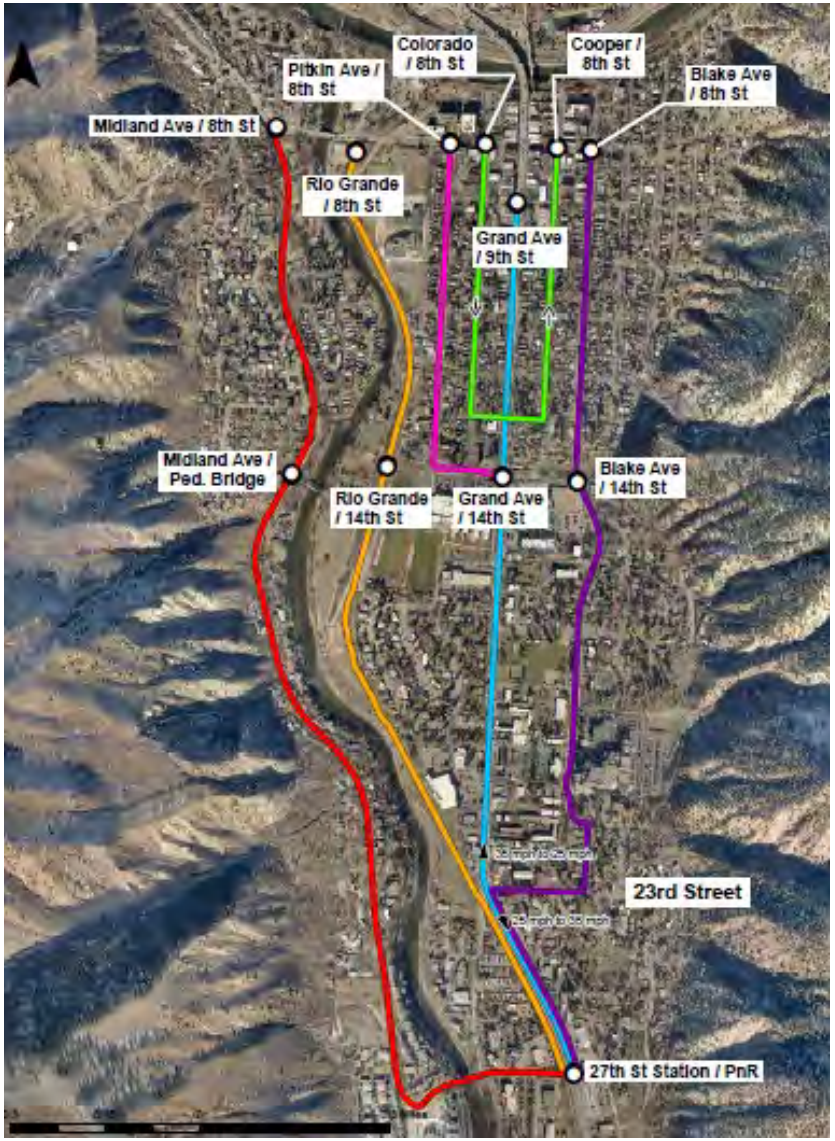



FIGURE 14. BRT EXTENSION ALIGNMENT OPTIONS


The anticipated BRT station locations for each alignment are located at the following cross streets:

1. 27th Street (Current RFTA Park-and-Ride (PnR))
2. 14th Street
3. In the vicinity of 8th or 9th Street

The **Grand Avenue alignment option** (1.6 miles) would provide a northbound dedicated BRT lane between 27th Street and 23rd Street (one-third mile) as shown in the typical section, **Figure 15.** From 23rd Street to 13th Street, the BRT vehicles would operate in the existing mixed flow traffic lanes. From 13th Street to 8th Street, business access/transit (BAT) lanes would provide semi-dedicated BRT lanes in both directions but would also allow right-turn movements, as shown in typical section **Figure 16.**


FIGURE 15. GRAND AVENUE TYPICAL SECTION: 27TH STREET TO 23RD STREET

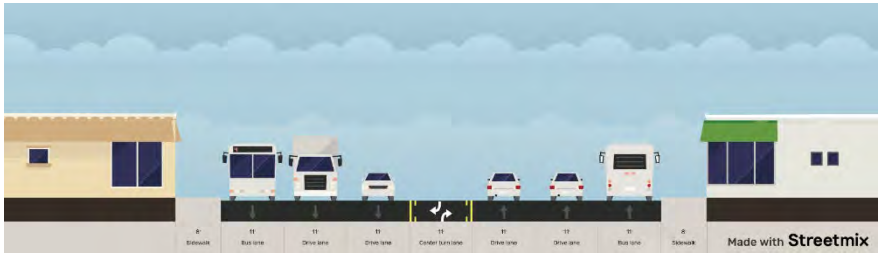



FIGURE 16. GRAND AVENUE TYPICAL SECTION: 13TH STEET TO 8TH STREET

The **Rio Grande Corridor alignment option** (1.7 miles) would provide fully dedicated BRT lanes in the exclusive right-of-way owned by RFTA that currently includes the Rio Grande trail. The BRT lanes would extend along the corridor from either 27th Street or 23rd Street to 8th Street. An inline BRT station would be located west of Glenwood Springs High School (approximately at 14th Street) and a more significant station with other bus connections would be located at 8th Street adjacent to the RFTA property.

The **Blake Avenue alignment option** (1.7 miles) would provide dedicated BRT lanes between 23rd Street and 8th Street. Between 23rd Street and 27th Street, the BRT service would operate along Grand Avenue in mixed traffic flow in the existing travel lanes. A BRT station would be located at Blake Avenue/14th Street and at Blake Avenue/8th Street.

The **Cooper (NB)/Colorado (SB) one-way couplet alignment option** (1.6 miles) would provide dedicated BRT lanes between 13th Street and 8th Street. Between 13th Street and 27th Street, the BRT service would operate along Grand Avenue in mixed traffic flow in the existing travel lanes. A BRT station would be located at 14th Street/Grand Avenue and at 8th Street/Cooper Avenue (NB) and at 8th Street/Colorado Avenue (SB).

The **Pitkin Avenue alignment option** would provide dedicated BRT lanes between 14th Street and 8th Street. Between 14th Street and 27th Street, the BRT service would operate in mixed traffic flow in the existing travel lanes along Grand Avenue. A BRT station would be located at 14th Street/Grand and at 8th Street/Pitkin Avenue.

The **Midland Avenue alignment option** from 27th Street to 8th Street (2.0 miles) would have the BRT service operating in mixed traffic flow for the entire alignment since the current ROW will not allow any dedicated lanes and property acquisition would be very costly due to the topography in the area. A BRT station would be located adjacent to the pedestrian bridge that spans the Roaring Fork River approximately 1 mile north of 27th Street on Midland Avenue between 14th and 15th Streets. Another BRT station would be located at 8th Street/Midland Ave.

More details and the cross sections of each alignment option are explained in detail in **Appendix G.**

## LEVEL 1 SCREENING

Results of the Level 1 screening of the BRT extension alignment options are shown in **Table 2** below. The quantitative values are shown for each criterion along with the relative scores based on the comparative values among the alternatives. Green shading indicates the best options, yellow indicates the middle options, and red indicates the worst options for each criterion. Similarly, numeric values (3 for best, 1 for worst) are also applied to determine a total score for all the criteria. No weighting of relative importance was applied; all criteria were weighted equally.

TABLE 2 - BRT EXTENSION ALIGNMENT OPTIONS LEVEL 1 SCREENING RESULTS

| | EVALUATION CRITERIA | NO BUILD | GRAND AVENUE | RIO GRANDE CORRIDOR | BLAKE AVENUE | COOPER/COLORADO ONE-WAY COUPLET | PITKIN AVENUE | MIDLAND AVENUE |
|---|---|---|---|---|---|---|---|---|
| *1* | **Improve BRT Travel Time Reliability (8th Street to 27th):** percentage of alignment in dedicated lanes | **1.6 miles in mixed flow (0%) dedicated lanes (1)** | **1.6 miles total; 0.4 mile (25%) semi-dedicated lanes* (2)** | **1.7 miles total; 100% dedicated lanes (3)** | **1.7 miles total; 1.2 miles (70%) dedicated lanes (3)** | **1.6 miles total; 0.4 mile (25%) dedicated lanes (2)** | **1.7 miles total; 0.5 mile (29%) dedicated lanes (2)** | **2 miles in mixed flow, 0% dedicated (1)** |
| *2* | **BRT Travel Time:** One-way transit travel time of the BRT before and after dedicated lanes. Current time / Projected | **8.0 / 8.0 (1)** | **8.0 / 7.1 (2)** | **NA / 4.6 (3)** | **10.6 / 7.9 (1)** | **8.0 / 7.2 (2)** | **9.4 / 8.2 (1)** | **8.0/8.0 (1)** |
| *3* | **BRT Travel Time Savings:** One-way transit travel time savings of the BRT based on average speed with proposed dedicated lanes, compared with Grand Avenue with dedicated lanes. | **0.9 min. slower (1)** | **0.9 min. faster than current (2)** | **2.5 min. faster (3)** | **0.8 min. slower (1)** | **0.1 min slower (1)** | **1.1 min. slower (1)** | **.9 min slower (1)** |
| *4* | **Number of on-street parking spaces displaced** | **0 (3)** | **140 spaces between 8th and 13th (2)** | **0 (3)** | **278 spaces between 23rd and 8th (1)** | **140 spaces on Cooper/Colorado combined between 13th and 8th (2)** | **161 spaces between 8th and 14th (2)** | **0 (3)** |
| *5* | **Community/Environmental Impact** | **No Impact (3)** | **Moderate Impact (downtown community feel) (2)** | **High Impact (trail) (1)** | **High Impact (residential parking) (1)** | **High Impact (residential parking) (1)** | **High Impact (residential parking) (1)** | **Moderate Impact (residential street) (2)** |
| | **TOTAL SCORE** | **9** | **10** | **13** | **7** | **8** | **7** | **8** |

**Business access/transit lanes that are semi-dedicated to BRT but also allow right-turning vehicle*



**Multimodal Options for a Vibrant Economy (MOVE) Study – The City of Glenwood Springs and The Roaring Fork Transportation Authority** 27


As shown in **Table 2**, the BRT extension alignment options with the worst overall scores are: Blake Avenue, Cooper/Colorado, Pitkin Avenue, and Midland Avenue. The Rio Grande Corridor has the highest overall score and the Grand Avenue alignment has the second highest score; consequently, these two options were advanced to the Level 2 screening. In discussions with the City, RFTA, City Transportation Commission and the Focus Group about the Level 1 screening results, several refinements to the two finalist alignments were suggested for further analysis as described in the Level 2 screening section below.

## LEVEL 2 SCREENING

The Level 2 screening process was intended to evaluate the alternative BRT alignment options that passed the Level 1 screening, namely:

- Grand Avenue BRT extension
- Rio Grande Corridor BRT extension

The No Build condition of no BRT extension was also carried into the Level 2 screening in order to compare the final two BRT extension alignment alternatives with continuation of existing transit services as they currently operate.

In addition, during discussions with the Focus Group, a hybrid BRT extension alignment was suggested for evaluation. Specifically, the hybrid alignment option follows Grand Ave from the 27th Street Station to 14th Street to the Rio Grande Corridor to 8th Street as shown on the map on **Figure 17.**

The City and RFTA also decided that a downtown transit center was not desirable due to the anticipated traffic volume and congestion increases caused by layover buses, parking, and other amenities, and that inline BRT stations would better serve the community. Consequently, they requested evaluation of BRT connections to the West Glenwood Springs PnR to facilitate bus connections via 8th/Midland and via US 6 as shown in **Figure 17.**


FIGURE 17. HYBRID BRT EXTENSION ALIGNMENT ON GRAND AVENUE AND RIO GRANDE CORRIDOR


Since the individual alternatives had been evaluated in the Level 1 screening, the Level 2 screening was applied to each of the alternative BRT alignment options that survived the Level 1 screening, plus the new hybrid alignment option and the peak hour-only options, to determine which combination would provide the greatest overall benefits. To assist the evaluation of the BRT extension options, exhibits and renderings were prepared to illustrate how the BRT lanes might look on Grand Avenue (**Figures 18 to 21**) and the Rio Grande Corridor (**Figures 22 to 26**). Additional renderings are included in **Appendix J**.

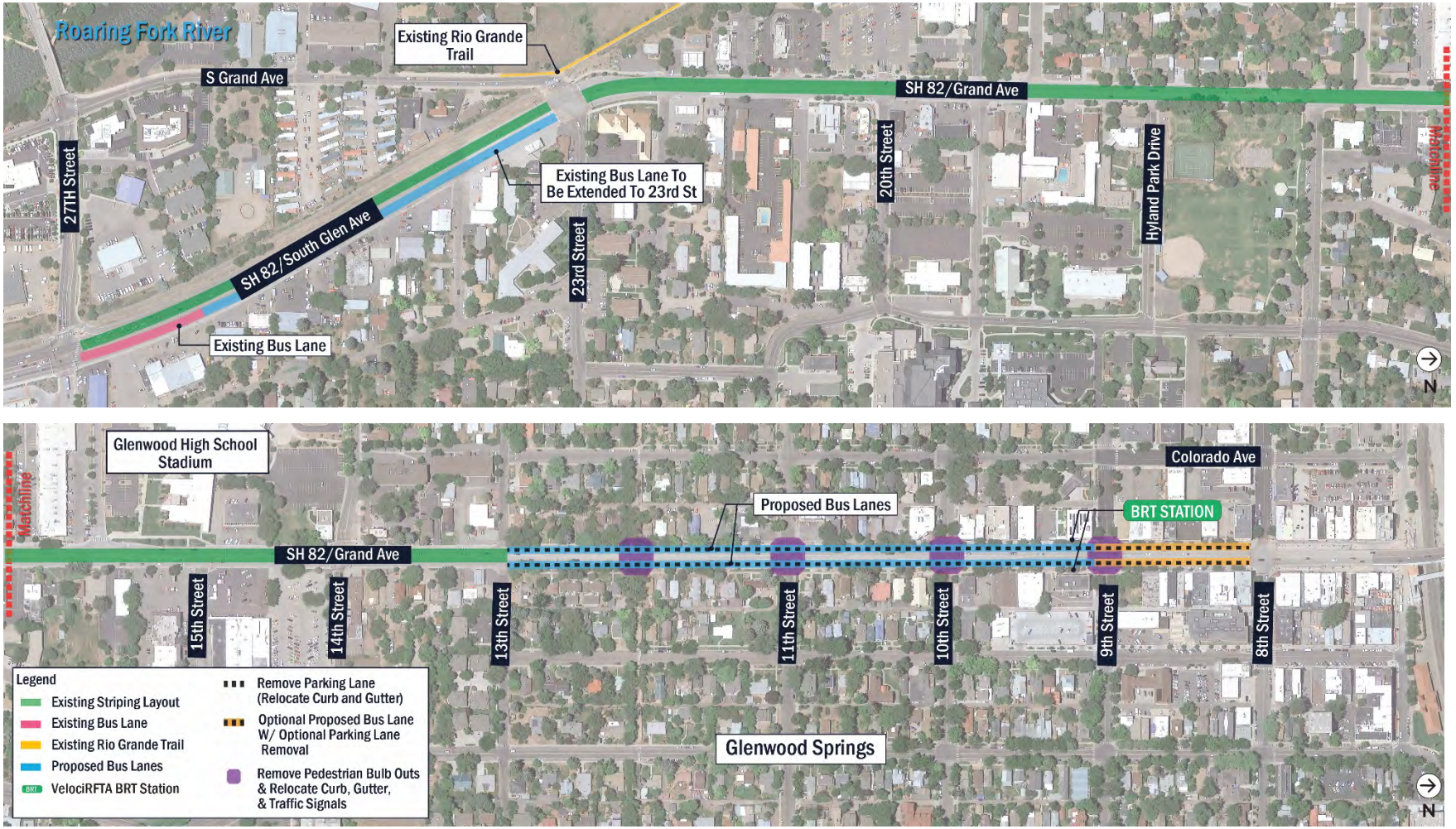



FIGURE 18. GRAND AVENUE SEMI-DEDICATED BRT LANES PLAN VIEW


FIGURE 19. GRAND AVENUE SEMI-DEDICATED BRT LANES THAT ALLOW RIGHT TURNING VEHICLES


FIGURE 20. RENDERING OF EXISTING GRAND AVENUE


FIGURE 21. GRAND AVENUE SEMI-DEDICATED BRT LANES - TO ACCOMMODATE WIDER LANES NEEDED, THE CURB WILL RECEDE BY 2' RESULTING IN THE REMOVAL OF MATURE TREES AND BULBOUTS



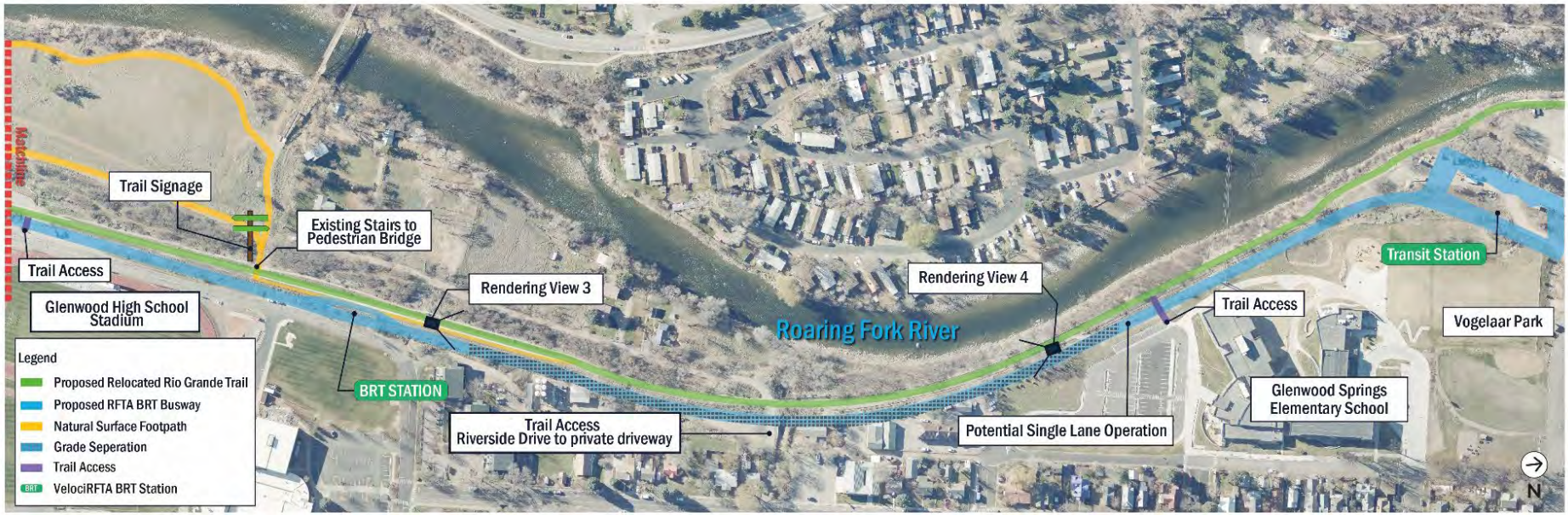



FIGURE 22. RIO GRANDE BRT LANES AND TRAIL


FIGURE 23. RIO GRANDE CORRIDOR BRT: EXISTING


FIGURE 24. RIO GRANDE CORRIDOR BRT RENDERING


FIGURE 25. RIO GRANDE CORRIDOR BRT REDNERINGS: VIEWS FROM RIO GRANDE TRAIL

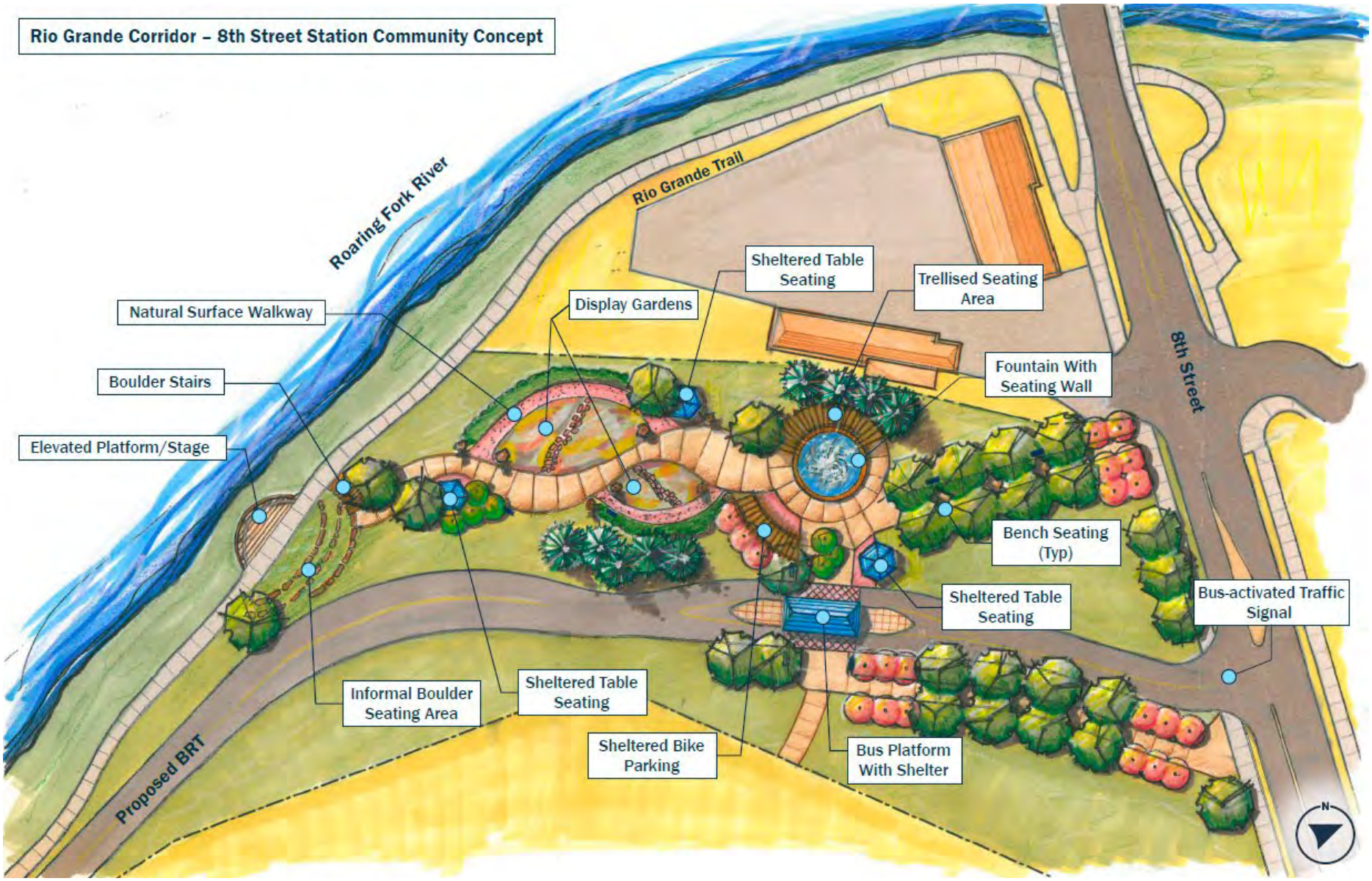




FIGURE 26. RIO GRANDE CORRIDOR BRT: 8TH STREET STATION COMMUNITY CONCEPT


Conceptual level design and rough order of magnitude cost estimates were also completed for both alignments and can be found in **Appendix H**. The order of magnitude costs were included in the Level 2 screening analysis as described below. The design guidelines and assumptions are explained in detail with the cost estimates. The intent of the Level 2 screening was to determine the best technical recommendation. Subsequently, the City and RFTA will seek input from the Transportation Commission, the Focus Group, and the community-at-large to understand their preferences and/or level of support for the recommended improvements as they select a preferred BRT alignment for implementation.

As shown in **Table 3**, several evaluation criteria beyond those used in the Level 1 screening were added to the Level 2 screening to provide a finer level and more detailed comparison of the final alternatives and their combinations. The criteria include several transit performance measures, conceptual level capital and incremental O&M cost increases, and several traffic, parking, and environmental impact criteria. The Alternative BRT Extension options were evaluated with the Level 2 screening process evaluation criteria and the results are shown below in Table 3. The quantitative values are shown for each criterion along with the relative scores based on the comparative values among the alternatives. Green shading indicates the best options, yellow indicates the middle options, and red indicates the worst options for each criterion. Similarly, numeric values (3 for best, 1 for worst) are also applied to determine a total score for all the criteria. No weighting of relative importance was applied; all criteria were weighted equally.

TABLE 3 - BRT EXTENSION ALIGNMENT OPTIONS LEVEL 2 SCREENING RESULTS

| | | | BASIC ALTERNATIVE BRT ALIGNMENTS AFTER LEVEL 1 SCREENING | | | REFINED ALTERNATIVE BRT ALIGNMENTS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | EVALUATION CRITERIA | No Build: Existing Mixed Flow BRT service with 14th Street and 8th Street stops | Grand Avenue BAT Lanes 13th to 8th (with 2 stops); 24 hours | Rio Grande Corridor BRT Lanes 27th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave to North RGC at 14th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave 27th-14th and RGC 14th to 8th peak hours only | Grand Ave: BAT lanes, both directions, peak hours only (7:30 -8:30 AM and 4:30-5:30 PM) | Grand Ave: BAT lane peak direction only (AM SB / PM NB); peak hours only | Rio Grande Corridor: 2 exclusive lanes peak hours only; minimal construction option |
| Transit Performance | 1 | **BRT Travel Time:** One-way transit travel time of the BRT from 27th Street PnR to Downtown based on posted speeds and # of stops. | 8.46 | 7.99 | 5.83 | 6.84 | 6.84 | 7.99 | 7.99 | 5.83 |
| | 2 | **BRT Travel Time:** One-way transit travel time of the BRT from 27th Street PnR to West Glenwood PnR based on posted speeds and # of stops. | 13.41 | 12.92 | 11.17 | 12.17 | 12.17 | 12.92 | 12.92 | 11.17 |
| | 3 | **Improve BRT Travel Time Reliability (27th Street to Downtown):** percentage of alignment in dedicated lanes | 1.6 miles; 0% dedicated | 1.6 miles; 0.4 miles dedicated (25%) | 1.7 miles; all dedicated (100%) | 1.8 miles; 0.6 miles dedicated (33%) | 1.8 miles; 0.6 miles dedicated (33%) | 1.6 miles; 0.4 miles dedicated (25%) | 1.6 miles; 0.4 miles dedicated (25%) | 1.7 miles; all dedicated (100%) |
| Transit Service Hours | 4 | **BRT Annual Service Hours:** Calculated BRT service hours per alternative. (27th Street PnR to Downtown) (incremental service hours compared to RFTA Baseline. Baseline assumes summer schedule adopted year-round and 40% of BRT trips extending to West Glenwood PnR.) | 6,954 | 6,954 | 3,454 | 5,204 | 5,204 | 6,954 | 6,954 | 3,454 |
| Transit Service Hours | 5 | **BRT Annual Service Hours:** Calculated BRT service hours per alternative. (27th Street PnR to West Glenwood PnR) (incremental service hours compared to RFTA Baseline. Baseline assumes summer schedule adopted year-round and 40% of BRT trips extending to West Glenwood PnR.) | 15,654 | 8,754 | 4,348 | 6,551 | 6,551 | 8,754 | 8,754 | 4,348 |
| Costs | 6 | **Incremental Annual O&M Cost:** BRT Estimated operations and maintenance costs (27th Street PnR to Downtown) (estimated using RFTA Cost Allocation model; does not include BRT-specific features such as additional maintenance at BRT stations and ROW maintenance likely required for Rio Grande alternative) | $321,000 | $321,000 | $174,000 | $327,000 | $327,000 | $321,000 | $321,000 | $174,000 |
| | 7 | **Incremental Annual O&M Cost:** BRT Estimated operations and maintenance costs (27th Street PnR to West Glenwood PnR) (estimated using RFTA Cost Allocation model; does not include BRT-specific features such as additional maintenance at BRT stations and ROW maintenance likely required for Rio Grande alternative) | $1,128,813 | $862,000 | $568,000 | $582,000 | $582,000 | $862,000 | $862,000 | $568,000 |


| | | EVALUATION CRITERIA | BASIC ALTERNATIVE BRT ALIGNMENTS AFTER LEVEL 1 SCREENING | | | REFINED ALTERNATIVE BRT ALIGNMENTS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | No Build: Existing Mixed Flow BRT service with 14th Street and 8th Street stops | Grand Avenue BAT Lanes 13th to 8th (with 2 stops); 24 hours | Rio Grande Corridor BRT Lanes 27th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave to North RGC at 14th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave 27th-14th and RGC 14th to 8th peak hours only | Grand Ave: BAT lanes, both directions, peak hours only (7:30 -8:30 AM and 4:30-5:30 PM) | Grand Ave: BAT lane peak direction only (AM SB / PM NB); peak hours only | Rio Grande Corridor: 2 exclusive lanes peak hours only; minimal construction option |
| | *8* | **Capital Cost:** Conceptual level capital cost (separate memo) | 0 | $3.5M | $18M-$31M | $12M | $12M | $3.5M | $3.5M | $18M-$31M |
| **Automobile Impacts** | *9* | **Auto Travel Time Improvements on Grand Ave:** Through traffic improvements due to Transit Signal Priority and reduced parallel parking conflicts | No improvement | Slight improvement in traffic movement | No improvement | No improvement | No improvement | Minimal improvement in traffic movement | Minimal improvement in traffic movement | No improvement |
| | *10* | **Ped/Bike Ability to Cross BRT Alignment** | 15 | 15 | 4 | 14 | 14 | 15 | 15 | 4 |
| | *11* | **Multimodal-BRT conflict points:** number of locations where cyclists and pedestrians cross BRT route | 15 | 15 | 4 | 14 | 14 | 15 | 15 | 4 |
| | *12* | **Buffer from BRT traffic:** physical separation from BRT route (average buffer width) | 4.3' | 2' | 4.1' | 2.3' | 2.3' | 2' | 2' | 4.1' |
| **Preliminary Business Parking Displacements** | *13* | **Number of on-street parking spaces displaced** | 0 | 140 spaces between 8th and 13th | 0 | 0 | 0 | 140 spaces between 8th and 13th during peak hours | 70 spaces between 8th and 13th during peak hours | 0 |
| **Impacts on Community Amenities (trail)** | *14* | **Impacts to Rio Grande Multimodal Trail (experience of user, noise, visual)** | No Impacts | No Impacts | High Impacts | Moderate Impacts | Moderate Impacts | No Impacts | No Impacts | High Impacts |
| **Construction Challenges/Duration** | *15* | **Construction Impacts (including maintenance of traffic and trail impacts)/years for construction** | No Impacts | No Impacts | High Impacts | Moderate Impacts | Moderate Impacts | No Impacts | No Impacts | High Impacts |
| **Ridership (see separate memo)** | *16* | **Expected BRT Ridership** (General estimate based on stations and access to Downtown as well as BRT travel time and reliability) | 1 | 2 | 3 | 3 | 3 | 2 | 2 | 2 |
| | | **TOTAL SCORE** | 30 | 34 | 38 | 34 | 34 | 34 | 35 | 37 |
| | | | No Build | Grand Ave | Rio Grande | Rio Hybrid | Rio Hybrid Peak | Grand 2 lanes peak | Grand 1 lane peak | Rio Peak |
| **Scoring: Red=1, Yellow=2, Green=3 with higher total scores representing best alternatives** | | | | | | | | | | |


### SCREENING RESULTS SUMMARY

The intent of the alternatives analysis is to provide an unbiased evaluation of the various alignment options for the BRT extension from the 27th Street station/PnR to downtown Glenwood Springs and a technical recommendation. The Level 1 screening reduced the number of viable BRT extension alignment options and added several variations on the basic alignments. The Level 2 screening, with a finer grain evaluation using three times as many criteria as Level 1, draws the following conclusion:

- With equal weighting of all criteria, either the Grand Avenue or the Rio Grande Corridor alignment would provide a good option for the BRT extension.
- However, despite its higher construction cost, the Rio Grande Corridor would provide significantly more benefits in terms of better travel time and reliability, lower service hours and O&M costs, and higher ridership.
- Extending the BRT service to the West Glenwood Springs park-n-ride will allow future extensions to other communities along the I-70 corridor as needed.

The Rio Grande BRT alignment allows for a revitalization of the currently undersized multimodal trail. In this alternative, dedicated BRT lanes are added at the location of the current trail alignment, and the multimodal trail is widened and relocated closer to the Roaring Fork River with opportunities for new trail connections to the river and revitalized park areas along the corridor. A new BRT station at 8th Street is envisioned to anchor the proposed development on 8th Street and park redevelopment providing an opportunity for complete integration and connectivity from the neighborhood to the river. The BRT station includes a public destination space that includes a large fountain spilling into a braided stream and pond. The existing slope from the trail to the station can accommodate an informal amphitheater with a raised deck attached to the river trail. Bike parking can be abundant allowing both transportation users as well as longer use for park and site users. The BRT improvement creates a sense of place that is Glenwood Springs.

The Grand Avenue BRT improvements create an efficient transportation improvement serving downtown users and lessoning traffic for visitors. Easy access to downtown businesses for employees will mitigate street parking impacts. Streetscape improvements can create context sensitive design improvements through natural stone paving and colored concrete techniques, benches, lighting and site furnishings can provide a unique detail within the historic downtown area.

With input from various stakeholders, RFTA and the City will determine the preferred alternative to carry forward to the next steps of refinement and implementation.

## Local Transit Recommendations

Based on public feedback, studies done earlier in the project area, and design philosophy, example integrated bus concepts are provided for each of the main BRT alternatives. For each of the BRT alignments, one representative transit center has been featured. These concepts would be a starting point for refinement once a preferred BRT option is selected and it is determined whether there will be an added transit center. If not, routings would be modified to ensure connection with the West Glenwood PnR.

### RIO GRANDE CORRIDOR BRT ALTERNATIVE

The following integrated service plan is suggested for the Rio Grande Alternative, as illustrated in **Figure 27**:

- **BRT:** BRT no longer uses Grand Avenue, instead uses Rio Grande Corridor
- **Local:** Local remains on Grand Avenue
- **RGS:** Route is restructured to better penetrate West Glenwood Springs.
    - It will no longer serve West Glenwood PnR since it makes its connections at a new transit center, however, can extend to West Glenwood PnR if configured for left turn access off Wulfsohn.
    - New coverage can be provided on Blake Street (or can remain on Grand Avenue to offer 15-minute combined service on Grand Avenue).


- No changes to the south end of the route.

- **Hogback:** Route is truncated at the new transit center if BRT stops at new transit center. If BRT extends to West Glenwood PnR, Hogback would be truncated at West Glenwood PnR.
- All routes serve new transit center (or West Glenwood PnR if no new transit center built).
- All routes except Hogback serve 27th Street.

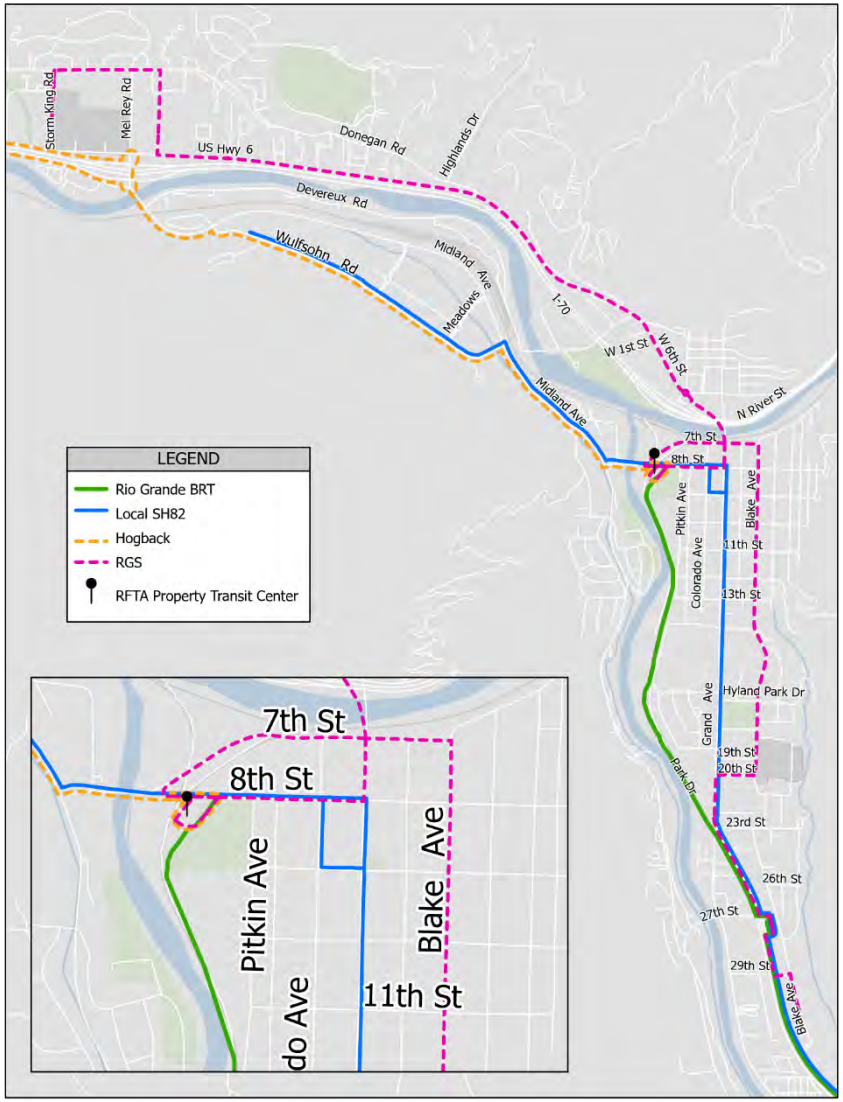



FIGURE 27. RIO GRANDE CORRIDOR INTEGRATED BUS CONCEPT


## GRAND AVENUE BRT ALTERNATIVE

Since Grand Avenue acts as a vital backbone for Glenwood Springs, the question is whether to focus transit service on this street or whether to provide coverage on other parallel streets. Frequency and options on Grand Avenue appear to be RFTA's preference for convenience, simplicity, understandability, and ridership generation. Reducing the number of routes on Grand Avenue appears to be the City's preference to avoid duplication, reduce the number of buses (and associated congestion) on Grand Avenue, and expand service to other areas.

Two concepts have been developed for the Grand Avenue BRT Extension, with both breaking some service off Grand Avenue to serve parallel Blake Street. The concept as shown in **Figure 28** retains the current number of RGS vehicles (Concept A):

- **BRT:** BRT remains on Grand Avenue, providing 10-minute peak and 15-minute off-peak service frequencies.
- **Local:** Realigned Local providing coverage on Blake Street.
- **RGS:** Routes split into two to increase community coverage in lieu of over-saturating Grand Avenue corridor, while maintaining current vehicle requirement.
    - RGS West anchored at new transit center, provides increased penetration of West Glenwood Springs; can extend to West Glenwood PnR if configured for left turn access off Wulfsohn though may require additional vehicles.
    - RGS South serves Roaring Fork Market Place, 27th Street, and extends coverage to South Glenwood Springs along 27th and Midland Avenue to the municipal airport.
- **Hogback:** Route truncated at new transit center if BRT stops at new transit center. Route can truncate at West Glenwood PnR if BRT extends to West Glenwood PnR.
- All routes except RGS South serve new transit center. If BRT is extended to West Glenwood PnR with no new transit center, all routes except RGS South serve West Glenwood PnR,
- BRT, Local and RGS South serve 27th Street.

**Figure 29** shows the second option for the Grand Avenue BRT alternative featuring the 7th & Colorado Transit Center (Concept B):

- **BRT:** BRT remains on Grand Avenue, providing 10-minute peak and 15-minute off-peak service frequencies.
- **Local:** Realigned Local avoids providing coverage on Blake Street.
- **RGS:** Route modified to increase community coverage in lieu of over-saturating Grand Avenue corridor.
    - Increases existing vehicle requirement to preserve one-seat ride to downtown Glenwood Springs.
    - Route uses Blake Street (with Local, combines to 15-minute all-day service along Blake).
    - Northern portion of RGS provides increased penetration of West Glenwood Springs and can extend to West Glenwood PnR if configured for left turn access off Wulfsohn.
    - Southern portion provides coverage to South Glenwood Springs along 27th and Midland Avenue to the municipal airport, in lieu of Roaring Forks Marketplace.
    - Ultimate construction of South Bridge could allow rerouting to serve South Glenwood Springs while restoring access to Roaring Forks Marketplace.
- **Hogback:** Route truncated at new transit center if BRT stops at new transit center. Route can truncate at West Glenwood PnR if BRT extends to West Glenwood PnR.
- All routes serve new transit center (or West Glenwood PnR if no new transit center built).
- All routes except Hogback serve 27th Street.

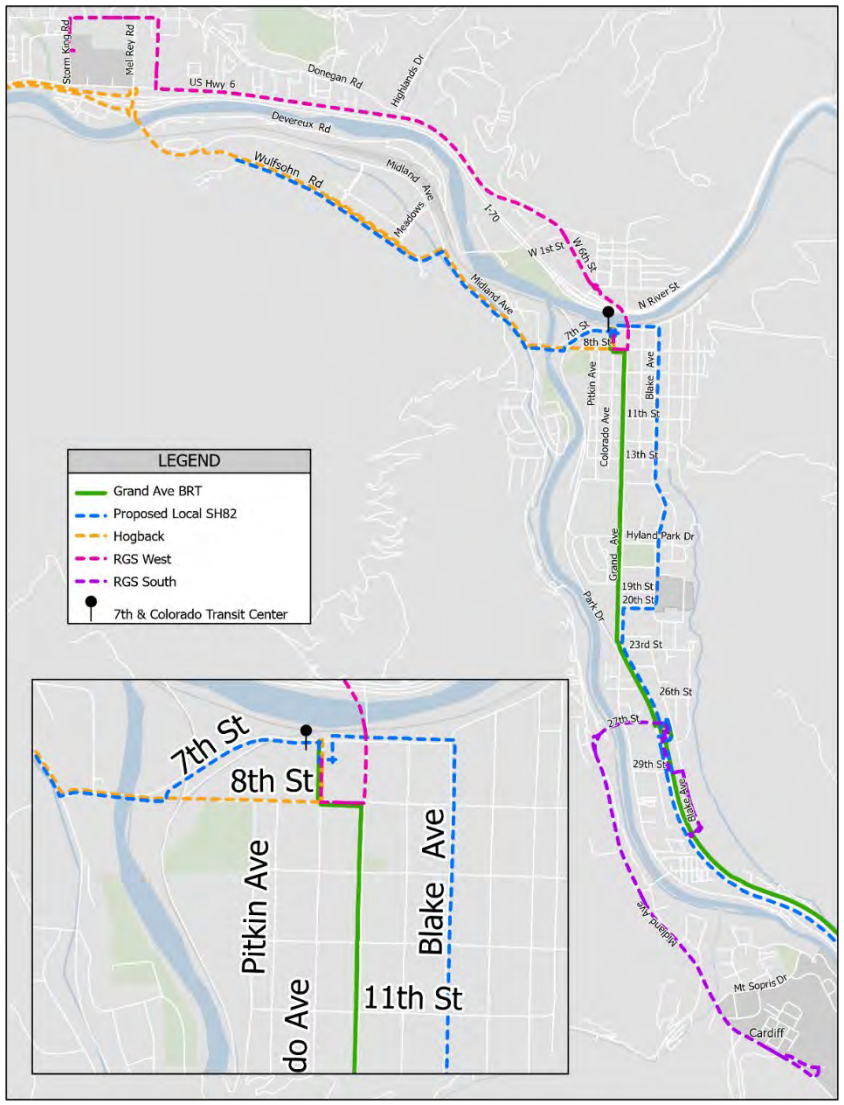




FIGURE 28. GRAND AVE CORRIDOR INTEGRATED BUS CONCEPT A

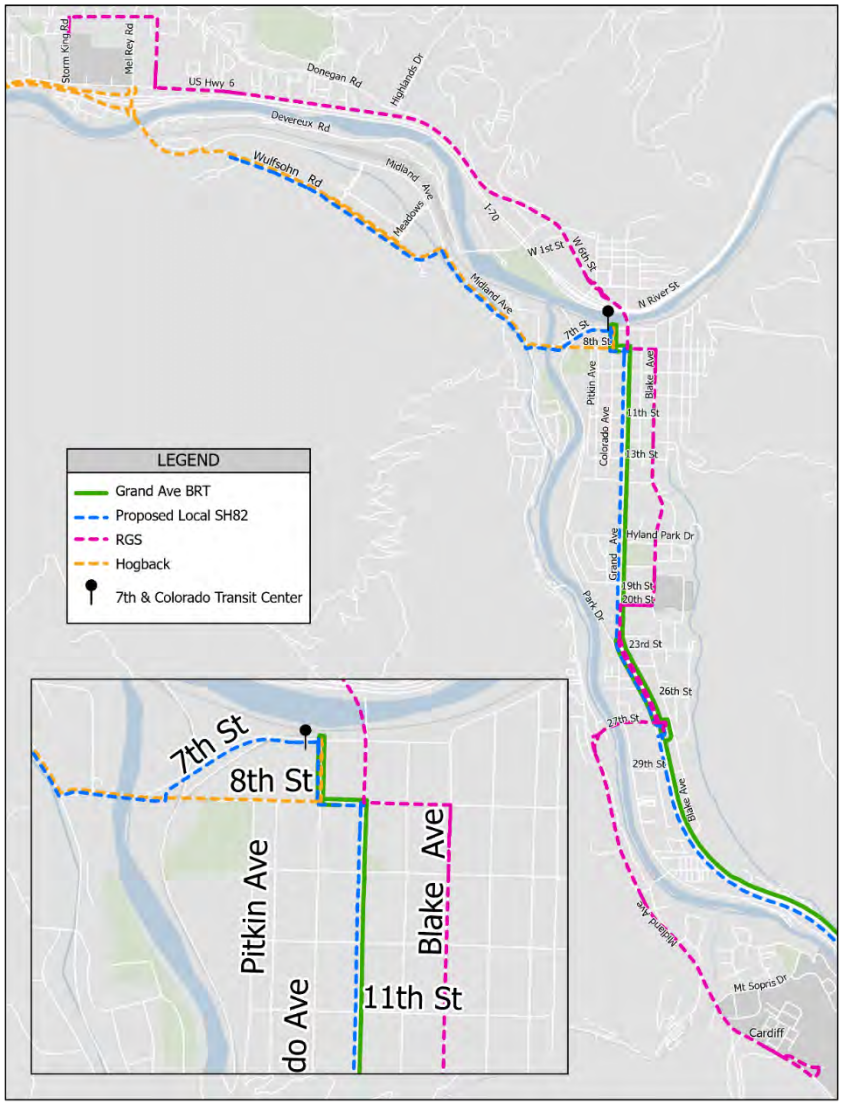



FIGURE 29. GRAND AVE CORRIDOR INTEGRATED BUS CONCEPT B


## PRE-BRT EXTENSION TRANSIT OPTIMIZATION CONCEPTS

Opportunities to explore modifications to existing service to better serve Glenwood Springs can be considered before BRT is extended through Glenwood Springs. Analysis was based on review of ridership data, previous studies, public feedback and input from RFTA and the City of Glenwood Springs. In depth descriptions of all the concepts and further details can be found in **Appendix C.**

### Target Areas for Improved Service:

- Grand Avenue corridor service
- Improved coverage of North Glenwood
- Improved coverage of South Glenwood
- Opportunities for alternative service delivery

**Figure 30** shows one of three options developed for improved coverage of North Glenwood. Instead of remaining on SH6, RGS instead branches onto Donegan Road, then turns south on Soccer Field Road, serves W. Glenwood Springs Mall, then proceeds to one of two terminus options. This option allows a safer stop for middle school students and improves Donegan Road access.

Until BRT is extended so that every BRT trip consistently makes stops on Grand Avenue, for now the Local route and RGS work in tandem to provide a threshold averaging 15-minute frequencies, with additional trips added by the other two routes. The strategy of maintaining both Local and RGS routes along Grand Avenue is recommended to provide this threshold service level along Grand Avenue in the near term, until all BRT trips are extended. A few options exist for modifying the multiple bus routes serving Grand Avenue including thinning the number of stops along Grand Avenue for the BRT and Hogback regional services or considering a deviation of RGS to serve Blake Avenue instead of Grand Avenue.

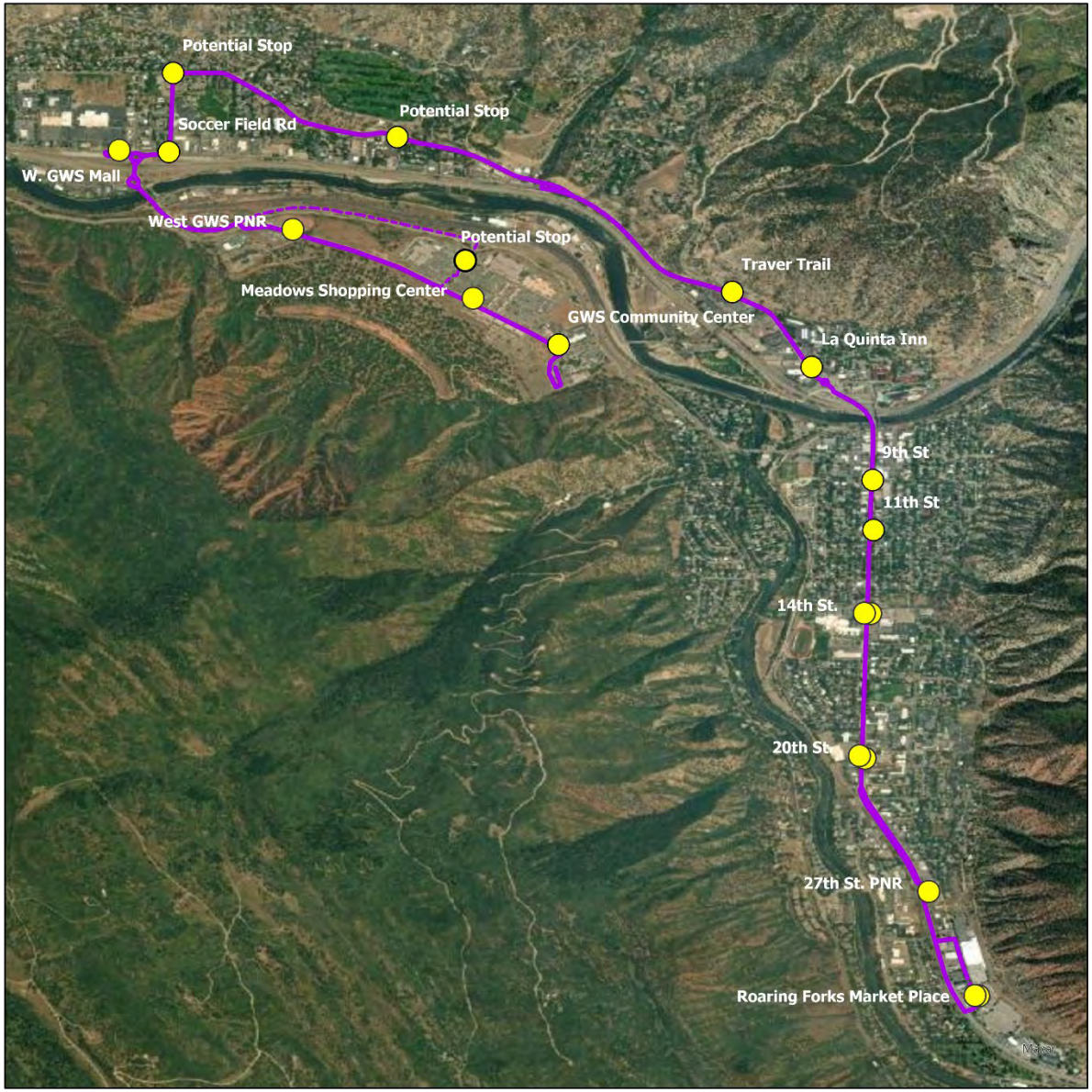




FIGURE 30. ONE OF THREE CONCEPTS FOR IMPROVED COVERAGE OF NORTH AND WEST GLENWOOD: RGS DONEGAN-SOCCER FIELD TO COMMUNITY CENTER OR W. MEADOWS LOOP


All four routes currently operating in Glenwood Springs provide service on Grand Avenue. Due to this redundant service on Grand Avenue and building demand for the direct connection between the 27th Street PnR and the West Glenwood PnR, RFTA along with the City have been considering various BRT alignment extension options. The report included in **Appendix C** focuses on service specifics for the BRT alternatives and provides concepts of how various bus services would integrate after BRT is extended. Next steps include the following:

- Consider pre-BRT extension optimization concepts, including the viability of an in-line stop at West Glenwood PnR.
- Review/interview other agencies that have initiated alternate service delivery to consider whether to pursue in Glenwood Springs.
- Pursue potential funding for alternate service delivery pilot program.


# Pedestrian and Bicycle Improvements

## Existing Conditions

The bicycle network in Glenwood Springs is largely supported by local and regional shared-use trails, such as the Rio Grande, Midland, and Atkinson Trails. On-street, dedicated bicycle facilities exist on two N-S streets in downtown Glenwood Springs: Blake Avenue from 7th to 23rd Streets, and Pitkin Avenue from 8th to 14th Streets. The 2015 Glenwood Springs Long Range Transportation Plan also cites 4 miles of on-sidewalk bicycle routes; however, sidewalk routes are not ideal for most cyclists and present conflicts between bicyclists and pedestrians. Connections between these facilities and downtown Glenwood Springs or RFTA transit stations are not comfortable for bicyclists, and many previous studies and plans recommend improving bicycle connectivity within downtown and along the shared-use trails. Wayfinding for bicyclists in Glenwood Springs is infrequent.

Pedestrians in Glenwood Springs also rely on the major shared-use trails mentioned above, as well as the sidewalk network. However, many gaps or inadequate conditions exist in the sidewalk network within downtown Glenwood Springs. Sidewalks are present in the downtown core but are lacking along many residential streets. For both bicyclists and pedestrians, accessing the 27th Street RFTA BRT station is noted as a key problem and deterrent from accessing transit using active transportation modes (biking and walking). Signal timing, long crossing distances, bicycle parking, and lack of comfortable sidewalks leading to the station are all noted as key discouraging factors.

## Recommendations

There are a number of recommended improvements that can be made to the walking and cycling network in Glenwood Springs, ranging in complexity, cost, and their dependency on a future BRT alignment. Improvements listed are the key to encouraging active transportation in Glenwood Springs and traveling to and from transit via foot or bike. Increasing the frequency and

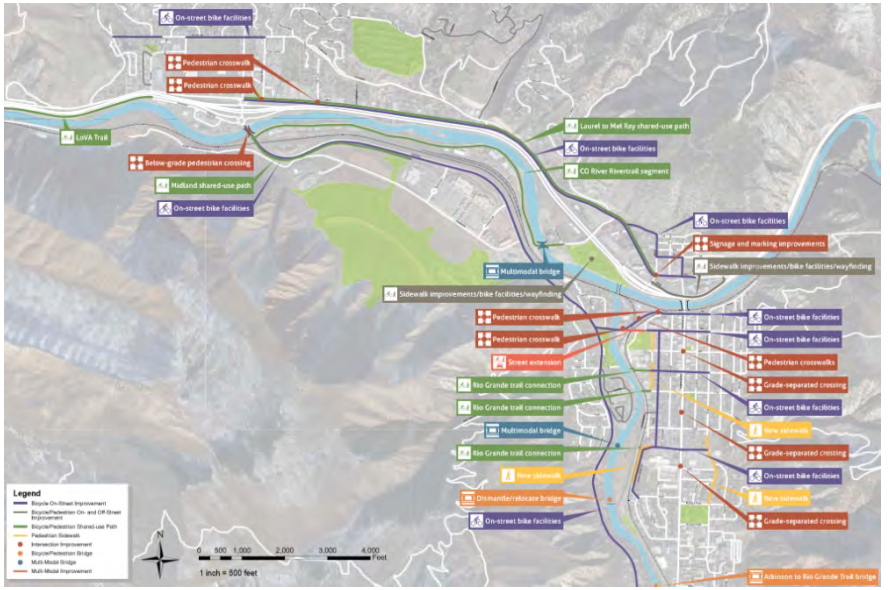



FIGURE 31. GLENWOOD SPRINGS LONG RANGE TRANSPORTATION PLAN BICYCLE AND PEDESTRIAN RECOMMENDATIONS

consistency of wayfinding signs and pavement markings will help people walking and biking feel informed and confident navigating to and from transit and destinations. Many of the recommendations will make traveling as safe and comfortable as possible for people walking and biking. The recommendations are in three groupings or phases: Phase 1, which can be implemented easily, at low cost, and independent of any specific transit improvements; Phase 2, which are still independent of transit or BRT but more complex and require planning and funds; and, Phase 3, which are dependent on a selected BRT alignment. The recommendations are mapped in **Figures 32-34** with further details provided in **Table 4** and **Appendix D** has explanations of the benefits for each proposed improvement.

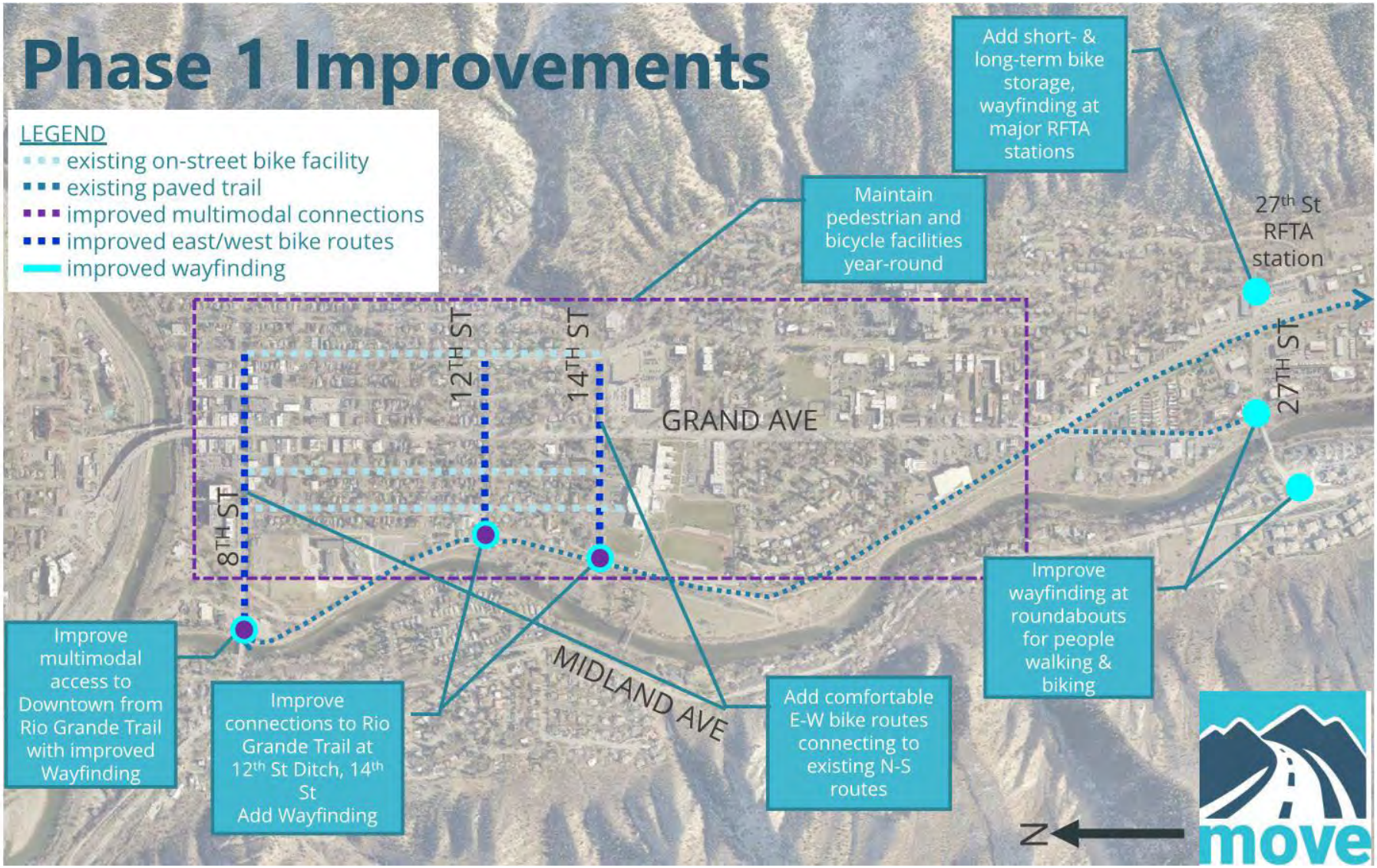



FIGURE 32. RECOMMENDED PEDESTRIAN AND BICYCLE IMPROVEMENTS PHASE 1

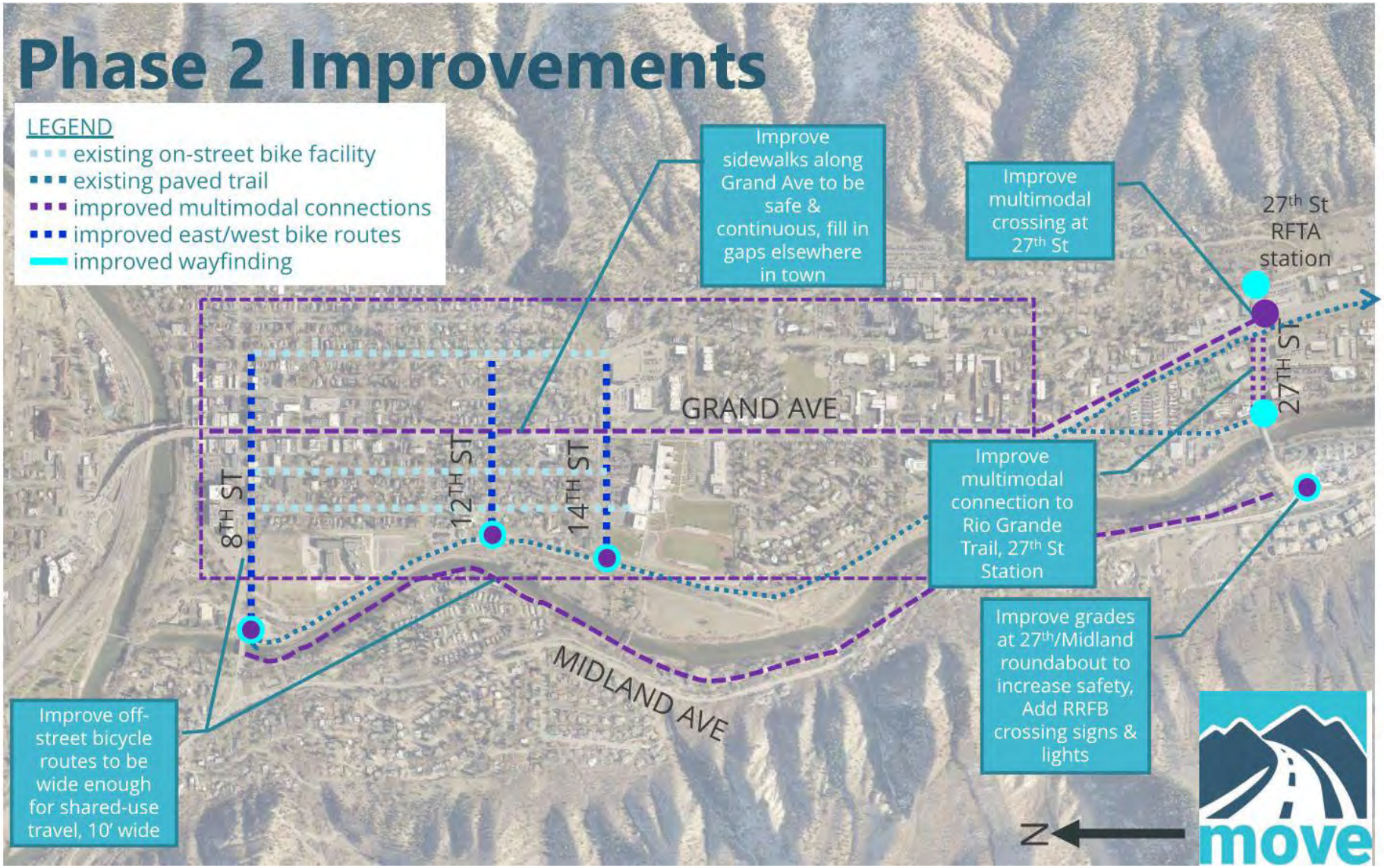



FIGURE 33. RECOMMENDED PEDESTRIAN AND BICYCLE IMPROVEMENTS PHASE 2

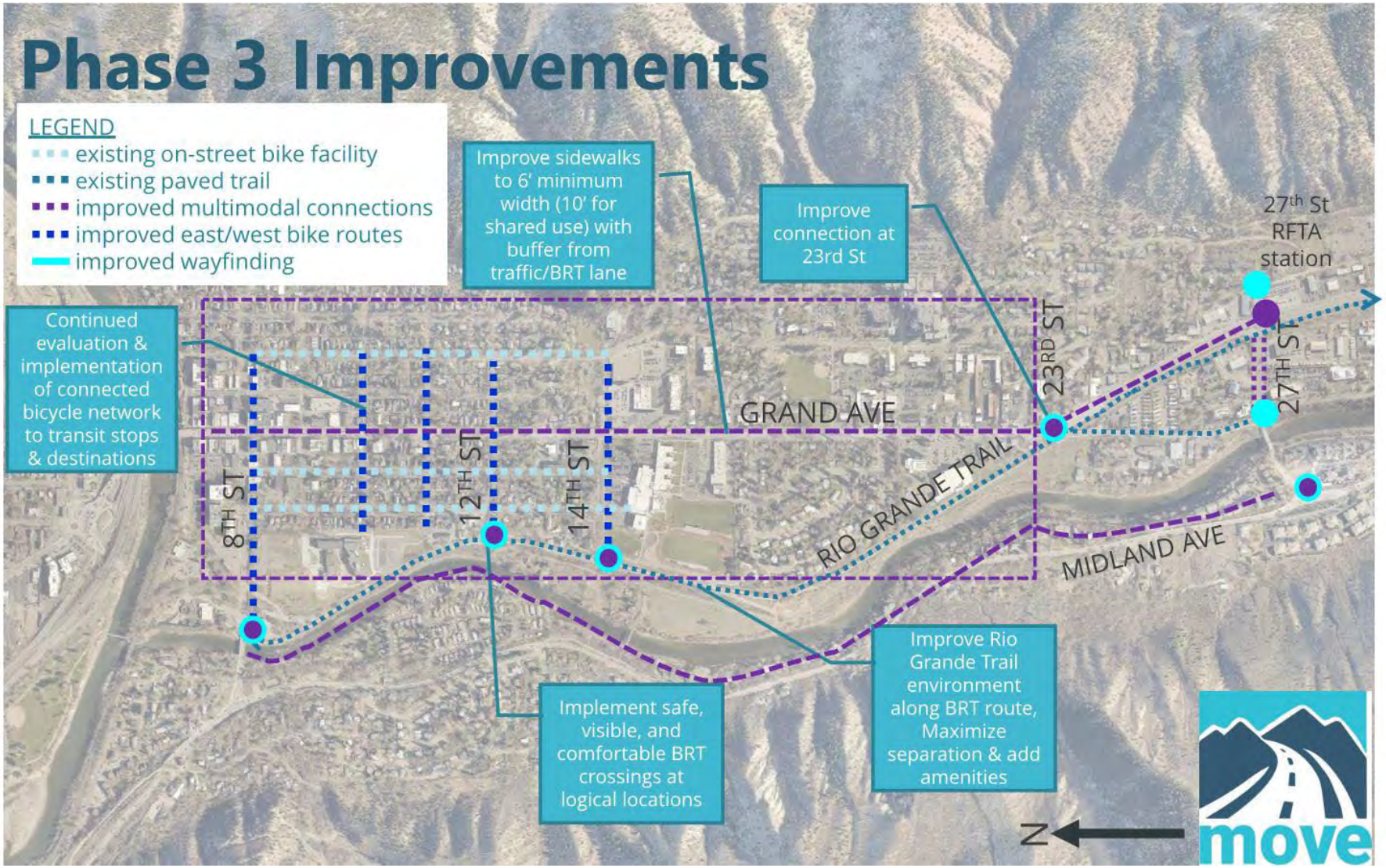




FIGURE 34. RECOMMENDED PEDESTRIAN AND BICYCLE IMPROVEMENTS PHASE 3


TABLE 4 – PEDESTRIAN AND BICYCLE RECOMMENDATIONS

| IMPROVEMENT | DESCRIPTION AND KEY IMPLEMENTATION STRATEGIES | RECOMMENDED IMPLEMENTATION TIMELINE | EXAMPLES OF POTENTIAL FUNDING SOURCES |
|---|---|---|---|
| **PHASE 1 IMPROVEMENTS (estimated cost $10,000-$50,000)** | | | |
| Maintenance of existing sidewalks and trails | Proper and timely maintenance, year-round, of the existing sidewalks, multi-use trails, and on-street bicycle routes. Priority should be given to routes connecting to transit and key destinations. Includes timely repair of surface damage; prompt removal of snow, ice, and debris; keeping sidewalks and trails clear of obstructions, including temporary construction signs and barricades when not in use; providing safe and clearly marked detour routes when construction does close bike and pedestrian routes; and maintaining pavement markings, wayfinding signs, and pedestrian ramps. | Short-Term | Safe Routes to School, Statewide Multimodal Options Funds, City General Fund |
| Network Wayfinding | Increasing the frequency and consistency of wayfinding signs and pavement markings. Include information to major transit stops, long-term bicycle storage, key local destinations, and estimated travel time/distance. | Short-Term | Safe Routes to School, Statewide Multimodal Options Funds, City General Fund |
| Added Bicycle Parking and Storage | Providing safe, secure bicycle parking and storage at major transit stations and minor transit stops is important. The existing transit station at 27th Street currently experiences issues with the parking lot filling up and deterring people from traveling to the station. Increasing bicycle storage, both long- and short-term, will lessen the need for driving to the station if cyclists feel their bikes will be secure while traveling to and from their transit destinations. Additionally, add more bike racks at minor stops and downtown. Install bike storage near lighting. | Short-Term | Safe Routes to School, Statewide Multimodal Options Funds, City General Fund |
| Existing Network Connections | Add wayfinding signage and improve accessibility at the Rio Grande Trail and at 8th Street, 12th Street/Riverside Drive, and 14th Street/Coach Miller Drive.<br><br>Improvements should be considered on key east-west streets to improve bicycle connections and safety. Shared Lane Markings ("Sharrows") could be placed on streets downtown to communicate to both cyclists and vehicles that cyclists are welcome on the roadway and should take the lane. Bicycle detection or push buttons at intersections would shorten the wait time if a cyclist approaches an intersection without other vehicles. | Short-Term | Safe Routes to School, Statewide Multimodal Options Funds, City General Fund |
| **PHASE 2 IMPROVEMENTS (estimated cost $50,000-$500,000)** | | | |
| 27th Street Improvements | Both north and south sidewalks should span the full length of 27th Street from South Grand Ave to South Glen Avenue/SH 82. The north sidewalk, as it connects to the bike/pedestrian bridge, should be widened to a 10-foot trail to accommodate both bicycles and pedestrians. Additionally, wayfinding signage should be installed directing trail users to the 27th Street RFTA station, the Rio Grande Trail, and the Atkinson Trail. | Short-Term | Safe Routes to School, Statewide Multimodal Options Funds, City General Fund |
| | Improve the grades of the roundabout approaches at 27th Street and Midland Avenue to slow vehicles as they approach and travel through the roundabout. | Medium-Term | |


| IMPROVEMENT | DESCRIPTION AND KEY IMPLEMENTATION STRATEGIES | RECOMMENDED IMPLEMENTATION TIMELINE | EXAMPLES OF POTENTIAL FUNDING SOURCES |
|---|---|---|---|
| Off-Street Bicycle Facilities | Sidewalk should be upgraded to a 10-foot trail (8-foot minimum). Wayfinding and signs should be included to communicate the trail as designated for both bikes and pedestrians and proper etiquette (yield to peds, announce to pass, etc.). Road signs should communicate to vehicles to look for both pedestrians and cyclists when turning. Ramps on these facilities should be constructed to accommodate comfortable movement by cyclists. | Medium-Term | Safe Routes to School, Statewide Multimodal Options Funds, City General Fund |
| Pedestrian Network | Gaps in the sidewalk network should be identified and filled to ensure full connectivity for people walking. Existing sidewalks should be evaluated for maintenance needs, including out-of-date accessible ramps, cracks, uneven grades, etc. | Medium-Term | Safe Routes to School, Statewide Multimodal Options Funds, City General Fund |
| **PHASE 3 IMPROVEMENTS - RECOMMENDATIONS NEEDED FOR BRT EXTENSION (Grand Avenue BRT Extension Alignment) estimated cost $500,000+** | | | |
| Sidewalk and bicycle route improvements | Sidewalks should be a minimum of 6’ wide; if the sidewalk is intended to serve as a multi-use facility for pedestrians and cyclists, it should be a minimum of 8’ wide and designated and maintained as a trail facility. Evaluate bicycle routes that parallel the BRT alignment and navigate to bus stops and destinations. Additional routes should be evaluated to create a connected network of comfortable bicycle routes with a complete and consistent wayfinding program. | Medium-Term | Destination 2040, Statewide Multimodal Options Funds, City General Fund |
| **PHASE 3 IMPROVEMENTS - RECOMMENDATIONS NEEDED FOR BRT EXTENSION (Rio Grande Corridor BRT Extension Alignment) estimated cost $500,000+** | | | |
| Sidewalk and bicycle route improvements | As much as possible, physical and perceived separation between the trail and BRT alignment should be maintained. Where space allows within the corridor, the trail or BRT alignment should be laid out to provide the greatest amount of horizontal separation. Where right-of-way is constrained, creating a sense of separation with landscaping, fencing, and/or by raising the BRT alignment slightly above the trail corridor will help trail users feel their facility is still separate from the BRT route. The four locations where pedestrians and bicyclists need to cross the Rio Grande BRT corridor should also be carefully considered and planned to allow for maximum visibility; crossing signage, striping, and signals where appropriate; and accessibility. | Medium-Term | Destination 2040, Statewide Multimodal Options Funds, City General Fund |


POSITIONING FOR BICYCLISTS ON SHARED ROADWAY


Increasing bicycle storage, both long- and short-term, will lessen the need for driving to the station if cyclists feel their bikes will be secure while traveling to and from their transit destinations. Additionally, adding more bike racks at minor stops and downtown will encourage people to travel by bike for their last-mile trips. Installing bike storage near lighting and shelter increases a sense of safety and may encourage use at night and year-round.

FIGURE 35. – EXAMPLE OF BICYCLE STORAGE AT TABLE MESA PARK-N-RIDE, BOULDER

Shared Lane Markings ("Sharrows") could be placed on streets downtown to communicate to both cyclists and vehicles that cyclists are welcome on the roadway. Enhancing the Sharrows with green backgrounds or by enlarging the pavement marking and adding supplemental dashed markings to indicate intended positioning. Adding bicycle detection, bike boxes, and/or bicycle push buttons at intersections would shorten the wait time if a cyclist approaches an intersection without other vehicles.

FIGURE 36. "SUPER SHARROW' PAVEMENT MAKRING IN ASPEN, CO INDICATES PRIORITY


# Parking

## Existing Conditions

Determining existing on-street parking conditions occurred in two main stages: taking inventory of curb space and off-street parking supply and then collecting parking utilization data. Existing curb space restrictions and parking management strategies (time limits, etc.) were used to classify the curb space. Ownership and user restrictions were used to classify the off-street lots. Parking utilization was observed and documented during multiple study periods in the winter of 2020. Due to the COVID-19 pandemic, other data sources were used to estimate parking demand in the summer. The project team also met with parking enforcement officers in Glenwood Springs to discuss current parking enforcement practices, as well as to identify existing parking and curb spaces issues, challenges, and potential solutions for downtown Glenwood Springs. **Appendix E** includes detailed descriptions of methodology and current parking utilization including the full map of **Figure 37** and additional maps.

A number of key takeaways from the existing parking conditions analysis from the winter are outlined in **Appendix E** and organized by each of the three study areas. The primary findings are listed below:

### 27th Street South Glenwood Station

- The PnR lot was about 40 percent occupied at 5 AM on both Thursday and Friday and it was clear that 8-12 cars had been parked overnight (this was evident by the fact that some cars were covered in frost at 5 AM or because the same cars were parked in the same location at 7 PM Thursday and 5 AM Friday).
- The PnR lot was full by 7 AM on Thursday and nearly full by 7 AM Friday. In the brief time that parking utilization was observed at this lot at 7 AM Thursday and 9 AM Friday, several cars were observed entering and exiting the lot upon finding it full.
- The PnR lot is used quite a bit for pick up and drop off, although there does not appear to be a designated spot (people are using the handicap spots and double parking briefly when the lot is full).

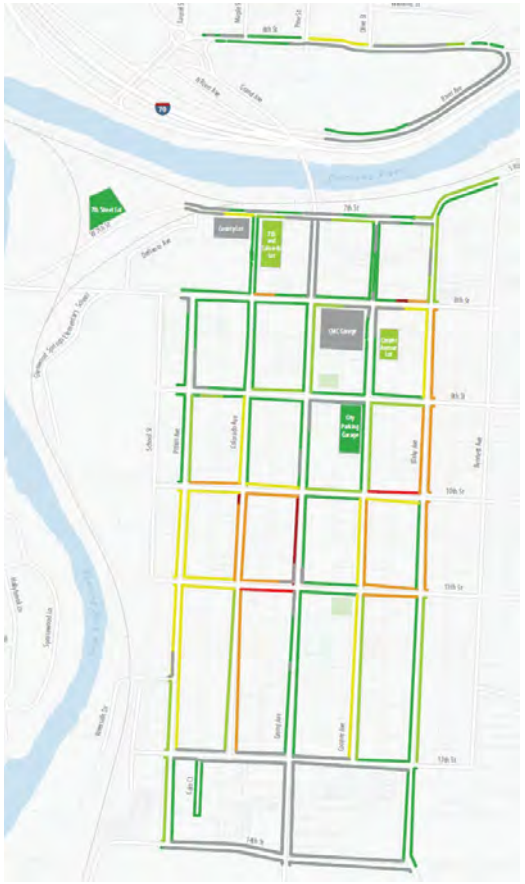


FIGURE 37. WINTER PARKING UTILIZATION, THURSDAY 5AM. REFER TO APPENDIX E FOR LEGEND AND ADDITIONAL UTLIZATION MAPS


**West Glenwood PnR**

- The West Glenwood PnR is lightly used relative to capacity. With 94 parking spaces it was never more than 35 percent occupied during any of the time periods studied.
- The 17 Bustang-only spaces were also lightly used, with about 4-6 cars parked in those spaces during the study periods.

**Downtown Glenwood Springs Winter**

- General Findings:
  - On-street parking occupancy is generally highest between 7th Street and 9th Street (except at 5 AM), and to a lesser extent between 10th and 11th Street.
    - On-street occupancy north of 9th Street is higher west of Grand Avenue weekday mornings and higher east of Grand Avenue weekday afternoons.
    - On-street parking occupancy north of 9th Street downtown is highest on Friday evenings.
    - On-street parking occupancy between 10th and 11th Street downtown remains high at 5 AM indicating this demand is likely generated by residential/hostel parking demand.
  - Parking occupancy along Grand Avenue is relatively low, generally less than 30 percent during all time periods, with two exceptions:
    - Between 8th and 9th Streets - occupancy was highest in the evening, about 75 percent.
    - On the west side of Grand Avenue between 10th and 11th Streets where occupancy was between 80 percent and 100 percent at all times of day, which may be due to the Glenwood Springs Hostel.

## Recommendations

Opportunities and recommendations to improve parking management in the study area are divided into three general categories: parking and curb space downtown, parking at the RFTA PnRs, and parking considerations/potential impacts as part of evaluating alternatives for extending the BRT into downtown.

The following recommendations in **Table 5** were made based on parking/curb-curb space occupancy data collected in the winter of 2020, estimated historic 2019 summer parking demand in downtown Glenwood Springs from other data sources, conversations with City, RFTA staff, and the police department, public feedback from the MOVE Grand Avenue project, and other data sources. All recommendations and additional information for the recommendations listed below can be found in **Appendix E.**


TABLE 5 – PARKING RECOMMENDATIONS (REFER TO APPENDIX E FOR ADDITIONAL DETAILS)

| RECOMMENDATION | DESCRIPTION & KEY IMPLEMENTATION STRATEGIES | RECOMMENDED IMPLEMENTATION TIMELINE |
|---|---|---|
| **Downtown Parking and Curb Space Management Recommendations** | | |
| Establish a Truck Loading Plan | The businesses and restaurants downtown require regular delivery of food, beverages, and other goods. However, given the limited street spaces active truck loading can come in conflict with vehicle traffic and parking availability. To mitigate the impacts of truck loading on traffic and parking the City should consider developing a truck delivery plan to regulate the location and times of when and where trucks deliver goods downtown. | Short-term |
| Manage the 700 Block of Cooper Avenue | Install more permanent end caps in the median at the two ends of the loading zone corridor where more permanent signs can be placed. This could be something semi-permanent, such as bollards bolted into the pavement (but that can be temporarily removed to allow for snow removal or street sweeping). Consider regulating the loading zone to better accommodate the change in demand at different times of the day. | Short-term |
| Weekend Enforcement | The City does not currently enforce parking and curb space regulations on the weekend. However, collection of Big Data (detailed at the end of this memo) demonstrated that parking demand likely remains high in parts of the downtown on the weekend, particularly on Saturday. It is recommended that the City enforce parking regulations downtown on the weekends (at least occasionally) to ensure better compliance. This will help ensure parking turnover and availability of parking as well as mitigate potential safety issues (such as blocking fire hydrants, crosswalks, sight lines, or handicap parking). | Short-term |
| Leverage Parking Enforcement Technology | Consider the use of new technologies to aide in parking enforcement, such as handheld license plate recognition (LPR) devices pared with automated ticket printing. More effective enforcement will result in higher rates of compliance and reduce the negative impacts of illegal parking, including ensuring there is more parking and loading space available. | Short-term |
| Increase Fines for Parking Violations | Consider increasing the fines for parking violations. In particular it is recommended that the City increase the fine for repeat offenders. Additionally, if paid parking is implemented downtown, parking fines should be set to be at least 50% higher than the cost of all-day parking in order to incentivize compliance. | Short-term |
| Curb Space Signage and Striping | Proper maintenance of curb space paint and signage is important to safely manage parking downtown and properly enforce regulations. It is also important to ensure signs are consistent and clear to encourage compliance. | Short-term |
| Bike Corrals | If there are locations with demand for bike parking that is not or cannot currently be provided along the sidewalk, the City may want to consider converting an on-street parking space to a bike corral. See **Figure 38**. | Short-term |
| Implement Paid Parking | Considering converting some of the publicly available time-restricted parking downtown to paid parking as a more effective means to enforce and manage parking where demand is high. Please see the supplemental Memo in Appendix E titled “Implementing Paid Parking in Downtown Glenwood Springs” for a more detailed summary of recommendations for how the City of Glenwood Springs could implement paid parking. | Medium-Term |
| Evaluate Increasing Parking Capacity | The City should continue to monitor parking demand downtown in the future. If data shows a growth in parking demand begins to reach capacity even with the short-term recommendations in place, the City may want to consider adding new supply. | Long-Term |
| Improve Transit Service Downtown | A long-term strategy to address parking demand downtown should continue to be making investments in the transit network that make it more convenient to get to downtown via transit. This, combined with other parking management strategies (such as implementing paid parking), will incentivize more people to use transit instead of driving into downtown. One option to partially fund transit, could be through the use of parking revenue. | Long-Term |


| RECOMMENDATION | DESCRIPTION & KEY IMPLEMENTATION STRATEGIES | RECOMMENDED IMPLEMENTATION TIMELINE |
|---|---|---|
| Planning for TNCs an AVs | The rise in transportation network companies (TNCs), such as Uber and Lyft, over the last decade has dramatically changed travel patterns and demand for curb space in many urban areas across the country. If demand for these services increases in Glenwood Springs, the City should be prepared to manage the curb space in response, particularly in high-activity areas downtown. TNCs are also considered a precursor for how autonomous vehicles (AVs) are likely to operate in the future, with the ability to drop people off in high demand areas and drive unoccupied to park in low demand locations. Planning for heavier TNC use will help the City prepare for the emergence of AVs as well. | Long-Term |
| **RFTA Parking Recommendations** | | |
| Better Connect Existing Overflow Lot | To increase parking capacity, improve the connection to the existing overflow lot by opening the gate on Blake Avenue to allow through vehicle movements on Blake Avenue, paving the portion of Blake Avenue that is dirt, completing the sidewalk network, improving the pedestrian environment to make it safer and more inviting (improvements could include providing street lighting, regular sidewalk maintenance, widening the walkway, etc.), and providing clear wayfinding for pedestrian and drivers. | Short-term |
| Lease Additional Parking | A potentially cost-effective option for RFTA to consider and to increase parking capacity is leasing parking spaces from existing nearby privately-owned parking lots for use by transit customers. | Short-term |
| Purchase Land for Additional Parking | The planned pedestrian crossing across SH 82 will additionally open the possibility for purchasing land on either side of SH 82 near 27th Street. If this option is pursued, it is recommended to develop surface parking and not structured parking, as surface parking can more easily be sold and repurposed in the future if parking demand at the 27th Street South Glenwood Station decreases long term. Due to the high cost and permanence of structured parking it is not recommended to convert the existing PnR or develop new parking facilities into structured parking. Parking lot designs that allow for more flexibility if demand changes long-term should be explored. | Medium-term |
| Establish a More Robust Parking Enforcement Program | To reduce parking demand, restrict overnight parking at the 27th Street PnR and conversely allow it at the West Glenwood PnR where there is excess capacity. An alternative strategy would be to implement and enforce a 24-hour time limit to restrict the use of the PnR more effectively for long-term parking. | Short-term |
| Additional BRT stations | Another strategy to reduce parking demand at the 27th Street South Glenwood Station includes adding additional access points to board the BRT in Glenwood Springs. Extending the BRT into downtown Glenwood Springs would provide more options for people to access the BRT from the core of the city without driving. If the BRT were extended to the West Glenwood PnR riders coming from west of Glenwood Springs would have an additional reliable option to park as well. | Medium-term |
| Kiss-and-Ride | To better support and encourage pick-up and drop-off as a means to access transit and free up parking spaces for people parking, it is recommended that RFTA formalize a “kiss-and-ride” location near the 27th Street South Glenwood Station. | Medium-term |
| Improved Multimodal Connections | Improvements to the pedestrian, bike, and local transit network in Glenwood Springs targeted toward making it easier for people to get to the BRT without driving would also reduce demand for parking. | Short-term and medium-term |
| **Recommendations for Managing a Parking/Bus Lane on Grand Avenue** | | |
| Advance Communication Prior to Implementation | Changes to parking operations on Grand Avenue should be clearly communicated to downtown businesses and residents prior to implementation. In addition, citywide public service announcements should be made. | Medium-term |
| Clear and Visible Signage | Proper signage on every block should be in place, indicating the times when parking is not allowed as well as the penalty, such as: Violators Will be Towed. | Medium-term |


| RECOMMENDATION | DESCRIPTION & KEY IMPLEMENTATION STRATEGIES | RECOMMENDED IMPLEMENTATION TIMELINE |
|---|---|---|
| Allow Time for Driver Adjustment | During the first month or two following implementation, the City should show compassion to drivers who will be getting used to the change. Consider a grace period when only warnings will be issued to allow time for the public to adjust. | Medium-term |
| Have a Towing Plan | Ultimately, the City will need to have a towing plan in place following the grace period. This will ensure the bus lane is not blocked (and thus ineffective) and the bus lane will need to be monitored on regular basis, likely twice daily at least at first. Based on experience with a similar situation in Aspen, towing is likely to be relatively common at first and then much less frequent as people adjust to the change. Allowing a grace period should help to minimize the need for towing as well. | Medium-term |


Curb space in a downtown environment is a valuable commodity and should be managed to maximize access to downtown businesses. One means that many communities have used to achieve this is to convert on-street parking in high-demand locations to bike parking. This type of design is called a bike-corral. On-street bike corrals can provide parking for up to ten bikes in the same space that can accommodate one parked motor vehicle, effectively serving more people in the same space. Adding bike-corrals will also incentivize people to bike downtown, which will help mitigate the need to provide parking for motor vehicles.

FIGURE 38. EXAMPLE OF ON-STREET BIKE CORRAL


FIGURE 39. EXAMPLE OF FADED CURB PAINT ON COLORADO AVENUE

FIGURE 40. EXAMPLE OF CURB PAINT ON COLORADO AVENUE

Proper maintenance of curb space paint and signage as shown in Figures 39 and 40 is important to safely manage parking downtown and properly enforce regulations. The areas with yellow paint are called safety zones and are at locations where parking is not allowed in order to preserve safe sight lines at intersections, driveways, crosswalks, where there are fire hydrants, or to preserve adequate space in the travel lane for safe vehicle movement. However, the locations with yellow paint are not always clear or consistent. In some locations downtown yellow paint is in locations signed for parking or loading. In other locations the paint is worn and only partially visible. Most locations with yellow paint also do not have


# Traffic and Safety

## Existing Conditions

This section provides a summary of the existing traffic operations and safety. The traffic analysis area consisted of Grand Avenue from north of the 8th Street intersection to south of the 14th Street intersection and along 8th Street between Midland Avenue and Grand Avenue. More detailed information is provided in **Appendix A**. The following key intersections were included in the traffic simulation model:

- 8th Street and Grand Avenue
- 9th Street and Grand Avenue
- 14th Street and Grand Avenue
- 8th Street and Midland Avenue
- 8th Street and Colorado Avenue
- 8th Street and Pitkin Avenue

The roadway and intersection geometry vary across the study area and key intersections. Beginning from the northwest between Midland Avenue and School Street, 8th Street is a generally a two-lane road with a posted speed limit of 25 MPH. On-street parking picks up along 8th Street east of School Street towards SH-82. From 8th Street to 13th Street along SH-82, the cross-section consists of a 4-lane highway with a continuous center left-turn lane with on-street parking on both sides. The posted speed limit is 25 MPH north of 23rd Street and increases to 35 MPH south of 23rd Street. SH-82 maintains the 4-lane cross-section with the continuous center left-turn lane south of 13th Street but loses the on-street parking. **Figures 41-43** show typical cross-sections.

### EXISTING CONDITIONS TRAFFIC ANALYSIS

A traffic simulation analysis was performed using adjusted traffic volumes. The methodology for the model calibration procedures and details of the operational results are provided **Appendix F.**

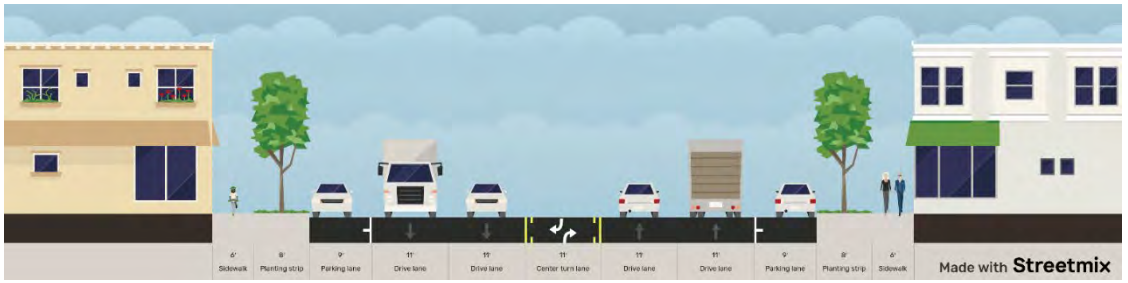



FIGURE 41. GRAND AVENUE FROM 8TH TO 13TH STREET

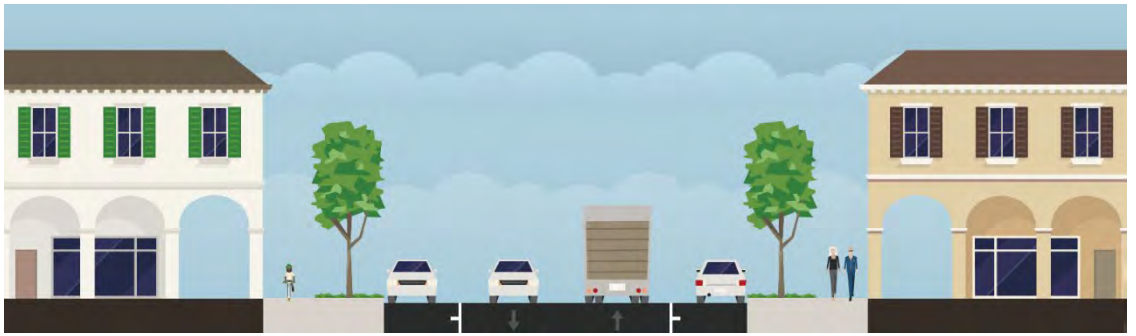


FIGURE 42. GRAND AVENUE FROM 13TH STREET TO 23RD STREET

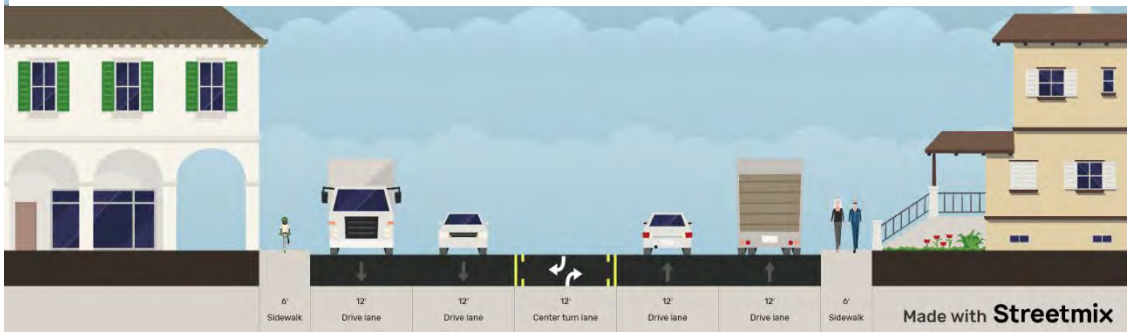



FIGURE 43. 8TH STREET FROM SCHOOL STREET TO GRAND AVENUE


As a summary, vehicle delays calculated by VISSIM were used within the *Highway Capacity Manual (HCM) 6th Edition*, Transportation Research Board (TRB), 2016 framework to calculate Level of Service (LOS) at each intersection. The generalized qualitative LOS descriptions are shown below.

| | |
|---|---|
| A | **EXCELLENT:** No Vehicle waits longer than one red cycle |
| B | **VERY GOOD:** Drivers begin to feel somewhat restricted |
| C | **GOOD:** Occasional vehicles may have to wait longer than one cycle |
| D | **FAIR:** Vehicles likely to wait longer than one cycle |
| E | **POOR:** May experience vehicles waiting through several signal cycles |
| F | **FAILURE:** Tremendous delays with increasing queue lengths |

The existing conditions traffic analysis results in terms of LOS are provided in **Figure 44.**

## EXISTING SAFETY ANALYSIS

Various sources of crash data were provided for the safety analysis. Crash data was provided by CDOT that summarizes reported incidents along the SH-82 corridor and intersections. A 3-year analysis period was evaluated within the time of June 2016 – June 2019. A total of 545 crashes were reported along SH-82. In addition, RFTA provided transit related incident data that represents the non-state highway facilities within the Glenwood Springs project limits. More details can be found in **Appendix A.**

Key findings include the following:

- There is a high frequency of both intersection and segment related rear-end crashes along SH-82 between 11th Street and 15th Street.
    - This may be a result due to the higher access density between 13th Street to 15th Street within the Glenwood Springs High School area and City Market. Many of the access control recommendations from the 2013 Access Control Plan have not been implemented such as closing access points and converting full access to right-in, right-out.
    - North of 13th Street, the area is primarily residential with on-street parking. The rear-end crashes can be attributed to driver inattentiveness and heavy parking activity along the highway.
- The primary transit-related incidents include bus collisions with fixed objects and other vehicles colliding with the bus.
- Many transit-related incidents occur along 9th Street, west of SH-82. The bus routes utilize 9th Street to access 8th Street from Colorado Street. 9th Street is generally narrow with on-street parking.

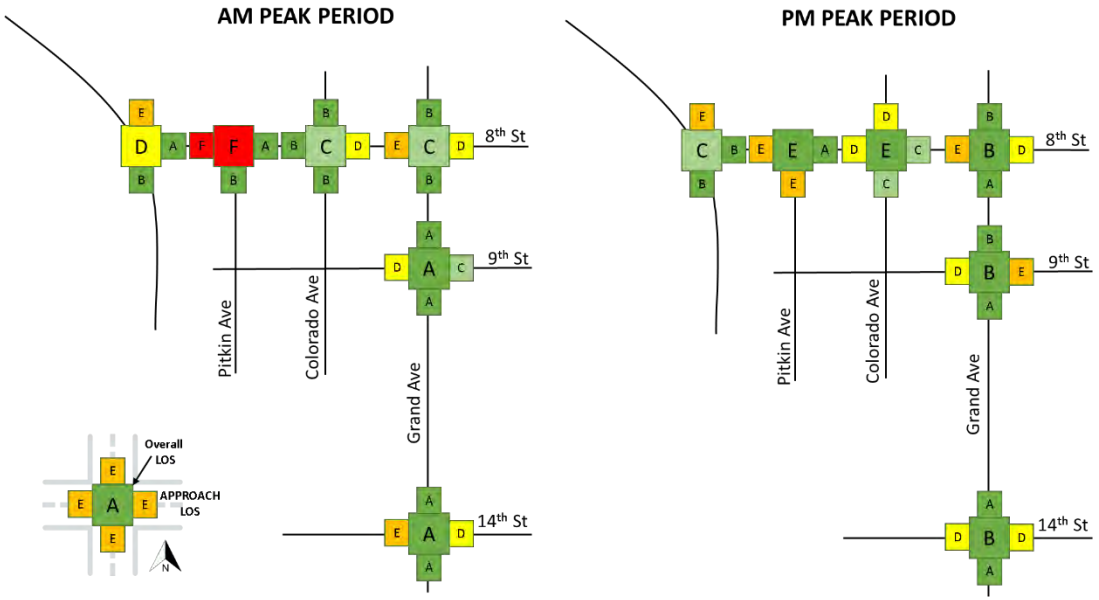



FIGURE 44. EXISTING (2020) NO-BUILD LOS RESULTS

## 2040 No-Build Model

Traffic forecast growth has been documented in the May 18, 2020, *Traffic Forecasting Assumptions Memo* completed by Parsons. This memo concluded that a 1.9% annual compounded growth rate is appropriate along the corridors, which was used to grow the 2020 existing counts to 2040 levels. All movements at each intersection utilized the same growth rate, as did the pedestrian counts incorporated into the VISSIM modeling. The traffic signal cycle lengths and timings were optimized using the 2040 turning movement volumes in Synchro, input into the VISSIM model, and verified for operations via visual confirmation.

Transit growth in the study area has included a doubling of headways along Ride Glenwood Springs and Roaring Fork Valley Local routes (from 30- to 15-minute headways). Future operations of the VelociRFTA BRT are expected to be adjusted so that all buses proceed past the 27th Street Station South Glenwood through the project study area all the way to the West Glenwood PnR and also include an increase in AM and PM peak headways of 15%. With the change to BRT operations, the Rifle/Grand Hogback route is expected to terminate at West Glenwood PnR and not proceed to the 27th Street Station South Glenwood removing all buses from the study corridor.

Transit routing changes have been assumed for northbound vehicles traveling Grand Avenue via 8th Street to the West Glenwood PnR. Instead of turning left at 8th Street, these vehicles will instead turn left at the 9th Street intersection and return to 8th Street via Colorado Avenue. This re-routing will avoid significant congestion but will also mean that buses will discontinue use of the Grand Avenue stop immediately south of 9th Street.

**Figure 45** illustrates the LOS for the 2040 No-Build Model; detailed traffic operational results are provided **Appendix F.**

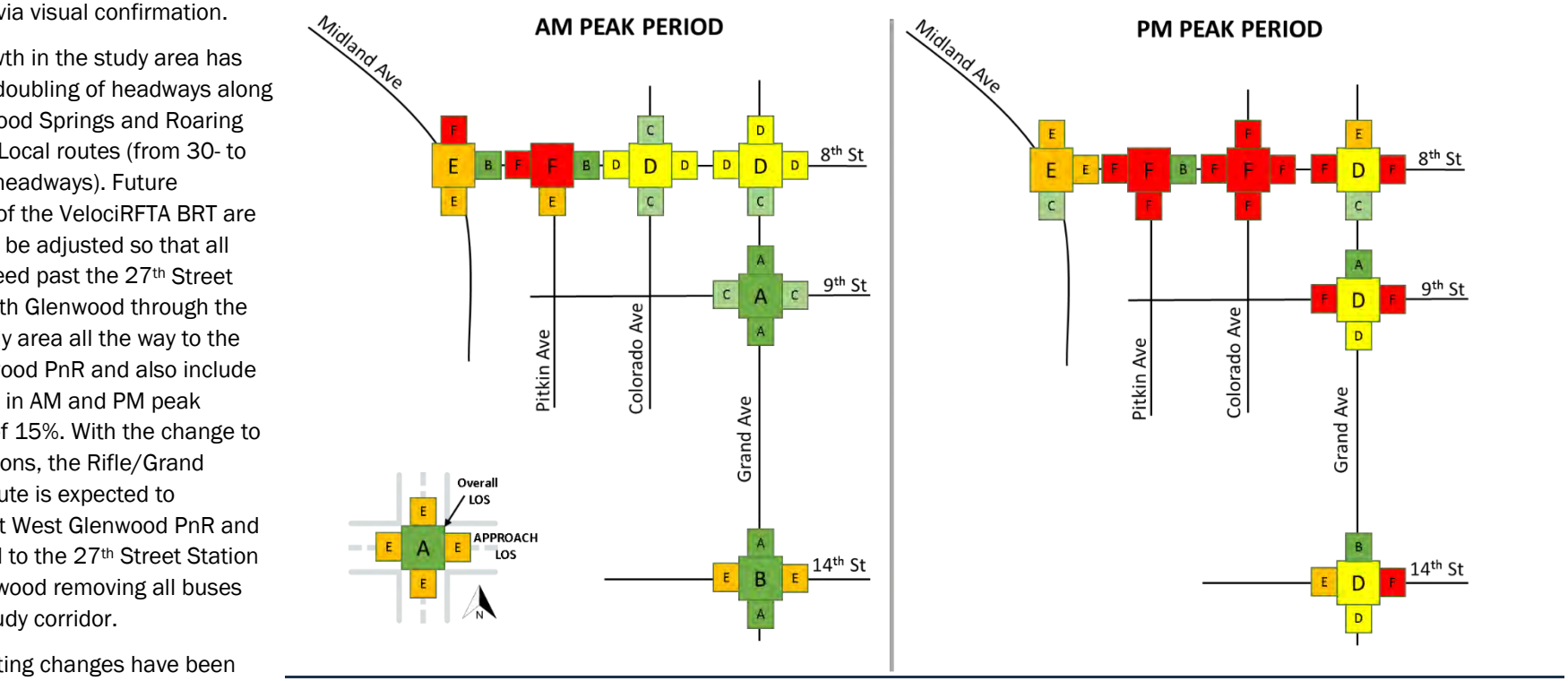



FIGURE 45. 2040 NO-BUILD LOS RESULTS


## Recommendations

Using the 2040 No Build model operations as the basis, the project team brainstormed various recommendations designed to improve operations at the study intersections and along the corridors. This effort focused on intersection and segment related improvements designed to provide enhanced transit operations and to alleviate future vehicular delay. The recommendations were combined to develop two alternative concepts for evaluation in VISSIM. During stakeholder meetings each of the recommendations were discussed and several recommendations were not carried forward into the evaluation process.

The two alternatives developed during this analysis reflect visions for how the transportation network could change in the future. These scenarios seek to enhance mobility for all users by offering solutions for VelociRFTA BRT delay anticipated to occur along Grand Avenue. The final alternatives include:

- 2040 Alternative 1: Business Access and Transit (BAT) Lanes – This alternative would convert existing Grand Avenue on-street parking to BAT lanes designed to provide buses a semi-exclusive lane (8th Street to 13th Street) and include transit signal priority (at 8th Street and 9th Street).
- 2040 Alternative 2: 8th and 9th Street Couplet – This alternative would convert existing portions of the roadway network to a pair of one-way couplets and construct a roundabout at 8th Street/Pitkin Avenue. The VelociRFTA trips are assumed to move to the Rio Grande Corridor in this alternative.

Alternative 1 provides infrastructure enhancements targeting enhanced BRT operations along Grand Avenue. This alternative successfully maintains the existing stops and placement of the buses through downtown by repurposing street right-of-way. Alternative 2 targets changes to the roadway network designed to provide more capacity for all vehicles traveling in downtown. This scenario dramatically reconfigures portions of 8th and 9th Streets and results in improved operations at the Grand Avenue intersections.

Overall, these alternatives provide a variety of successful recommendations targeting different users of the system. The selection and implementation of individual concepts are provided in **Table 6.**

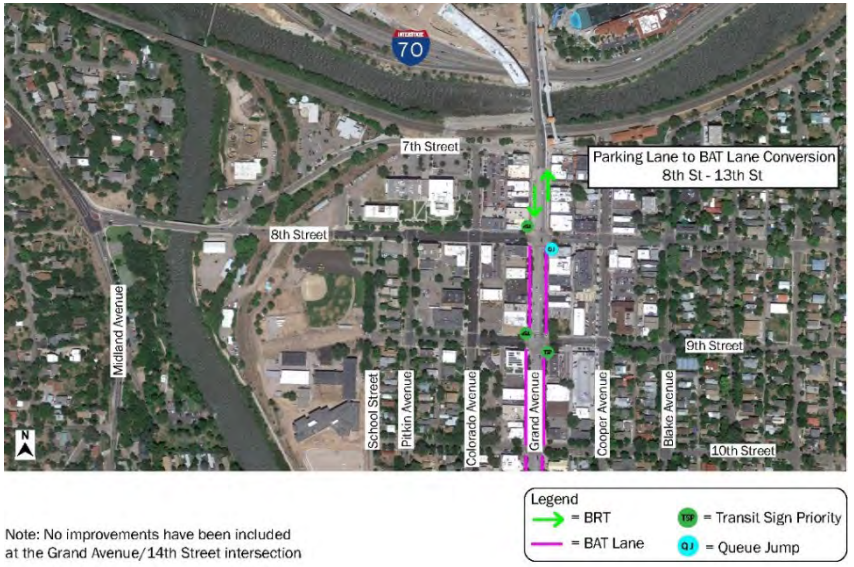



FIGURE46. ALTERNATIVE 1 RECOMMENDED IMPROVEMENTS


FIGURE 47. ALTERNATIVE 2 RECOMMENDED IMPROVEMENTS


TABLE 6. TRAFFIC AND SAFETY IMPROVEMENTS

| IMPROVEMENT | DESCRIPTION & KEY IMPLEMENTATION STRATEGIES | ESTIMATED COST | RECOMMENDED IMPLEMENTATION TIMELINE | EXAMPLES OF POTENTIAL FUNDING SOURCES |
|---|---|---|---|---|
| **PHASE 1 IMPROVEMENTS – LOW/NO COST IMMEDIATE RECOMMENDATIONS** | | | | |
| Remove North Leg Crosswalk at Grand Avenue and 8th Street | This improvement would provide pedestrian safety benefits by reducing vehicle-pedestrian conflicts as well as moderately improving vehicular traffic operations at the intersection by eliminating the required pedestrian green time for that crossing. The scope of the project requires removal of pavement marking and pedestrian signal at the crossing. Additional signage is recommended to guide pedestrians to the appropriate crossing. This improvement can be implemented immediately as a standalone project independent of the BRT alternatives. | $5,000 | Short-Term | Safe Routes to School (SRTS) Program; City general funds; Acquisitions and Improvements (A&I) Fund |
| Restripe 8th Street to provide center left-turn lane from Pitkin Avenue to Grand Avenue | There is adequate roadway width to accommodate the striping of a10' wide two-way center left-turn lane from Pitkin Avenue to Grand Avenue. Implementation of this improvement would improve safety and potentially reduce the delay for through vehicles that will not be blocked by left-turning vehicles onto Pitkin Avenue and Colorado Avenue, and the mid-block driveways. The project scope includes existing pavement marking removal and striping of the center left-turn two-way lane. This low-cost improvement can be independent of the BRT alternatives. | $30,000 | Short-Term | SRTS Program; City general funds; A&I Fund, |
| **PHASE 2 IMPROVEMENTS - HIGHER COST RECOMMENDATIONS** | | | | |
| 8th Street and 9th Street 2-Lane One-Way Couplet | The conversion of the existing two-way traffic to a one-way couplet along 8th Street and 9th Street from Cooper Avenue to Colorado Avenue would increase network capacity as well as improve operations along Grand Avenue. With the additional roadway width, parking availability can be increased by reconfiguring to angled parking or buffered bicycle lanes can be included. The traffic analysis indicates a significant operational improvement and can serve as a project independent of the BRT alternatives but would require more planning, analyses, and public coordination before being implemented. The project scope includes existing pavement marking removal, signing, and striping. Based on the traffic analysis, this project is recommended to be implemented for the short-term due to side-street performance. | $100,000 | Mid-Term | Funding Advancements for Surface Transportation and Economic Recovery (FASTER) Program; Multimodal Options Fund (MMOF); City general funds |


| IMPROVEMENT | DESCRIPTION & KEY IMPLEMENTATION STRATEGIES | ESTIMATED COST | RECOMMENDED IMPLEMENTATION TIMELINE | EXAMPLES OF POTENTIAL FUNDING SOURCES |
|---|---|---|---|---|
| Remove east-west stop control at 8th Street and Colorado Ave | This lower-cost spot improvement is recommended to be implemented with the one-way couplet option as it was shown to optimize traffic movements along 8th Street. The overall project scope would include stop-sign removal and it is recommended to improve signage and advanced yield lines for the pedestrian crossings to increase driver awareness and compliance. | To be included with Project 2-1 | Mid-Term | FASTER Program; MMOF; City general funds |
| Construct a Roundabout at 8th Street / Pitkin Avenue | Based on the traffic operations analysis results, this project would provide significant benefits both in traffic operations and safety. Additional technical and feasibility analysis is recommended to evaluate specific design parameters. This project is recommended to be constructed in the short-term based on existing intersection performance; however, due to the higher implementation cost, this was included as a Phase 2 project. | $1,300,000 | Mid-Term | FASTER Program; SRTS Program; A&I Fund; City general funds |
| Provide Access Management Measures on SH-82 | This improvement is primarily intended to improve safety and provide more efficient business access south of 14th Street. Specific improvements can include the removal of existing underutilized access points or conversion to right-in/right-out. A detailed evaluation and recommendations are provided in the SH 82 Access Study. | $200,000 | Mid-Term | Highway Safety Improvement Program (HSIP); City general funds |
| Implement SH-82 Transit Signal Priority (TSP) | Not only would this improvement best support the primary BRT alternatives, but it is also recommended that TSP be implemented for general transit service as well along SH-82. The estimated cost varies and is dependent on what technology is used. Overall project scope would include installation of communication equipment for both the intersection and transit vehicles. Assumed to be implemented at all signalized intersections between 8th Street and 27th Street. | $135,000 | Mid-Term | FASTER Program; MMOF; City general funds, Parking revenues |
| **PHASE 3 IMPROVEMENTS - RECOMMENDATIONS NEEDED FOR BRT EXTENSION (Grand Avenue BRT Extension Alignment)** | | | | |
| Install Queue Jump Lanes Signal Operations along SH-82 | This improvement would best support the proposed dedicated transit lanes along Grand Avenue, Alternative 1. The project scope could involve installation of separate transit specific signal heads at the northbound terminal of the BAT lane at Grand Avenue & 8th Street. | Cost included in BRT Extension cost estimate | Long-Term | FASTER Program; MMOF; City general funds; Destination 2040 |
| **PHASE 3 IMPROVEMENTS - RECOMMENDATIONS NEEDED FOR BRT EXTENSION (Rio Grande Corridor BRT Extension Alignment)** | | | | |
| Bus-activated 8th Avenue Traffic Signal for Rio Grande Corridor BRT Extension | Recommended to maximize BRT operations when entering/exiting the proposed Rio Grande Trail alignment. Further analysis is recommended to evaluate 8th Street peak-hour impacts and coordination with traffic signal at Midland/8th (only 1/8-mile west). | Cost included in BRT Extension cost estimate | Long-Term | FASTER Program; MMOF; A&I Fund; City general funds; Destination 2040 |

## TRAFFIC OPERATIONAL RESULTS

Alternative 1's focus is on improving transit travel times through the creation of BAT lanes along the corridor. A comparative review of the 2040 Alternative 1 results and the 2040 No Build reveals improvement to bus travel times along the Grand Avenue corridor. Since no significant general traffic-based improvements are planned in this alternative, the performance of the intersections is similar to the No Build. By 2040, it is expected that the traffic operations will degrade below LOS C at all intersections during various time periods. The signalized intersections continue to experience decreased traffic operations but maintains LOS D during nearly all of the time periods. The LOS results are summarized in **Figure 48.**

Given Alternative 2's focus on improving vehicular movements through the creation of the couplet and changes to intersections along 8th Street, a comparative review of the 2040 Alternative 2 results and the 2040 No Build reveals significant improvement to vehicle LOS along the Grand Avenue and 8th Street corridors. These results show significant vehicular LOS improvements compared to the No Build model. With improvements along Grand Avenue and 8th Street, a LOS D or better is achieved at all intersections during all periods except at 8th Street and Colorado Avenue. Despite poor LOS at 8th Street / Colorado Avenue this alternative still reduced the average delay the intersection by half demonstrating the strong operational benefits of the recommendations. The LOS results are summarized in **Figures 49 and 50** that provides a side-by-side comparison to the 2040 No-Build.

**Figure 51** provides a travel time comparison that demonstrate the benefits of the new Alternative 1 BAT lane in the transit travel times along Grand Avenue. In particular, NB transit travel times in this table report up to 15% travel time savings as buses jump long queues around 8th and 9th Streets. This modeling effort does confirm that buses will benefit from the inclusion of BAT lanes along the corridor and could be a viable recommendation to facilitate enhanced travel times and speeds. In addition, the figure indicates that the modeled vehicular travel time compared to the modeled transit travel time for selected segments throughout the study area. Only local buses included in the scenario model run have been included in the travel time comparison.

**Figure 52** and **Figure 53** provide a comparison of vehicular average queue lengths (represented as red lines) for both the AM and PM peak periods.

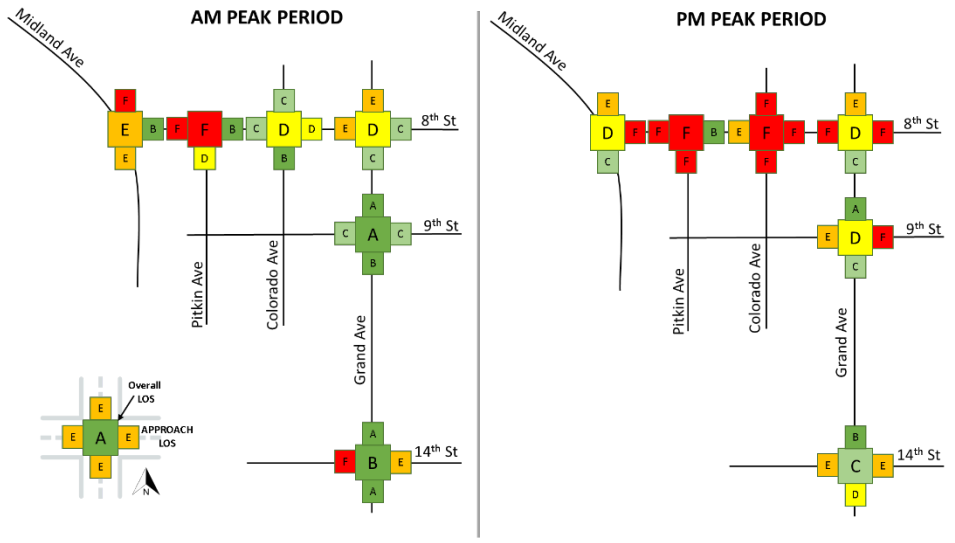



FIGURE 48. ALTERNATIVE 1 LOS RESULTS

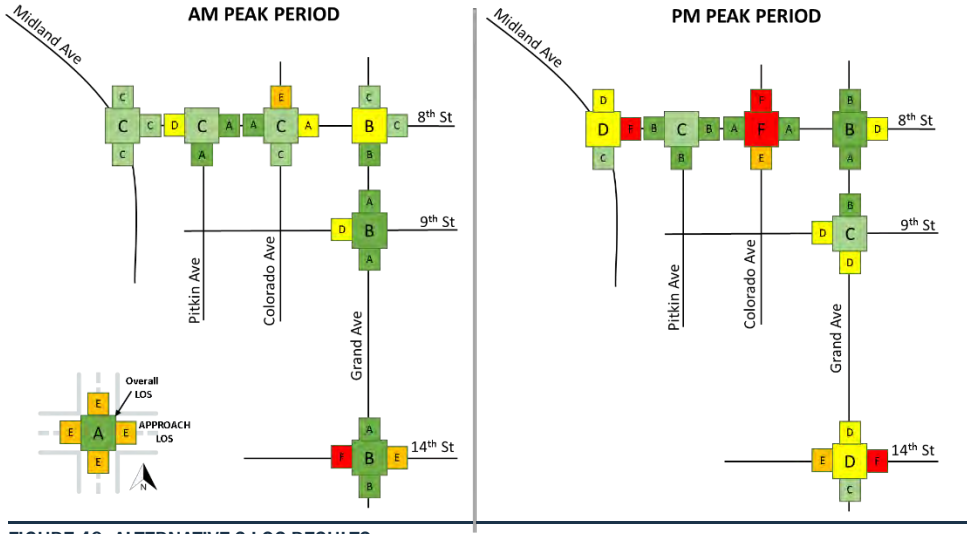
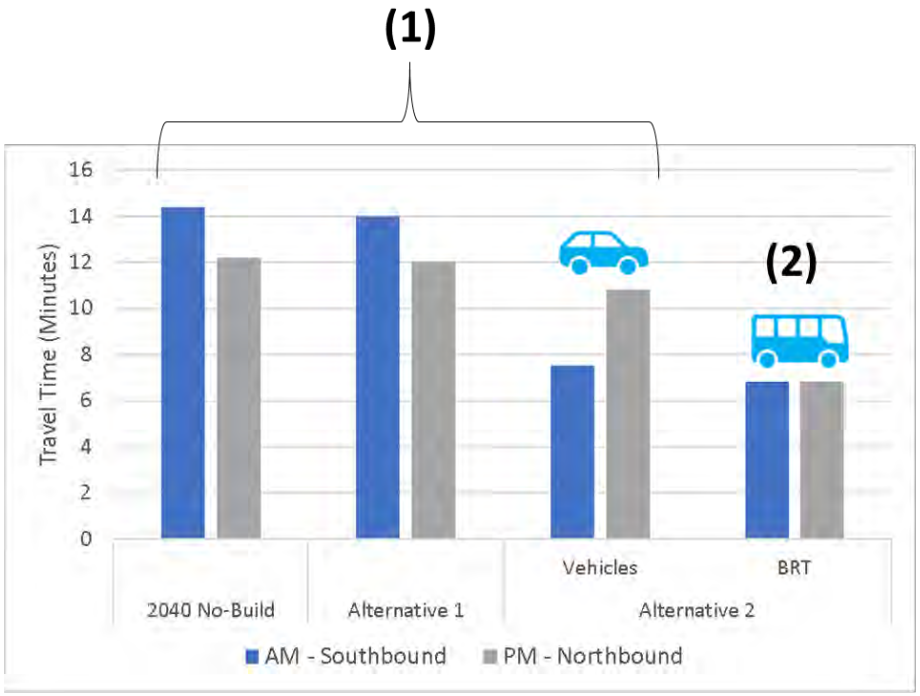



FIGURE 49. ALTERNATIVE 2 LOS RESULTS


| | | 2040 No-Build | | 2040 Alternative 1 | | 2040 Alternative 2 | |
|---|---|---|---|---|---|---|---|
| | Intersection | Delay (sec.) | Level of Service | Delay (sec.) | Level of Service | Delay (sec.) | Level of Service |
| AM Peak Period | 8th St / Midland Ave | 75.1 | E | 75.9 | E | 27.3 | C |
| | 8th St / Pitkin Ave | 71.3 | F | 69.1 | F | 22.3 | C |
| | 8th St / Colorado Ave | 32.8 | D | 30.4 | D | 15.4 | C |
| | 8th St / Grand Ave | 42.3 | D | 46.3 | D | 19.9 | B |
| | Grand Ave / 9th St | 5.5 | A | 5.9 | A | 10.7 | B |
| | Grand Ave / 14th St | 15.2 | B | 15.3 | B | 19.5 | B |

| | | 2040 No-Build | | 2040 Alternative 1 | | 2040 Alternative 2 | |
|---|---|---|---|---|---|---|---|
| | Intersection | Delay (sec.) | Level of Service | Delay (sec.) | Level of Service | Delay (sec.) | Level of Service |
| PM Peak Period | 8th St / Midland Ave | 56.8 | E | 54.0 | D | 43.3 | D |
| | 8th St / Pitkin Ave | 115.0 | F | 112.0 | F | 15.7 | C |
| | 8th St / Colorado Ave | 126.5 | F | 115.4 | F | 60.1 | F |
| | 8th St / Grand Ave | 49.5 | D | 52.4 | D | 10.5 | B |
| | Grand Ave / 9th St | 41.3 | D | 38.2 | D | 34.3 | C |
| | Grand Ave / 14th St | 35.7 | D | 33.5 | C | 35.4 | D |

FIGURE 50. LOS COMPARISON SUMMARY

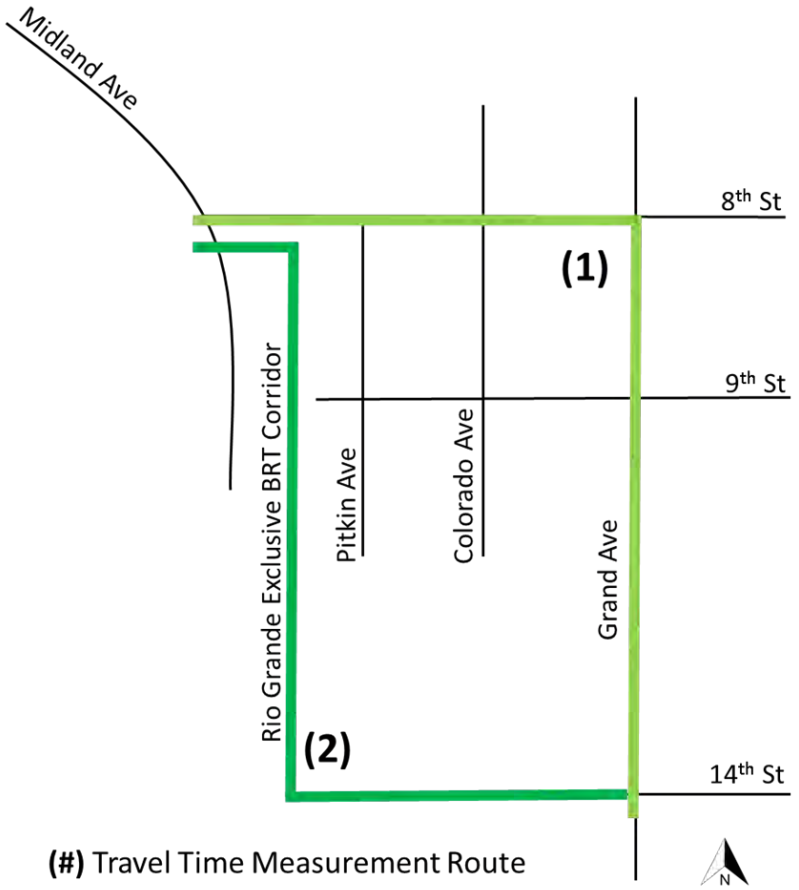




FIGURE 51. OVERALL TRAVEL TIME RESULTS/TRAVEL TIME MEASUREMENT ROUTE MAP

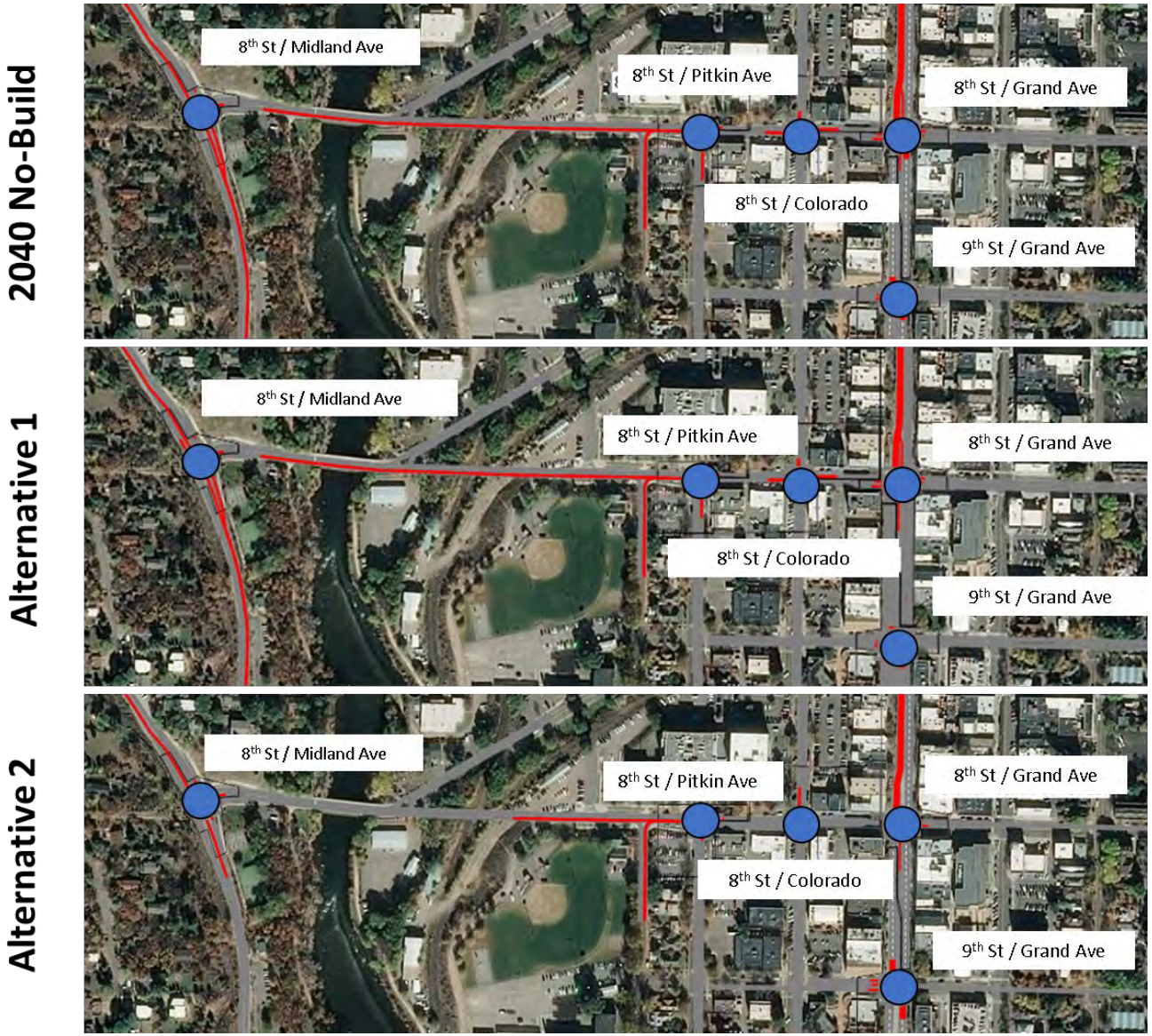



FIGURE 52. AM PEAK PERIOD QUEUE SUMMARY

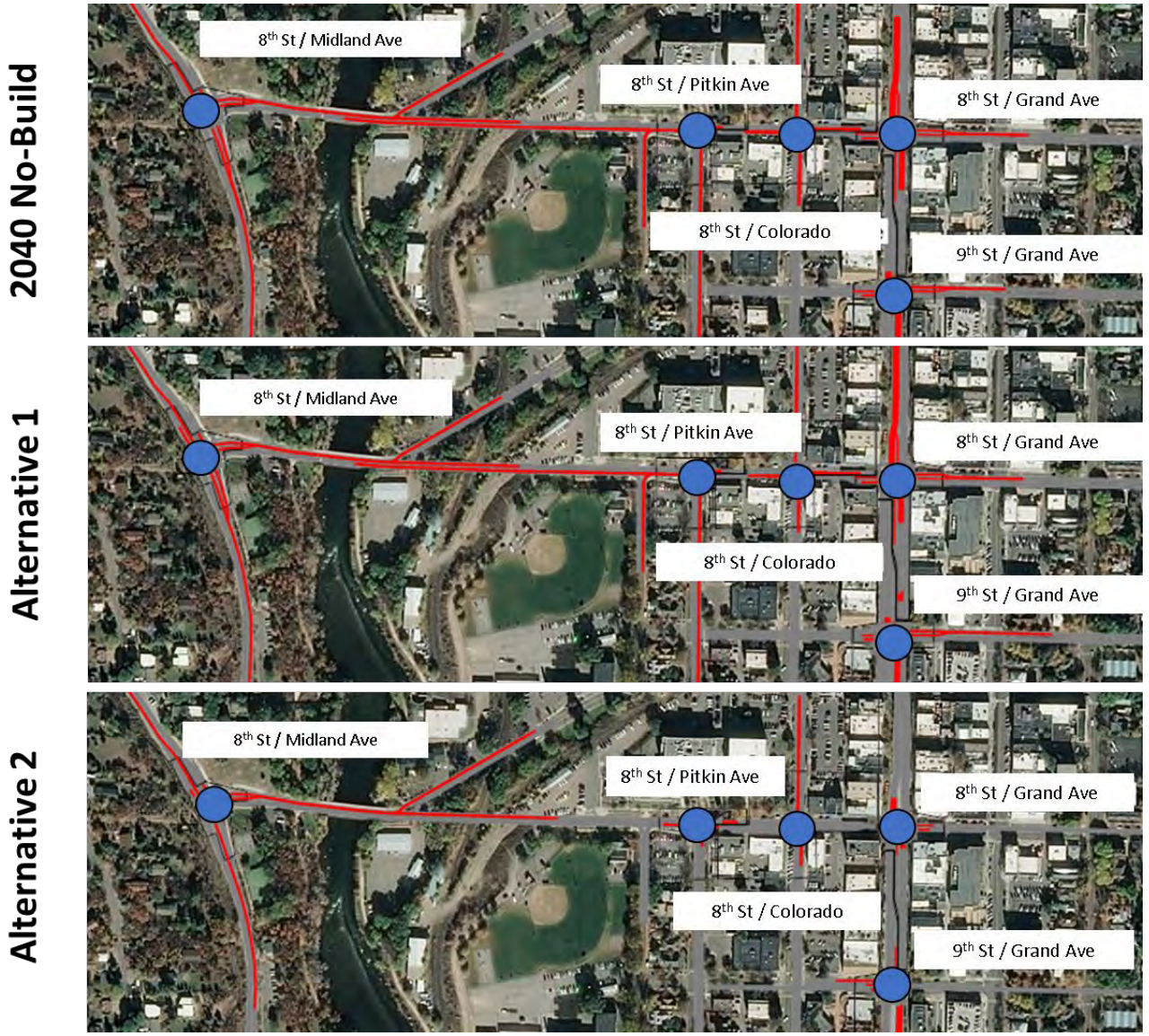



FIGURE 53. PM PEAK PERIOD QUEUE SUMMARY


# Next Steps

## Implementation and Phasing

In the previous section the recommended improvements for each transportation mode (excluding regional transit) are categorized into three phases that are based on implementation timeframe and relationship to the primary BRT extension alternatives. The phases are described as followed:

- **Phase 1 Improvements:** Low/No Cost Immediate Recommendations: These improvements are estimated to be lower in cost compared to the other recommendations and are also independent of the primary BRT alternatives, so easiest to implement in the near term.
- **Phase 2 Improvements:** Higher Cost Recommendations: Higher cost improvements that are independent of the BRT alignment alternatives. These improvements are implemented in the short and medium term.
- **Phase 3 Improvements:** Recommendations Needed for BRT Extension: These were developed to optimize the BRT alignment alternatives and are projects by mode that are best implemented with the proposed BRT extension improvements.

The BRT extension implementation next steps involve confirmation of a locally preferred alternative (LPA) between the Rio Grande Corridor and Grand Ave BRT alignment options. The LPA will have RFTA, City of Glenwood Springs, Colorado Department of Transportation (CDOT), Garfield County, and community support. From there project development begins with preliminary engineering of the BRT elements including multimodal integration, and environmental evaluation of the following resources from a National Environmental Policy Act (NEPA) standpoint. Note that NEPA evaluation is only required if Federal funding is pursued or required by CDOT if Grand Avenue is selected.

- Land Use and Zoning
- Land/Property Acquisition, Relocation, Leases and Easements
- Environmental Justice
- Cultural, Historic and Archaeological Resources
- Visual/Aesthetics
- Park and Recreation Resources
- Noise and Vibration
- Air Quality
- Hazardous Materials
- Farmland
- Floodplains
- Water Resources and Water Quality
- Wetlands and Waters of the U.S.
- Threatened and/or Endangered Species
- Natural and Biological Resources
- Traffic and Parking
- Utilities
- Construction Impacts
- Public Outreach and Agency Coordination
- Safety and Security
- State and Local Permits, Policies and Ordinances

Project Development includes:

- Complete travel demand forecasting, traffic analysis and transit ridership forecasts
- Complete NEPA process and required technical studies in coordination with lead Federal agency (FTA or FHWA) for approval
- Advance preliminary engineering to approximately 30% plans, constructability reviews and cost estimates


- Develop financial plan, funding positioning and funding applications
- Stakeholder and public outreach

After project development, the project moves into final design including finalizing the year of expenditure (YOE) capital cost estimates. The construction bid process can then begin. Once a contractor is selected, the project will go into construction, testing, commissioning and finally revenue operations. The recommended phasing, costs, and example funding sources are listed in **Appendix H.**


## Funding

Identifying funding sources for infrastructure elements can be difficult in good economic times. Following the impacts brought on by the COVID-19 pandemic, funding options available to municipalities and transit agencies may be expanded due to increased state and federal programs. However, the competition for those dollars – at either level – will likely be intense. This report identifies numerous potential funding sources that could be pursued for a variety of projects. Of the 34 identified, ten sources (three federal, three state, and four local) are recommended as they have been pursued in the past, align well with project priorities, and/or represent those that provide the best opportunities for successful funding pursuits.

Recommended funding sources are identified in **Table 7** and are described in more detail in **Appendix I**. **Appendix I** also includes 25 funding sources that were identified but not recommended for a variety of reasons. While they are not recommended now to fund project elements, these funding sources should be periodically reevaluated to account for changing requirements, evaluation criteria, project competitiveness, and potential availability to support the recommended improvements.

TABLE 7 - RECOMMENDED FUNDING SOURCES BY PHASE

| # | Recommended Funding Sources | Source | Agency | Phase 1 | Phase 2 | Phase 3 |
|---|---|---|---|---|---|---|
| 1 | Capital Investment Grant Program/New Starts/Small Starts | Federal | USDOT | | ✔ | ✔ |
| 2 | RAISE Grant | Federal | USDOT | ✔ | ✔ | ✔ |
| 3 | Formula Funding | Federal | USDOT | ✔ | ✔ | ✔ |
| 4 | Safe Routes to School | State | CDOT | ✔ | ✔ | ✔ |
| 5 | Statewide Multimodal Options Funds | State | CDOT | ✔ | ✔ | ✔ |
| 6 | FASTER Program | State | CDOT | ✔ | ✔ | ✔ |
| 7 | Destination 2040 | Local | RFTA | ✔ | ✔ | ✔ |
| 8 | City General Fund | Local | GWS | ✔ | ✔ | ✔ |
| 9 | Street Tax Fund | Local | GWS | ✔ | ✔ | |
| 10 | Bus Tax Fund | Local | GWS | ✔ | ✔ | |


## Conclusions and Recommendations

Both BRT extension options will meet the goals and objectives of the study. The primary advantages of the Rio Grande Corridor alternative are that it would have significantly better travel time and reliability; lower service hours and O&M costs; and higher ridership (which may correlate to fewer cars traveling in and through Glenwood Springs) than the Grand Avenue alternative. The capital cost is significantly higher, but that cost does include enhancements to the corridor that may offset opposition to the buses being added to an area that currently sees only pedestrian, bicycle, and recreational use. The Grand Avenue alternative, with its lower cost, can be built and implemented quicker. The trade-offs for this option include on-street parking removal and the need to widen the lanes by receding the curb back by two feet, which ultimately removes mature trees and existing pedestrian bulbouts. Additionally, the travel time savings and ridership are not as high as the other alternative. With input from various stakeholders, RFTA and the City will determine the preferred alternative to carry forward to the next steps of refinement and implementation. This study includes the pieces needed for the next phase for either alternative, including conceptual level design and cost estimates in potential year-of-expenditure dollars.

This study highlighted many improvements that can be made prior to and independent of the BRT extension as summarized in **Table 8**. Parking, pedestrian, bicycle, traffic and safety, and local transit improvements can be implemented immediately to benefit mobility, economic vitality, economic sustainability, and quality of life for the City and the entire region.

TABLE 8 - FINAL RECOMMENDATIONS BY PHASE AND MODE

| MODE | RECOMMENDATIONS |
|---|---|
| **PHASE 1 IMPROVEMENT RECOMMENDATIONS (Low/No Cost Immediate Recommendations)** | |
| Pedestrian and Bicycle | Ongoing maintenance of existing sidewalks and trails, improve network wayfinding, add bicycle parking and storage at major transit stations, improve existing network connections |
| Downtown Parking | Establish a truck loading zone plan, manage the 700-block of Cooper, increase fines for parking violations, improve curb space signage and striping |
| RFTA Parking | Better connect existing overflow lot, establish a more robust parking enforcement program |
| Traffic and Safety | Remove north leg crosswalk at Grand Avenue and 8th Street, restripe 8th Street to provide center left turn lane from Pitkin Avenue to Grand Avenue |
| **PHASE 2 IMPROVEMENT RECOMMENDATIONS (Higher Cost Recommendations)** | |
| Pedestrian and Bicycle | Improve sidewalks on 27th Street, improve off street bicycle facilities, identify and fill in gaps in the sidewalk network |
| Local Transit | Implement one of three concepts developed in the study to improve coverage of North Glenwood. Thin number of stops along Grand Avenue for BRT and Hogback or consider a deviation of RGS to serve Blake Avenue instead of Grand Avenue. |
| Downtown Parking | Add weekend parking enforcement, leverage parking enforcement technology, install bike corrals, implement paid parking, plan for TNCs and AVs, evaluate increasing parking capacity |
| RFTA Parking | Lease additional parking, purchase land for additional parking, formalize a kiss & ride area at the 27th Street station, improve multimodal connections |


| MODE | RECOMMENDATIONS |
|---|---|
| Traffic and Safety | Convert 8th and 9th Street into 2-lane one-way couplets from Cooper Ave to Colorado Ave and remove east-west stop control at 8th Street and Colorado Avenue, construct a roundabout at 8th Street and Pitkin Avenue, provide access management measures on SH-82, Implement Transit Signal Priority on SH-82. |
| **PHASE 3 IMPROVEMENTS - RECOMMENDATIONS NEEDED FOR BRT EXTENSION (Grand Avenue BRT Extension Alignment)** | |
| Pedestrian and Bicycle | Sidewalks should be a minimum of 6' wide; if the sidewalk is intended to serve as a multi-use facility for pedestrians and cyclists, it should be a minimum of 8' wide and designated and maintained as a trail facility. Evaluate bicycle routes that parallel the BRT alignment and navigate to bus stops and destinations. Additional routes should be evaluated to create a connected network of comfortable bicycle routes with a complete and consistent wayfinding program. |
| Local Transit | Option 1: Move local service to Blake Avenue, split Ride Glenwood Springs into two loops serving West Glenwood and South Glenwood. Option 2 same as Option 1 except Ride Glenwood Springs increases existing vehicles to increase coverage. |
| Parking | Ensure advance communication prior to implementation, include clear and visible signage, allow time for driver adjustment, have a towing plan. |
| Traffic and Safety | Install queue jump lane signal heads at northbound terminal of BAT lane on Grand Avenue |
| **PHASE 3 IMPROVEMENTS - RECOMMENDATIONS NEEDED FOR BRT EXTENSION (Rio Grande Corridor BRT Extension Alignment)** | |
| Pedestrian and Bicycle | As much as possible, physical and perceived separation between the trail and BRT alignment should be maintained. Where space allows within the corridor, the trail or BRT alignment should be laid out to provide the greatest amount of horizontal separation. Where right-of-way is constrained, creating a sense of separation with landscaping, fencing, and/or by raising the BRT alignment slightly above the trail corridor will help trail users feel their facility is still separate from the BRT route. The four locations where pedestrians and bicyclists need to cross the Rio Grande BRT corridor should also be carefully considered and planned to allow for maximum visibility; crossing signage, striping, and signals where appropriate; and accessibility. |
| Local Transit | Ride Glenwood Springs restructured to better penetrate West Glenwood Springs |
| Traffic and Safety | Install bus activated traffic signal on 8th Street where buses will enter/leave RFTA property and Rio Grande corridor |


# APPENDICES

A – Existing Conditions Report

B – Public Outreach Summary Report

C – Integrated Bus Service Report

D – Multimodal Improvements Memo

E – Parking Report

F – VISSIM Technical Report and Traffic Implementation Plan

G - Alternatives Analysis Report

H - Conceptual Design, Cost Estimates, and BRT Implementation

I - Funding Plan

J – Project Renderings


# Appendix A – Existing Conditions Report

move


# GLENWOOD SPRINGS MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY (MOVE)

## Corridor History, Context, and Understanding Report

GLENWOOD SPRINGS COLORADO

RFTA

# CORRIDOR HISTORY, CONTEXT, AND UNDERSTANDING REPORT

## TABLE OF CONTENTS

# Introduction

## Project Background

The Roaring Fork Transportation Authority (*RFTA*) and the City of Glenwood Springs (*The City*) have initiated a study to develop a long-term vision and program for transportation within and through Glenwood Springs, focusing on the I-70 and SH-82 corridors, recognizing the transportation, land use, environmental, economic and social needs of the City and the region. The *Multimodal Options for a Vibrant Economy (MOVE)* study will investigate various aspects of mobility for the City, including but not limited to transit, parking, and internal circulation.

**This Corridor History, Context, and Understanding Report will provide a comprehensive understanding of the past, present, and future transportation conditions of the Glenwood Springs area, particularly within the context of the SH-82 and I-70 corridors. This report will provide the basis for the development of a corridor vision and alternative ways to achieve it.**

### OVERALL PROJECT GOALS

| | |
|---|---|
| 1 | Improve mobility, connectivity, safety, and accessibility |
| 2 | Determine effective and affordable transportation solutions with strong community support |
| 3 | Provide reliable BRT access to the downtown/confluence area of Glenwood Springs |
| 4 | Improve travel time for auto travel and local transit |
| 5 | Reduce congestion in the corridor |
| 6 | Improve service efficiency (e.g. higher transit ridership, riders per trip, rider per hour of service) |
| 7 | Meet current and future person-trip demand |
| 8 | Encourage a shift of auto trips to attractive and reliable alternative modes |
| 9 | Support local livability, development, and sustainability plans and policies |
| 10 | Improve transit connections and accessibility to affordable housing |

## Study Area

The overall study area will include the limits for study to extend the BRT corridor from 27th Street through the downtown/Confluence area in Glenwood Springs to the I-70 corridor and will include the area to be studied for strategies to best address oversupply and undersupply parking issues downtown around 7th and 8th Streets and the 800, 900, and 1000 blocks of Grand Avenue, Cooper Avenue, Pitkin Avenue, and Colorado Avenue. **Figure 1** shows the parking study area. Within this area, intersection operations analysis will be investigated at the following key intersections.

**Critical Intersections**

1. 8th and Grand Avenue
2. 9th and Grand Avenue
3. 14th and Grand Avenue
4. 8th and Midland Avenue
5. 8th and Colorado Avenue
6. 8th and Pitkin Avenue


FIGURE 1 – MOVE STUDY AREA MAP

## Regional and Local Context

The City of Glenwood Springs was incorporated in 1885 and is both the country seat for Garfield County and the most populated city in the county. It is located at the confluence of the Colorado and Roaring Fork Rivers, approximately 180 miles west of Denver. The population of the City was 9,962 in 2017 and the main streets in the study area are generally flat and rolling.

At the north end of the city, Interstate 70 (I-70) moves east-west along the Colorado River. State Highway 82 (SH-82) begins at the intersection of I-70 and stretches south along the Roaring Fork River and the is the key north-south connection from Glenwood Springs to the resort towns south of the City. Glenwood Springs is known for its medicinal hot springs, outdoor recreation, and scenic beauty. Large numbers of tourists visit year-round, with the busiest months in the summer as evidenced by **Figure 2** that shows the monthly accommodations tax collections. The major destinations for visitors include the Glenwood Hot Springs, Glenwood Caverns Adventure Park, downtown areas, the Rio Grande Trail, Snowmass Village and the other resort towns south of Glenwood Springs.

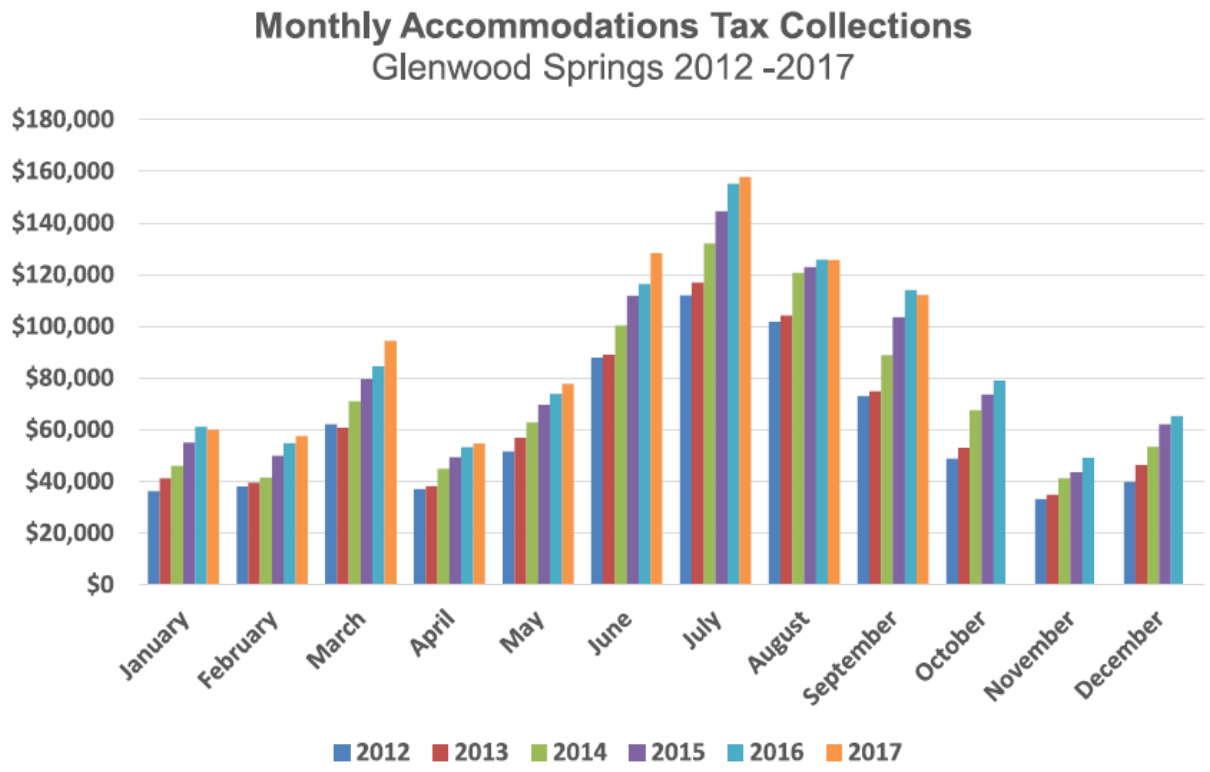



FIGURE 2 – SEASONALITY ANALYSIS FOR GLENWOOD SPRINGS (*SRC: GWS PREPARED BY STROMBERG/GARRIGAN & ASSOCIATES*)

Glenwood Springs is 5.69 square miles. The gentle terrain, number of visitors to the area, and geographic size are indictive of high potential for active transportation modes including walking, bicycling, and transit use.

RFTA's VelociRFTA Bus Rapid Transit (BRT) was the first rural bus rapid transit system in the nation. It serves Glenwood Springs to/from Aspen and travels mostly along SH-82. During peak periods, the bus comes every 10 minutes or less. Many BRT buses end at the 27th Street South Glenwood station, with a few buses continuing to the West Glenwood Park & Ride. Most transit users that want to access downtown Glenwood Springs need to transfer to a local RFTA or Ride Glenwood Springs bus to complete their journey.

# Existing Conditions

This section provides a summary of the existing conditions that summarize existing geometry of the key roadway facilities, parking, pedestrians and bicycles, transit operations, and traffic operations.

## Roadway Cross-Sections

The roadway and intersection geometry vary across the study area and key intersections. Beginning from the north west between Midland Avenue and School Street, 8th Street is a generally a two-lane road with a posted speed limit of 25 MPH. On-street parking picks up along 8th Street east of School Street towards SH-82. From 8th Street to 13th Street along SH-82, the cross-section consists of a 4-lane highway with a continuous center left-turn lane with on-street parking on both sides. The posted Speed limit is 25 MPH north of 23rd Street and increases to 35 MPH south of 23rd Street. SH-82 maintains the 4-lane cross-section with the continuous center left-turn lane south of 13th Street but loses the on-street parking. **Figures 3**, **4**, and **5** show typical cross-sections.

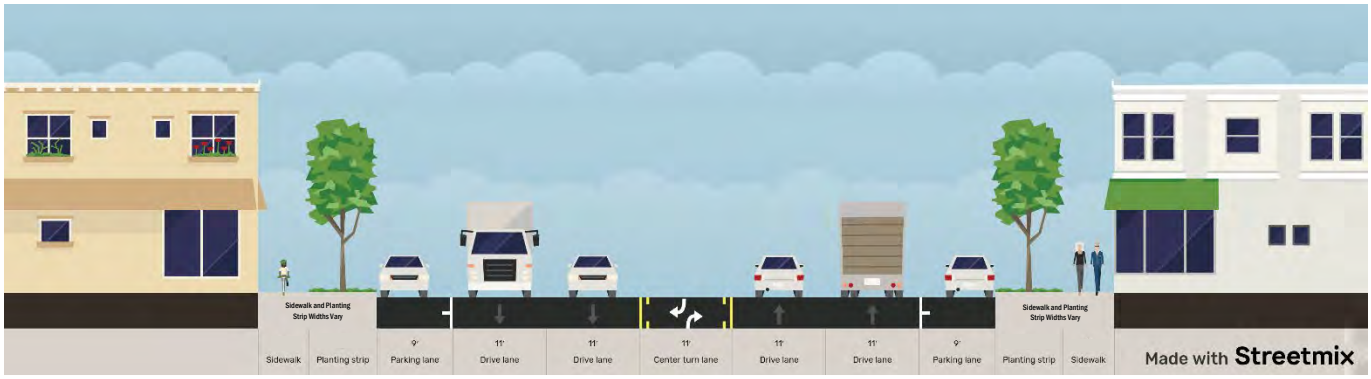



FIGURE 3 – GRAND AVENUE FROM 8TH TO 13TH STREET

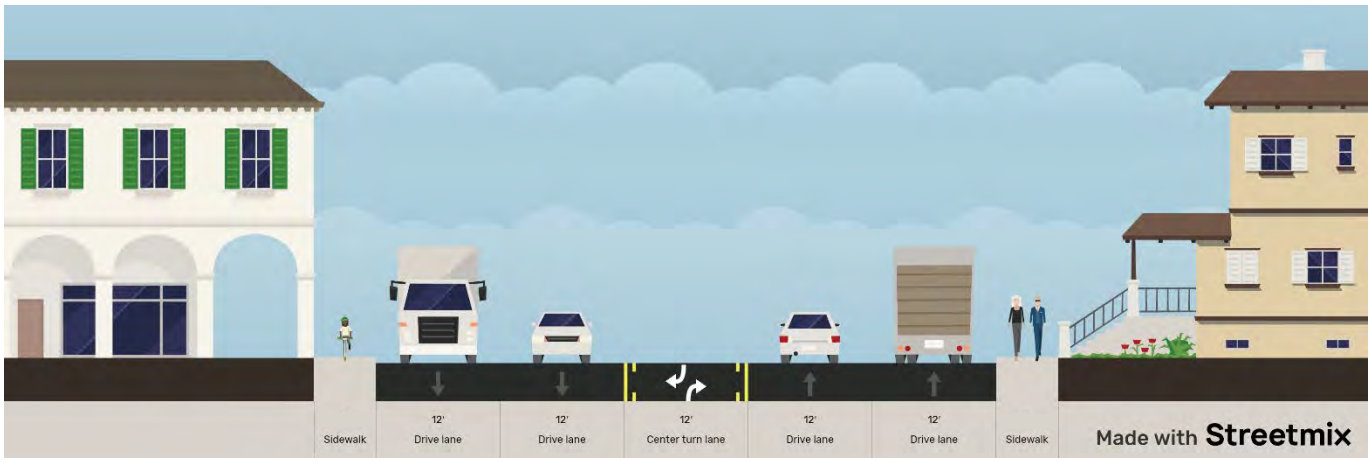



FIGURE 4 – GRAND AVENUE FROM 13TH TO 23RD STREET

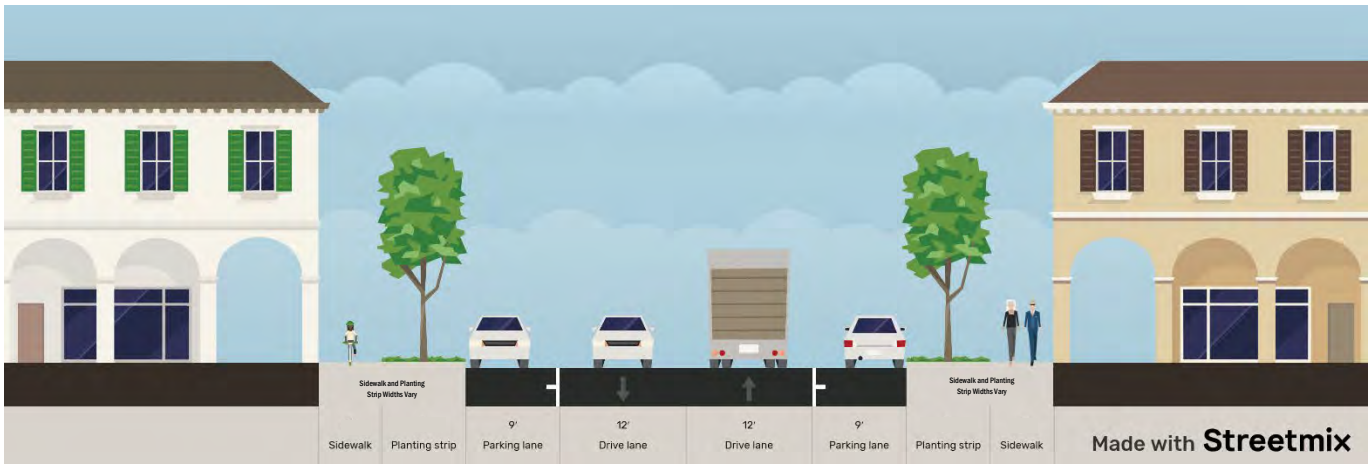



FIGURE 5 – 8TH STREET FROM SCHOOL ST. TO GRAND AVE.

## Parking

This section provides a summary of existing on-street parking and off-street public parking conditions in downtown Glenwood Springs and at the two RFTA park & rides in Glenwood Springs. The analysis that was performed summarizes existing and future parking and curb space opportunities and recommendations. The complete parking analysis & preliminary findings memorandum for the winter season is provided in **Appendix E**.

As a summary, the document provides details of the existing parking enforcement and the residential parking permit program practices. The analysis included a parking and curb space inventory and utilization that include Downtown Glenwood Springs with six off-street public parking facilities, and two RFTA Park & Rides that include the 27th Street South Glenwood Station and the West Glenwood Park & Ride.

**Figure 6**, is an excerpt from the parking study that illustrates one of the winter parking utilization maps during a Thursday at 5:00 AM where the line symbology represents the percent occupancy. Key findings that focus on downtown Glenwood Springs from the parking utilization and occupancy analysis for the winter season are provided below:


FIGURE 6 – GWS PARKING UTILIZATION MAP

- On-street parking occupancy is generally highest between 7th Street and 9th Street downtown (except at 5 AM), and to a lesser extend between 10th and 11th Street but varies some depending on the time of day.
- Parking occupancy along Grand Avenue is relatively low, generally less than 30 percent during all time periods.
- The Garfield County and CMC lots were heavily used after 6 PM on Friday, 97 percent and 84 percent full respectively (and less used on Thursday evening).
- The 7th & Colorado lot was full at most time periods that may be in part due to exceptions to the 4-hour time restriction granted to County employees and some downtown residents.
- The Cooper Avenue lot (between 8th Street and 9th Street) was full or nearly full during the day and about 40 percent full at 5 AM.
- The City Garage was most full during the day (at 9 AM and 4 PM), but never exceeded 80 percent capacity. It was less than 20 percent full overnight.
- The public spaces at the 7th Street lot near the confluence were never more than 50 percent occupied.

More details on the key findings, including results regarding the 27th Street South Glenwood Station and West Glenwood Park & Ride, are provided in the **Appendix E**. In addition, short-term and long-term opportunities and recommendations are provided in the memorandum for areas that include parking and curb space management, strategies to reduce demand at the RFTA park & rides, and BRT considerations along with the impact to downtown parking.

## Bicycle and Pedestrian Network

This section provides a summary of existing bicycle and pedestrian conditions in downtown Glenwood Springs and at the two RFTA park & rides in Glenwood Springs. In addition to observations of the study area, a review of previous plans and documents provide context for the existing multimodal conditions in Glenwood Springs.

The bicycle network in Glenwood Springs is largely supported by local and regional shared-use trails, such as the Rio Grande, Midland, and Atkinson Trails. On-street, dedicated bicycle facilities exist on two N-S streets in downtown Glenwood Springs: Blake Avenue from 7th to 23rd Streets, and Pitkin Avenue from 8th to 14th Streets. The 2015 Glenwood Springs Long Range Transportation Plan also cites 4 miles of on-sidewalk bicycle routes; however, sidewalk routes are not ideal for most cyclists and present conflicts between bicyclists and pedestrians. Connections between these facilities and downtown Glenwood Springs or RFTA transit stations are not comfortable for bicyclists, and many previous studies and plans recommend improving bicycle connectivity within downtown and along the shared-use trails. Wayfinding for bicyclists in Glenwood Springs is infrequent.

Pedestrians in Glenwood Springs also rely on the major shared-use trails mentioned above, as well as the sidewalk network. However, many gaps or inadequate conditions exist in the sidewalk network within downtown Glenwood Springs. Sidewalks are present in the downtown core but are lacking along many residential streets. Many previous plans (2015 RFTA Regional Bicycle, Pedestrian, and Transit Access Plan; 2015 Glenwood Springs Long Range Transportation Plan; 2017 6th Street Corridor Master Plan) recommend completing and improving the sidewalk network in Glenwood Springs to provide continuous, wide, and safe walking routes between residential areas, downtown, and transit services.

For both bicyclists and pedestrians, accessing the 27th Street RFTA BRT station is noted as a key problem and deterrent from accessing transit using active transportation modes (biking and walking). Signal timing, long crossing distances, bicycle parking, and lack of comfortable sidewalks leading to the station are all noted as key discouraging factors. Preceding plans have identified several similar recommended improvements to mitigate connectivity and safety issues for bicyclists and pedestrians. The recommended improvements from the 2015 Glenwood Springs Long Range Transportation Plan are shown in **Figure 7**. These maps illustrate the number of gaps that exist for bicyclist and pedestrians to feel comfortable or connected while accessing downtown and transit. A handful of the recommendations have been implemented, but many remain.

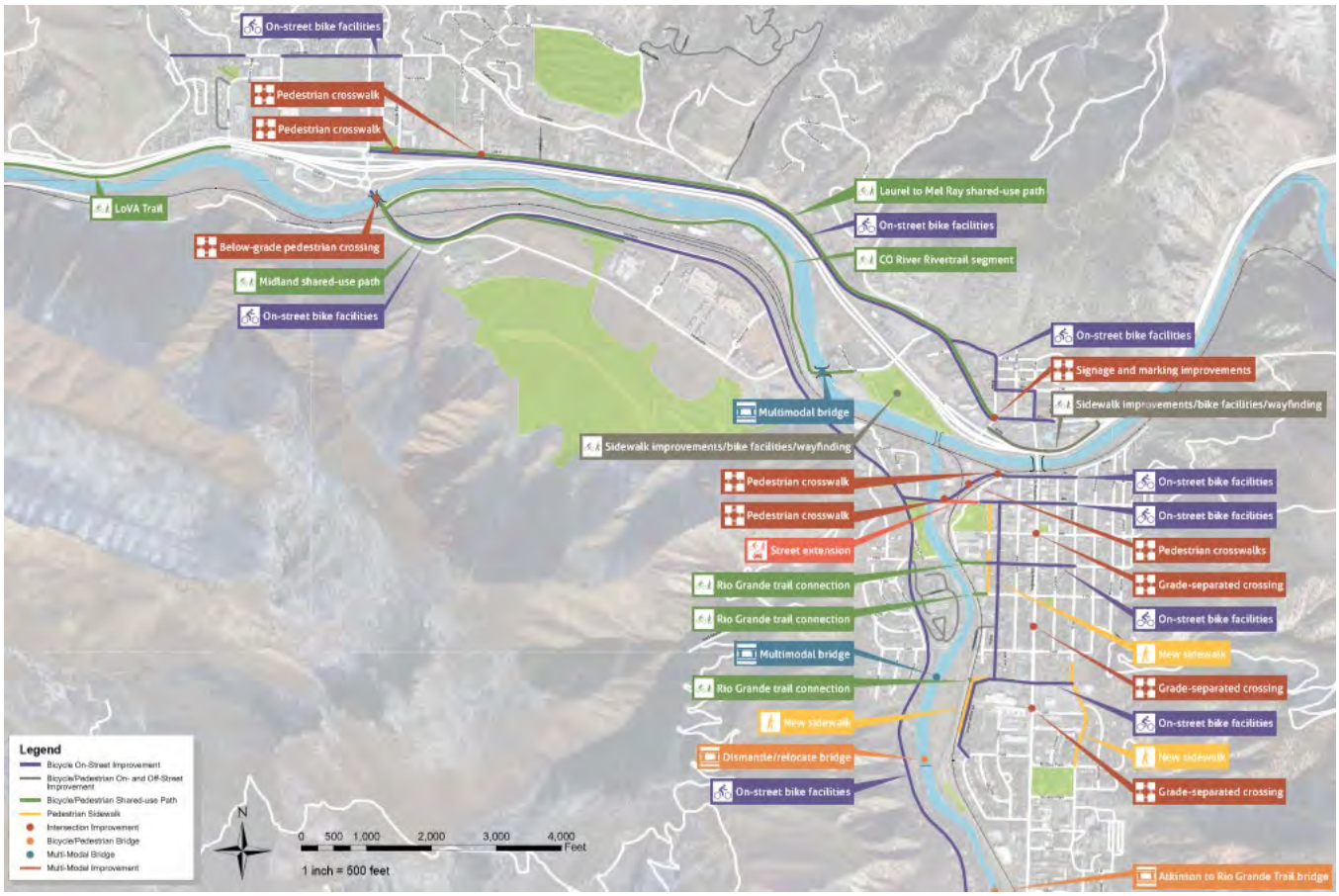



FIGURE 7– GLENWOOD SPRINGS LONG RANGE TRANSPORTATION PLAN RECOMMENDATIONS

## Transit Operations

**Figure 8** below shows the RFTA and Ride Glenwood average stop activity by route. More information about transit operations can be found in the Transit and Multimodal Alternatives Plan for this study in the **Appendix C** and includes existing service demand and needs and anticipated future needs of the community as well as analysis if the existing service is being delivered efficiently and effectively.

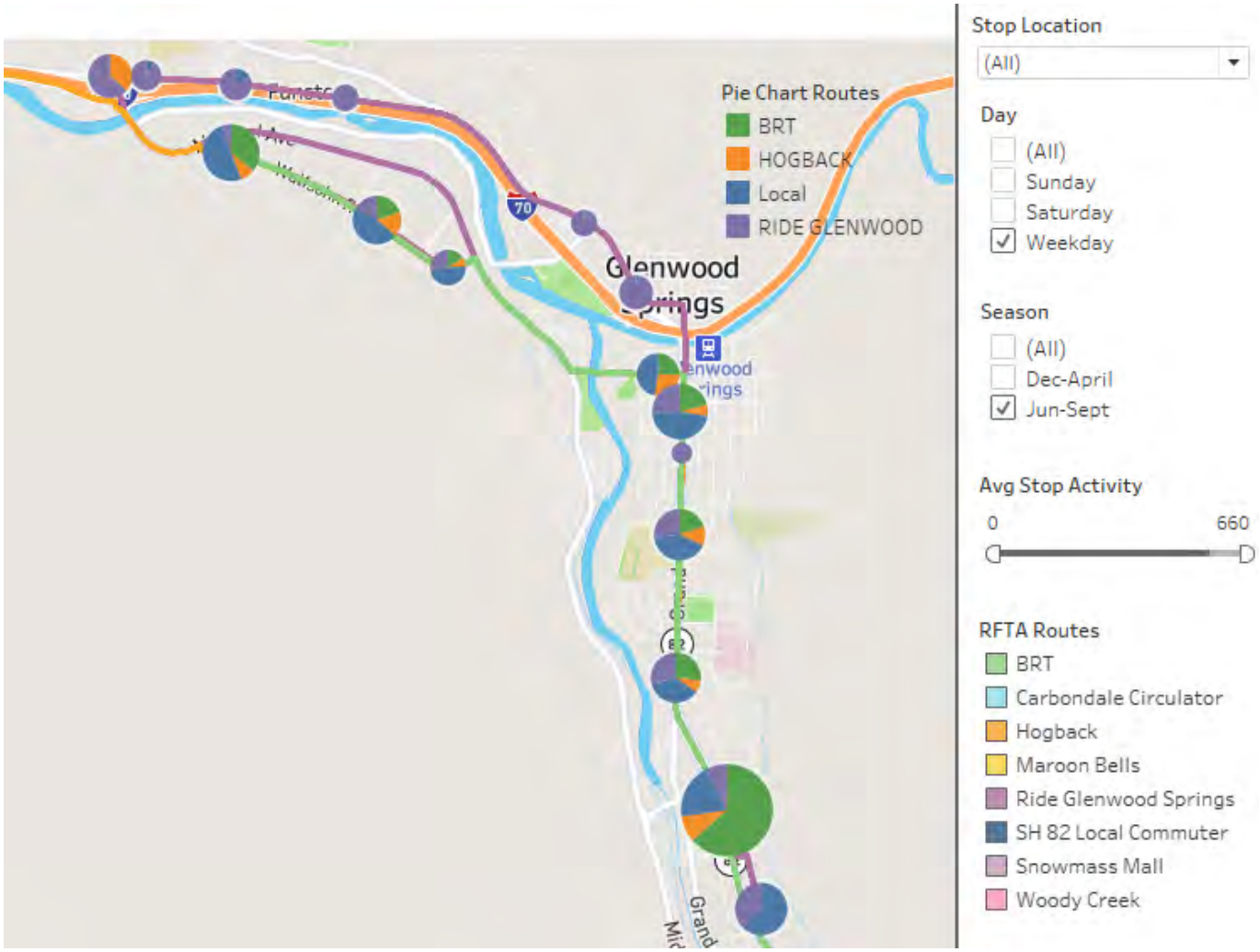



FIGURE 8 – TRANSIT AVERAGE STOP ACTIVITY BY ROUTE

## Traffic Operations

For the SH-82 corridor within the Glenwood Springs study area, the existing traffic operations and performance are referenced from the CDOT 2020 Glenwood Springs Signal Retiming project. The project uses traffic data collected from September 2018. The traffic operations results are based on the proposed summer optimized signal timing that have been recently implemented and indicate that the overall intersection Level-of-Service (LOS) for the SH-82 intersections have adequate capacity (LOS D or better). Level-of-Service definitions that are based on the Highway Capacity Manual are

| | |
|---|---|
| A | **EXCELLENT:** No Vehicle waits longer than one red cycle |
| B | **VERY GOOD:** Drivers begin to feel somewhat restricted |
| C | **GOOD:** Occasional vehicles may have to wait longer than one cycle |
| D | **FAIR:** Occasional vehicles may have to wait longer than one cycle |
| E | **POOR:** May experience vehicles waiting through several signal cycles |
| F | **FAILURE:** Tremendous delays with increasing queue lengths |

FIGURE 9 – LEVEL-OF-SERVICE DEFINITIONS

summarized in **Figure 9**. Both **Figure 10** and **Figure 11** provide a summary of the SH-82 (Grand Avenue) LOS. The westbound and eastbound approach of 8th Street, 14th Street and at 27th Street are anticipated to be operating at LOS D or worse) during the AM peak period and may operate at capacity during the PM peak period. The northbound/southbound approach along SH-82 LOS were observed to be LOS C or better near downtown Glenwood Springs.


FIGURE 10 – SH-82 AM PEAK HOUR LOS


FIGURE 11 – SH-82 PM PEAK HOUR LOS

Six intersections were identified as key intersections that will be further evaluated. These intersections include three SH-82 intersections at 8th Street, 9th Street and 14th Street as shown above in **Figure 10** and **Figure 11**. Note that additional intersections are illustrated to provide additional insight on existing SH 82 conditions. The other three key intersections are along 8th Street and include Midland Avenue, Pitkin Avenue, and Colorado Avenue. Both Pitkin Avenue and Colorado Avenue are currently operates as All-Way Stops. The six intersections will be further analyzed for developed alternatives based on future traffic growth in later sections.

Representative existing traffic volumes for the three intersections along 8th Avenue were referenced from the Glenwood Springs Downtown Vehicular and Pedestrian Circulation Study completed in 2013 due to the inability to collect more recent traffic data as a result of stay-at-home orders. These traffic volumes were projected to represent the existing baseline year and specific movements were adjusted to represent the traffic patterns with the 8th Street extension. The complete methodology is provided in the **Appendix F**.

**Figure 12** and **Figure 13** provide the LOS along 8th Street at the key intersections of Midland Avenue, Pitkin Avenue, and Colorado Avenue during both the AM and PM peak periods, respectively. As illustrated, the eastbound approach at Pitkin Avenue experiences heavy congestion during the AM peak period and the southbound left-turn movement at the Midland Avenue intersection is approaching capacity with over 600 vehicles per hour utilizing that lane. During the PM peak period, the Midland Avenue intersection experiences failing operations primarily due to the heavy WB right-turns and SB left-turns.

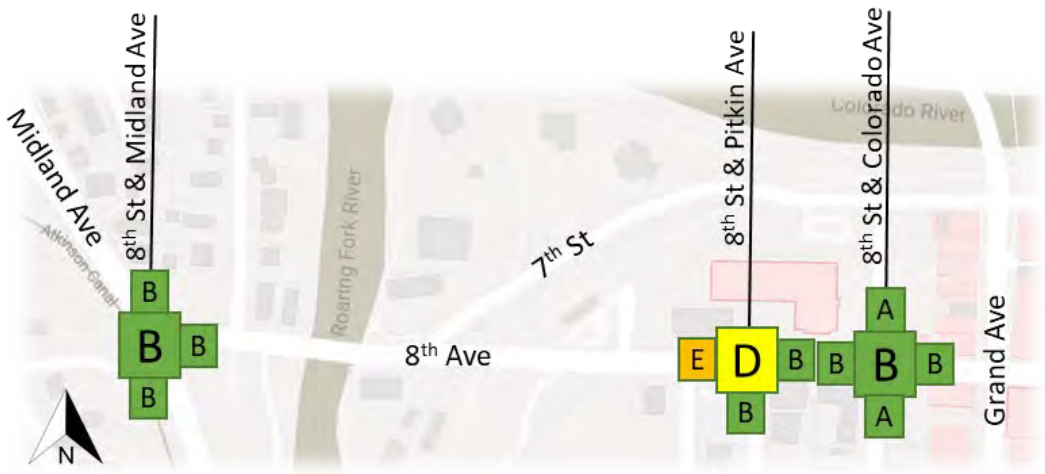



FIGURE 12 – 8TH STREET AM PEAK HOUR LOS

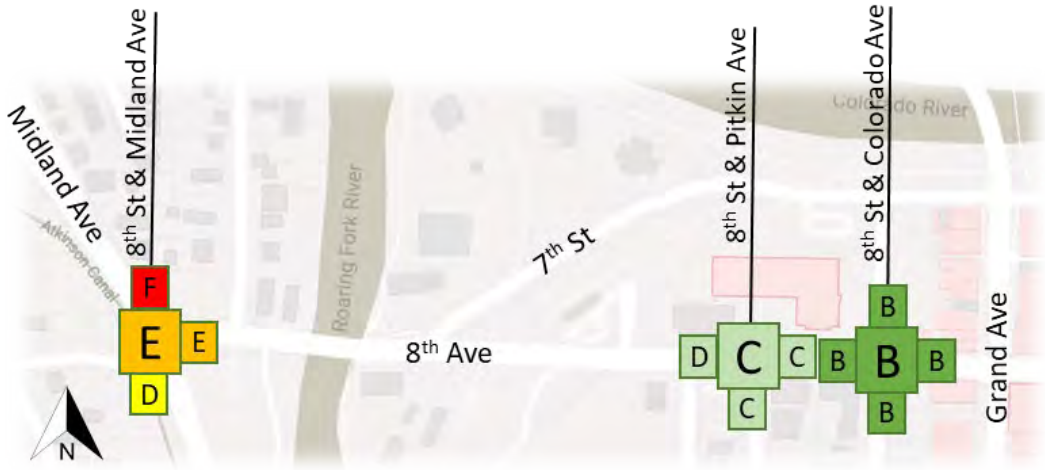



FIGURE 13 – 8TH STREET PM PEAK HOUR LOS

## KEY FINDINGS

- The SH 82 retiming project has improved north/south travel along the corridor through Glenwood Springs with capacity for future growth. However, side-street operations may experience congestion that is currently estimated to experience a LOS E or worse especially during the PM peak period.
- The 8th Avenue & Midland Avenue intersection is expected to be over capacity during the PM peak period.
  - The southbound left-turn movement queues are exceeding the left-turn lane storage length that results in additional delay for southbound through traffic.
  - The westbound right-turn movement experience significant delay due to the heavy traffic volumes despite the movement being yield control.
- The AM peak period directional split towards the eastbound direction results in significant delay at the eastbound approach of 8th Avenue & Pitkin Avenue where it is experience LOS E.

## Safety

### CDOT CRASH ANALYSIS

Crash data was provided by CDOT that summarizes reported incidents along the SH-82 corridor and intersections. A 3-year analysis period was evaluated within the time of June 2016 – June 2019. A total of 545 crashes were reported along SH-82. Each of the SH-82 reported crashes were categorized into separate environment types as shown to on the left.

The summary in **Table 1** provides an overview summary of key SH-82 crash groups and how each group compares to both national and statewide statistics. The crash records for SH-82 indicate that Rear-end, Sideswipe, and Pedestrian/Bicycle related crashes are above the national average.

**TOTAL CRASH SUMMARY (SH-82)**

| | |
|---|---|
| Intersection (*signalized*) | 224 (*41%*) |
| Intersection (*unsignalized*) | 46 (*8%*) |
| Non-intersection | 233 (*43%*) |
| Driveway access | 42 (*8%*) |

| | National[1] | Statewide[2] |
|---|---|---|
| 3 **Fatal** crashes (<1.0% of total crashes) | — | — |
| 96 **Injury** related crashes (18% of total crashes) | ▼ | ▲ |
| **Rear-ends** were the most common (49% of total crashes) | ▲ | N/A |
| **Sideswipes** account for (17% of total crashes[1]) | ▲ | N/A |
| **Angle** crash types at intersections account for (17% of total crashes) | ▼ | N/A |
| 19 crashes were **Pedestrian/Bicycle** related (4% of total crashes) | ▲ | N/A |

▲ Above Average ▼ Below Average — Within Average

TABLE 1 – SH-82 CRASH COMPARISON

**Figure 14** provides an illustration of SH-82 crash "Hot Spots". These five locations along SH-82 were observed to above average intersection related crash occurrences. In addition, 41 total crashes were observed between 11th Avenue to 15th Avenue (MM 0.5 to MM 1.25) which is identified as one of the higher crash segments. More moderate high crash segments include Grand Avenue between 9th Street to 11th Street (36 total crashes) and between 15th Street to Highland Park Drive (37 total crashes. Within those segments, rear-end crash types are the most common which account for 60 percent of the total crashes of the three segments.

[1] 2017 National Highway Traffic Safety Administration Annual Report
[2] 2018 CDOT Crash Summaries by County

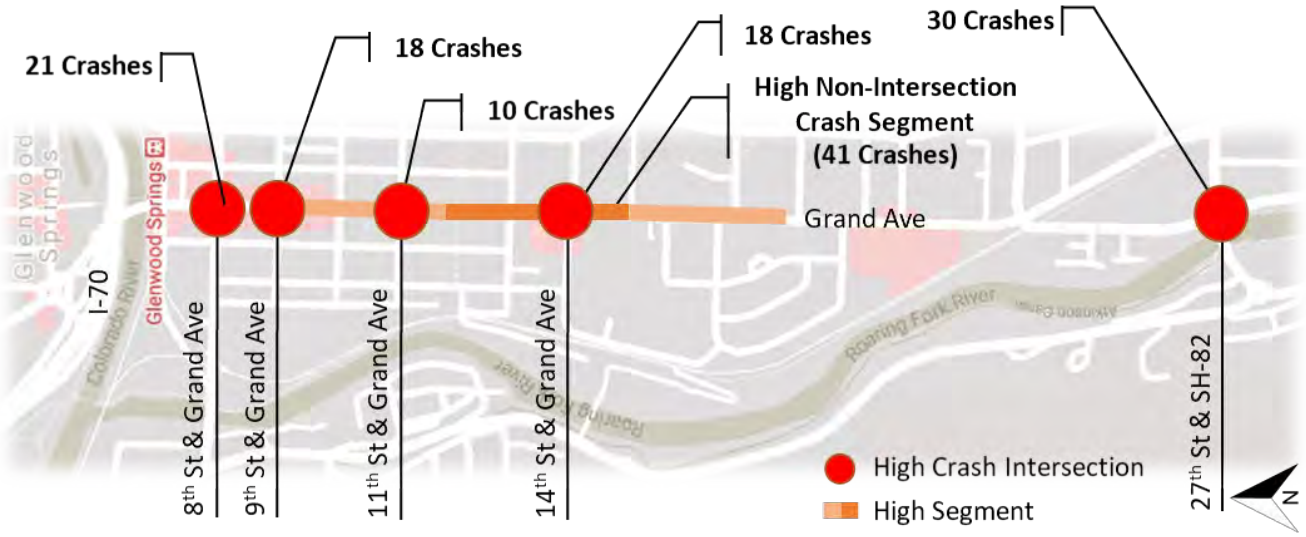



FIGURE 14 – CRASH HOT SPOTS

**Figure 15** summarizes the crash severity percentage for both intersection and non-intersection related crashes. As shown, injury crashes occur more at intersections compared to the non-intersection crashes which is typical for intersection related crashes.

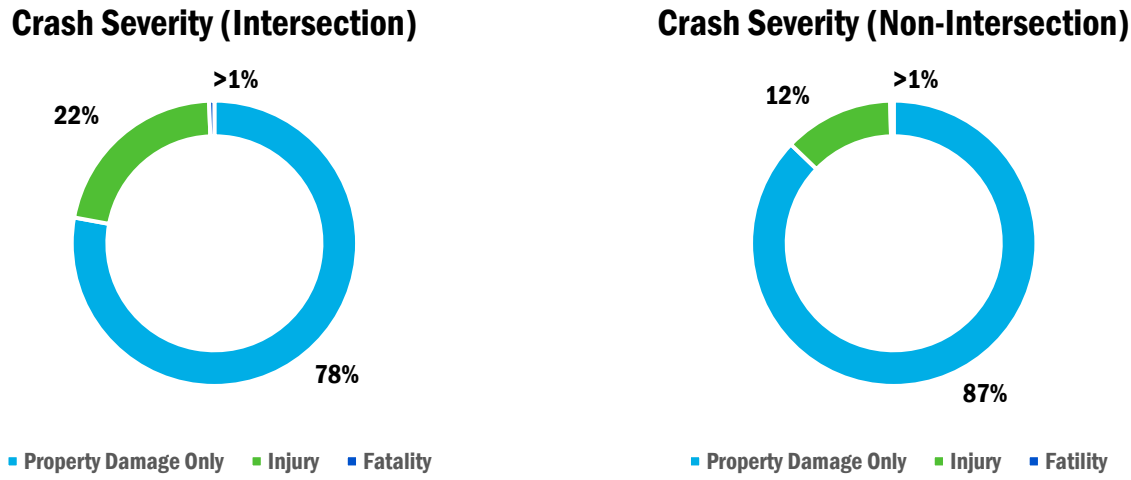



FIGURE 15 – OVERALL CRASH SEVERITY COMPARISON

**Figure 16** provides a comparison of the most common crash type by percentage. Rear-end crashes out the most common crash types for both intersection and non-intersection related crashes. Approach turn (angled) crash types are the second most common crash types at intersections and sideswipes are the second most common crash type along non-intersection segments. It is also important to note that pedestrian and bicycle crashes are more common at intersections.

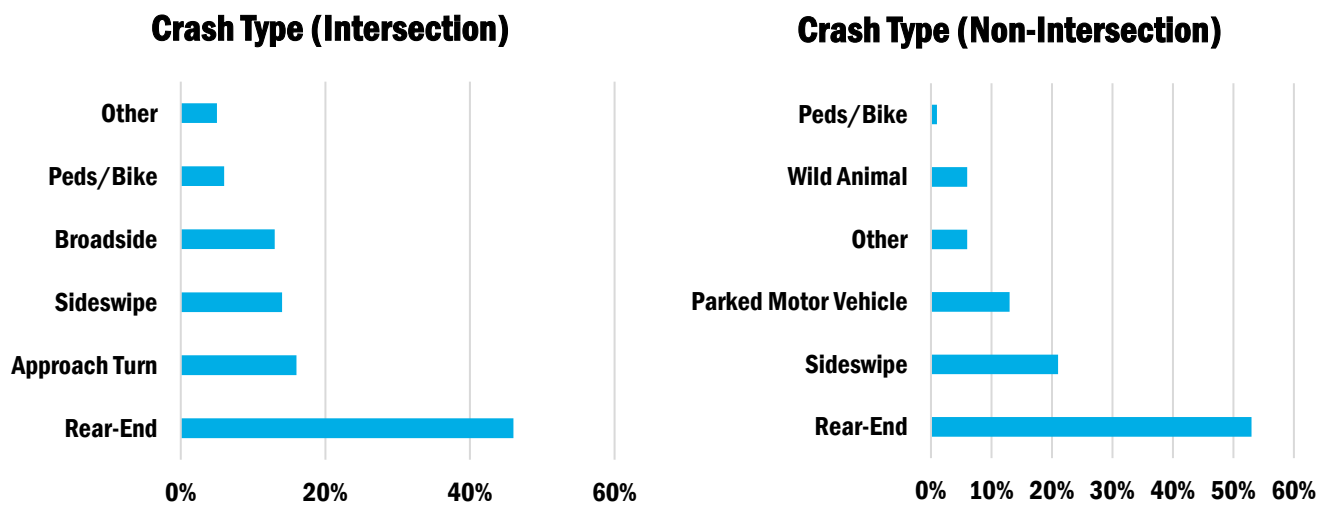



FIGURE 16 – OVERALL CRASH TYPE COMPARISON

## RFTA CRASH ANALYSIS

Additional transit related incident data was provided by RFTA that represents the non-state highway facilities within the Glenwood Springs project limits. The crash records provided by RFTA were classified into various categories that focus on bus related incidents. The categories describe the various incident characteristics as described in the raw crash data. Within the three-year time period, a total of 85 incidents were documented by RFTA. **Table 2** provides a summary of the frequency of each incident classification. The most common crash classifications include other vehicles colliding with the buses, the buses colliding with parked vehicles, and the buses colliding with road-side fixed objects.

| | Total | Percentage |
|---|---|---|
| Passenger Incident | 7 | 8% |
| Parked Vehicle | 13 | 15% |
| Bus-to-Bus Collision | 6 | 7% |
| Bus to Other Vehicle Collision | 9 | 11% |
| Other Vehicle to Bus Collision | 23 | 27% |
| Pedestrian Related | 1 | 1% |
| Fixed Object | 22 | 26% |
| Other | 4 | 5% |

TABLE 2 – RFTA BUS RELATED CRASH SUMMARY

**Figure 17** illustrates the locations where incidents have been more common. As shown, 9th Street between Grand Avenue and Colorado Boulevard experiences the most incidents that include a mixture of Other Vehicle to Bus Collision, collision with parked vehicles and fixed objects. Overall, the bus related incidents are spread out across Glenwood Springs south of I-70.

## KEY FINDINGS

- There is a high frequency of both intersection and segment related rear-end crashes along SH-82 between 11th Street and 15th Street.
    - This may be a result due to the higher access density between 13th Street to 15th Street within the Glenwood Springs High School area and City Market. Many of the access control recommendations from the 2013 Access Control Plan have not been implemented such as closing access points and converting full access to right-in, right-out
    - North of 13th Street, the area is primarily residential with on-street parking. The rear-end crashes can be attributed to driver attentiveness and heavy parking activity along the highway.
- The primary transit related incidents include bus collisions with fixed objects and other vehicles colliding with the bus.
- Many transit related incidents occur along 9th Street, west of SH-82. The bus routes utilize 9th Street to access 8th Street from Colorado Street. 9th Street is generally narrow with on-street parking.

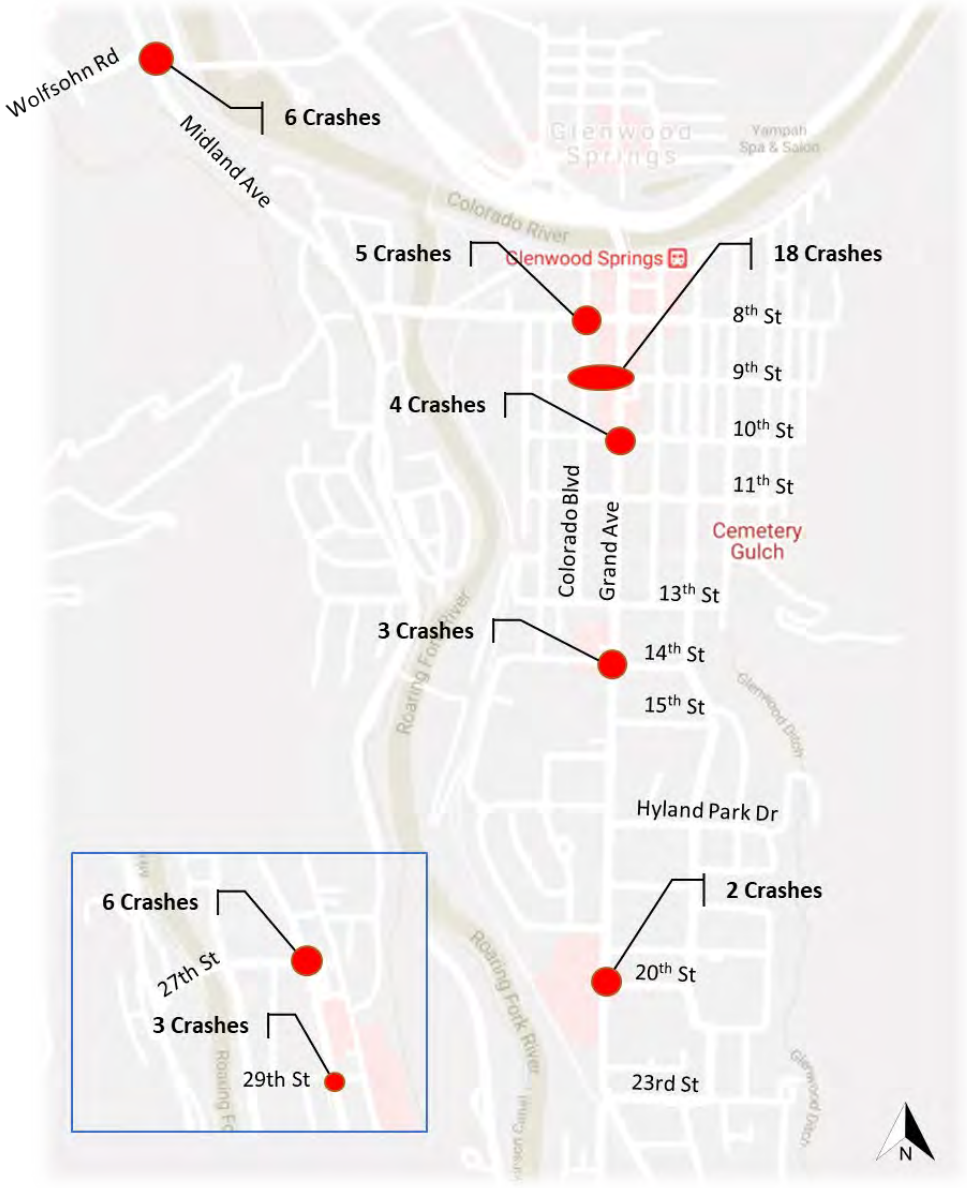



FIGURE 17 – RFTA INCIDENT FREQUENT LOCATIONS

# Existing Conditions Summary

The Existing Conditions section surveyed the various dynamics that influence mobility within Glenwood Springs which includes parking, transit, pedestrian/bicycle activity, safety and vehicular traffic operations. To summarize this section, below are some key conclusions that cover each element:

- Despite previous efforts for improving the active transportation modes, various deterrents still exist that inconvenience pedestrians and bicyclist wanting to access transit or in general, access to other areas in Glenwood Springs. These include pedestrian crossing time due to current signal timing, long intersection crossing distances, lack of bicycle parking and continuous sidewalks.
- The evaluation of parking indicated that many of the garages and off-street parking lots stay full depending on the time of day. Observations showed that on-street parking along Grand Avenue in the winter season is relatively low compared to the parking activity along 7th Street and 9th Street within the downtown area.
- The traffic operations analysis indicates that there is significant side-street delay at the signalized intersections along SH 82 which does suggest a long waiting time for pedestrians/bicyclist wanting to cross SH 82 as well. In addition, 8th Street experiences heavy congestion especially at the signalized intersection at Midland Avenue and at the non-signalized intersections of Pitkin Avenue and Colorado Boulevard.
- The safety evaluation indicated that rear-end crashes are the most frequent crash type along SH 82 and are higher than the national average. Pedestrian/bicycle related crashes along SH 82 were also shown to be higher than the national average. Along 8th Street, crashes related to on-street parking were observed to be the most common contributing factor. There is a high percentage of transit related incidents along 9th Street, just west of SH 82.f

# Existing Plans

There are several recent plans and documents that have been prepared for both RFTA and the City. It is important to understand the recent and past goals, objectives, and efforts from these studies to help develop the framework for future planning.

## RFTA Corridor Investment Study (*May 2003*)

This document discusses the process that compared long-range transportation alternatives for the RFTA corridor, from Glenwood Springs to Aspen, that preceded both the current BRT system along the corridor as well as the Rio Grande Trail. It notes the critical part of solving congestion throughout the Valley being providing transportation choices. The purpose of the Corridor Investment Study (CIS) process was to develop a regional transportation solution that addresses the mobility needs and respects the quality-of-life concerns of the citizens residing within the project corridor. The CIS was a planning tool created by RFTA in consultation with its member jurisdictions, the Colorado Department of Transportation (CDOT), Federal Transit Administration (FTA), and the Federal Highway Administration (FHWA). In addition, the CIS served to provide the local community a comparative analysis of bus and rail technologies with long-range transportation alternatives in the RFTA service area through the year 2025. The study found that overall that projections indicated an anticipated increase in transit demand (10.1 to 11.4 percent increase for the BRT and Rail Alternatives, respectively) and annual boarding (75 percent to 125 percent increase), while vehicle miles traveled (VMT) projections indicated a slight increase.

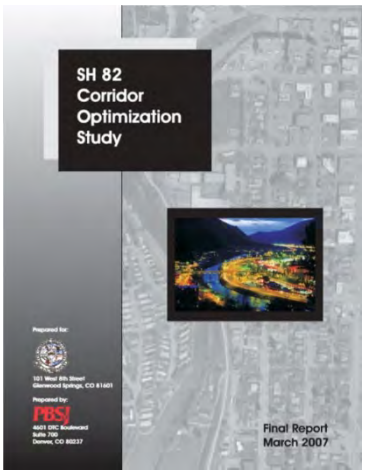
The CIS included a public involvement process that identified public issues and priorities and allowed citizens and local officials participate in resolution, establish project objectives, develop measures for screening alternatives, and assessing the strength of alternatives. Groups involved in the efforts included four Citizen Task Forces (CTFs) organized by geographic region, Regional Citizen Task Force, Rio Grande Trail Task

> **"The small block sizes, street grids, storefronts, and mix of housing and commercial activity, all within close proximity, are legacies of the Valley's railroad era. This historic integration of land use and transportation gave today's residents the pedestrian-friendly communities they cherish and hope to preserve and enhance."**

Force, Policy Committee, RFRHA board, and local elected boards.

The alternatives developed were evaluated using a three-level tiered approach screening which involved a collaborative process with the local communities and stakeholders. The alternatives included, a No Action/Committed Projects Alternative, Bus Rapid Transit (BRT) + Trail which included either a BRT-Bus or BRT using light rail transit (LRT), and a Rail Alternative + Trail were analyzed in detail within the CIS using the tiered approach which included three levels of screening. In addition, each alternative included various Technology, Propulsion, Station Location, and Alignment options. With the identified funding sources summarized in the study, it was found that the BRT-LRT alternative is expected to require the lowest amount of additional federal, state and local funding resources when compared to the BRT-Bus and rail alternative.

## SH 82 Corridor Optimization Study (*March 2007*)



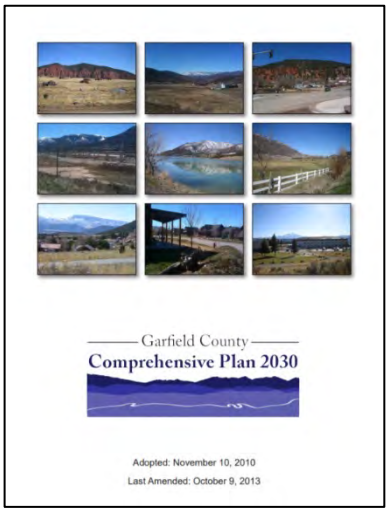

The purpose of the *SH 82 Corridor Optimization Study* (COS) was to identify feasible alternatives for addressing the regional travel and local mobility needs of SH 82 by evaluating environmental concerns, capacity, mobility, safety, cost of improvements, and potential funding options for each of the developed alternatives.

The problem statement for the study was developed with the goal to ensure that SH 82 will serve the current and future north-south mobility needs while balancing the local mobility needs and quality of life of the Glenwood Springs community. A total of 22 alternatives were identified as possible solutions and were evaluated by a set of evaluation criteria that included goals/needs for mobility, the environment, safety, and cost through a cooperative effort with the City, CDOT, and the County.

Alternatives for SH 82 included improvements to the existing alignment, signal timing, limited turns, and additional interchanges. Other alternatives included an additional bridge south of the Glenwood Springs Airport and various alternatives for Midland Avenue. From a multimodal (bike-pedestrian) perspective, three of the alternatives performed best in the evaluation: the East Alignment option is best in terms of local impact to ped/bike, community cohesiveness, and safety; the South Glenwood Bridge is best for local impact to ped/bike, but worst for community cohesiveness and safety; and the Traffic Calming option is nearly best for local impact to ped/bike and community cohesiveness, and rates in the middle for safety.

The next step following this study was the development of an SH 82 Corridor Optimization Plan. No specific alternative was recommended above the others concluding this study.

## 2030 Garfield County Comprehensive Plan (*Amended October 2013*)




The Garfield County Comprehensive Plan projected land use needs to the year 2030 intended to provide a steady, predictable direction over the next 20 years. The plan was adopted in November 2010 but later amended in 2013. Each of the plan elements (such as housing, transportation, etc.) contains five components that include a vision statement, identified primary issues, goals, policies, and strategies and actions.

For transportation specifically, the goals aim to ensure that county roads are constructed and maintained on a safe and fiscally sustainable basis and that public transit services as well as alternative modes are supported when and where feasible. To accomplish these goals, the following strategies and actions are recommended:

1. Assure the interconnectivity of the county roadway system, to provide multiple routes to reduce congestion and provide for emergency access.
2. Focus infrastructure improvements (and road maintenance) in a cost-effective pattern, in areas where growth is appropriate.
3. Create and maintain a map of existing road conditions and ownerships and establish road standards.
4. Adopt a Road master Plan to help guide the Capital Improvement Plan.
5. Convene a work session of regional stakeholders to share information about current plans, projections, issues and potential solutions.

6. Work with RFTA, or other transit entities, to address transit throughout Garfield County and how to connect with Eagle County's ECO-Transit system.
7. Explore mechanisms for the County to address increase traffic from new development.

## City of Glenwood Springs Downtown Parking Study Update (*July 2013*)

The Downtown parking study update provides an assessment of current downtown parking supply and demand conditions, evaluates future parking needs, and recommendations for potential parking management strategies. It largely concluded that parking in downtown was sufficient, though some may need to walk an acceptable distance of 1-2 blocks from a parking space to their destination in town. This study was completed prior to the Grand Avenue bridge improvements. The "acceptable" walking distance of 1-2 blocks, mentioned above, is based on a Level-of-Service (LOS) approach that the study consultants (Walker Parking Consultants) uses. The best rating, LOS A, is a walking distance of up to 400' or 1.4 minutes, and this ranges to LOS D of 1200-1600' or 4.1-5.5 minutes walking. Most parking within downtown can be accessed through this LOS A distance, according to the study.

Public outreach and stakeholder feedback were included as part of the data collection effort. This included surveys, various stakeholder meetings and open houses to gather public feedback. The study does recommend considering alternative options to manage parking demand, including a parking circulator (transit), walking and bike parking options. Bike rack locations are noted in the study, referencing the City's Downtown Public Parking Map (*Figure 2 in Study*).

It is mentioned in the study that "signage, wayfinding, bike parking, and event parking were mentioned frequently" in public comments as issues that impact residents and business owners in downtown.

The study recommends continuing to promote City bike trails and commuter programs to encourage commuting to downtown via alternative modes and utilizing the 25+ bike racks that the City maintains in town. Appendix D of the study notes bicycle parking best practices and cites that adequate bicycle parking, along with pedestrian facilities and amenities, can reduce demand for parking. It is recommended that Glenwood Springs consider supporting a full-service bike station or similar amenities in combination with another type of project, such as a transit station or public parking garage. Bike Share is briefly mentioned in the study, although it does not make any recommendations as to whether it would be successful in Glenwood Springs.

Improved wayfinding – for vehicles, bikes, and pedestrians – is discussed to aid in navigating to and from destinations and parking areas. Many stakeholders for the project mentioned a goal for the downtown area to be more pedestrian friendly, even at the expense of some parking.

## 2014 Local and Regional Travel Patterns Study (*September 2015*)

The purpose of the Regional Travel Patterns Study was to provide local jurisdictions and planning agencies with information on travel demand with the study area that includes the Roaring Fork and Colorado River Valleys between Aspen and Parachute. The study included two rounds of surveys in 2014, a winter (targeted employees and employers) and summer survey (residents). The survey highlights topics such as where people live and work, mode of travel, employer policies, walking and biking transit use, and demographic information.

Some key takeaways for multi-modal behavior: Winter commuting by bus is about 35% (2014) in the Roaring Fork Valley.

The study revealed a 10% mode shift from driving to walking and biking between winter and summer months, i.e. more people walk or bike in the summer months. The summer active mode share was more than double the winter mode share: 17% (regionally) walking and biking in the summer, compared to 7% in the winter months. Glenwood Springs, specifically,

had a 20% summer active mode share and 15% winter active mode share in 2014. The 7% who bike commuted in the winter months in Glenwood Springs was the highest in the region.

About 37% of workers (2014) in the study commute five miles or less to work. **This presents an opportunity for more mode shift to walking and biking.**

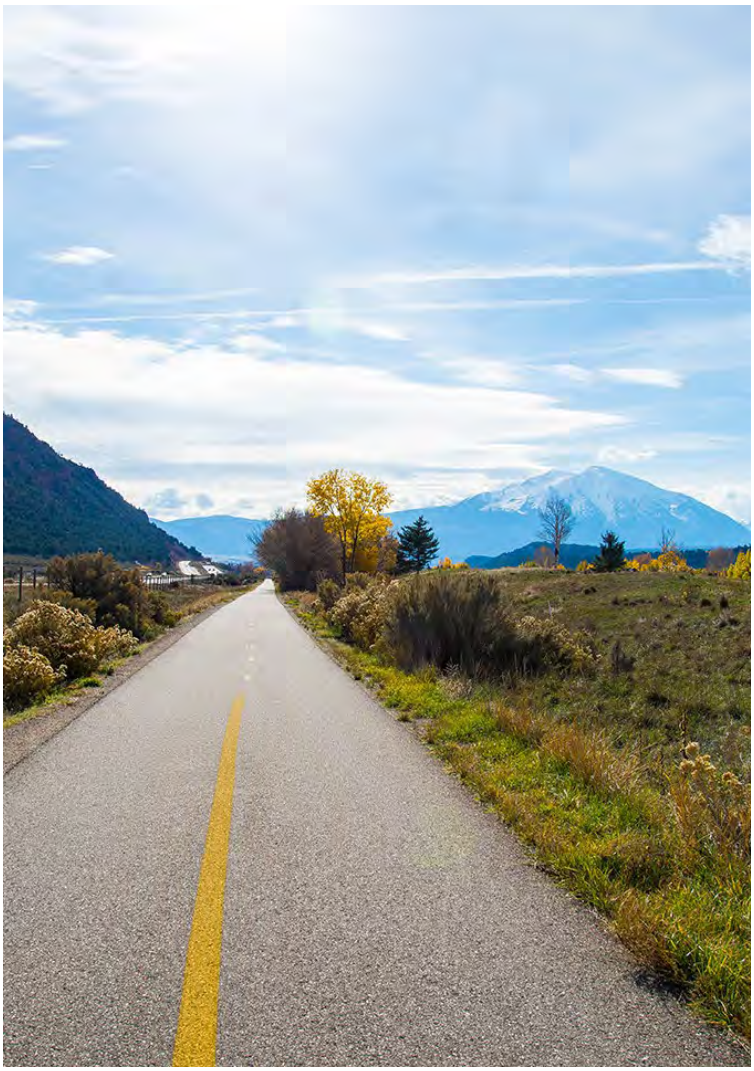
In 2014, the average commute distance for Glenwood Springs residents was 13 miles, down from 15 in 2004. The regional average distance from a resident's home to the nearest RFTA bus stop was 1.7 miles, with 43% of residents living within 5 blocks of a bus stop and 34% living more than a mile from the nearest stop. In Glenwood Springs, 47% of surveyed residents lived within 5 blocks of a bus stop, and 31% lived more than one mile from a stop.

- **Glenwood Springs, along with Rifle, Aspen, Carbondale and Snowmass, has the highest percentage of commuters walking or biking to work.**
- **37% of workers in the study commute 5 miles or less.**
- **47% of surveyed Glenwood Springs residents live within 5 blocks of a bus stop with an additional 31% more than one mile from a stop.**

Once the decision to take the bus has been made, more than half of Garfield County residents walked or biked to the bus (56% winter, 55% summer). After arriving at their final bus stop in Garfield County, the majority of commuters walk to work (90% winter, 81% summer), and some use a personal bike for the "last mile" to work (7% winter, 8% summer). The rest of the commuters drive, both getting to the bus and then getting to work.

The percent of regional employers offering non-driving commute incentives in 2014 was 29%, which is the same as 2004. However, more of these incentives are for biking in particular. 45% of employers reported that showers were available for active commuters, and 52% reported that bike parking was available.

Recommendations following the study include focusing on local connectivity, which will increase the percentage of local trips made by walking and biking, including first- and last-mile connections to transit.



## Glenwood Springs Comprehensive Plan (*March 2011, revised 2014*)

The Glenwood Springs Comprehensive Plan serves as a guide for making land use decisions that are based on the community's values and vision for the future. The plan update is based on the vision, and other concepts proposed in previous plans that have been confirmed by the public and decision makers. The plan outlines community goals for transportation and mobility that include the following:

1. Maintain Glenwood Springs role as a regional center
2. Preserve the small-town character and maintain the livability
3. Preserve and increase the vibrancy and commercial success of the Downtown
4. Promote sustainable economic diversity
5. Address transportation needs and provide multiple convenient travel choices
6. Preserve access to natural areas and the Colorado and Roaring Fork rivers.

In terms of transportation and mobility, the plan provides a vision that supports regional travel needs with a balanced multi-modal transportation system. Key objectives for transportation and mobility included maximizing the effective traffic movement on Grand Avenue to the extent that it is consistent with maintaining pedestrian friendliness, increase the connectivity of local streets, trails and walkways to provide multiple routes for circulation through town, continue to assess and plan for an alternative alignment of State highway SH-82, and provide convenient alternatives to automobile circulation within the city limits for local residents and visitors.

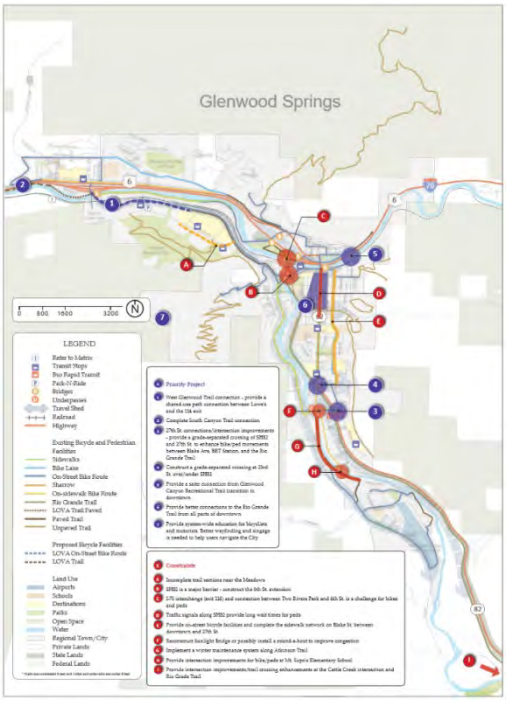
The plan recommends strategies and actions to promote transportation and mobility which includes: Continue planning for a relocated route for SH-82; Improve interconnectivity of the road network to provide alternative routes through and around town; Encourage reduction of single-occupant vehicles and encourage alternate travel modes through land use planning and community design; Strengthen transit and plan for transit hubs; Expand and connect the trail system and other walking and bicycle routes; Create complete streets to encourage alternative modes of travel; Work with CDOT on the replacement of the Grand Avenue Bridge.

SH 82 Relocation Alternative

## RFTA Regional Bicycle, Pedestrian and Transit Access Plan (*July 2014*)

The existing conditions identified in the RFTA Regional Bicycle, Pedestrian, and Transit Access Plan state that the Roaring Fork Valley's regional facilities generally offer convenient and safe connections between communities and destinations, but admits that existing bicycle and pedestrian access to RFTA BRT stations is variable and that many stations rely on vehicle access.

In Glenwood Springs, seven priority projects and nine constraints were identified to improve bicycle, pedestrian, and transit, 8 of which relate to the extents of the Grand Avenue Alternatives Analysis project:




### PRIORITY PROJECTS

1. Improve SH-82 & 27th St intersection to enhance bicycle and pedestrian connectivity between Blake Ave, Rio Grande Trail, and RFTA BRT station – **High Priority**
2. Grade-separated crossing at 23rd St over/under SH-82 – **Medium Priority**
3. Better connections from Rio Grande Trail to downtown – **Medium Priority**
4. System-wide education for cyclists and motorists. Better wayfinding and signage to navigate the city – **Medium Priority**

**CONSTRAINTS**

1. SH-82 is a major barrier
2. I-70 interchange and connection between Two Rivers Park and 6th St is a challenge for bikes and peds
3. Traffic signals along SH-82 provide long wait times for bikes and peds
4. Incomplete on-street bicycle and sidewalk networks between downtown and 27th St

Additionally, public engagement identified the following as top factors that discourage walking and biking: dangerous crossings, disconnected pathways, missing or narrow sidewalks, lack of bicycle parking, system connectivity (lacking), high traffic volumes, lack of dedicated bicycle facilities.

## Glenwood Springs Long Range Transportation Plan 2015-2035

The Glenwood Springs Long Range Transportation Plan (LRTP) builds upon the Glenwood Springs' 2003 Long Range Transportation Plan. The vision of the LRTP is to create a multi-modal transportation system that safely and efficiently moves people and goods, enhances the quality of life, promotes economic vitality, and exemplifies the historic community character of Glenwood Springs. Based on existing conditions and input from the community, this plan establishes objectives for Glenwood Springs to focus on and prioritized recommendations to develop a complete multi-modal transportation network. Every project outlined in the plan considered each of the following goals:

- Connectivity
- Safety
- Accessibility
- Convenience
- Sustainability
- Accountability
- Livability

The plan acknowledges that while the City has great regional trails that are generally safe and convenient, there are on-street network gaps (for bicycles and pedestrians) and multi-use conflict zones that need to be addressed.

The City currently (2015) has 2.5 miles of on-street bike lanes, 13 miles of bike routes, 4 miles of on-sidewalk bike routes, 7.5 miles of paved and 10 miles of unpaved trails. Most of these bike routes are not designated with wayfinding signage or route information.

The City's shared-use paths allow local and regional travel but have limited access points to downtown and neighborhoods.

Sidewalks are present in downtown but are lacking in residential areas and vary in width and condition.

8th Street & Grand Avenue, 9th Street and Grand Avenue, and 7th Street & Cooper Avenue reported the largest pedestrian volumes (2015).

The Plan recommends a number of bicycle and pedestrian infrastructure projects, including the following that relate to the extents of the Grand Avenue Alternatives Analysis project:

- On-street bicycle facilities on 6th, 7th, 8th, and 10th Streets
- Rio Grande Trail connection at 10th, 11th, 14th Streets
- SH-82 shared-use path to commercial areas

## Glenwood Springs Confluence Area Redevelopment Plan (*2017*)

The Confluence Redevelopment Plan provides an implementation framework with strategies for moving redevelopment efforts forward. The Confluence area is located adjacent to Glenwood's historic downtown and sits a few blocks west of Grand Avenue (SH-82). A strong emphasis was put forth on the community engagement process that included techniques for crafting a shared vision, goals, design solutions, and implementation steps. To meet the community goals, a placemaking framework was used that consists of four key strategies that include (1) Improve Connectivity. (2) Redevelop Vogelaar Park, (3) Redevelop the Riverfront, and (4) Redevelop the 7th Street Corridor.


A strong emphasis on building partnerships among stakeholders was included in the community engagement process. This included techniques such as a goal-setting workshop, urban design charrette, community feedback, and the establishment of a Project Advisory Team (PAT).

The success of the Confluence relies on creating safe, multi-modal connections which notably, the redevelopment of the 7th Street corridor recommends the exploration of integration of a transit center that will require further study and discussion between the city, Garfield County and RFTA. In addition, further study to explore integration of shared parking of the off-street parking lots along 7th street is recommended. The plan outlines recommended key next steps that fall within each of the four key strategies.

## 6th Street Corridor Master Plan (*June 2017*)

The 6th Street Corridor Master Plan serves as a blueprint for both public and private investment by outlining both a vision and action plan for the corridor. The plan was envisioned to be consulted as a way to prioritize public investment, as a tool to evaluate future development proposals, and for landowners contemplating new development or redevelopment to ensure that development concepts are in-sync with the vision and goals of this plan. The goals set by the plan include:

1. 6th Street should serve as an extension of Downtown
2. Enhance the identity of 6th Street
3. Improve connectivity
4. Create nodes of activity with a mixture of new uses
5. Beautify the edges; Engage the river.

Specific mobility goals were also developed to promote Glenwood Springs as an outdoor recreation destination. These goals include facilitate walking and biking as viable transportation options by implementing comfortable and easy-to-use facilities; connect the major activity centers within GWS to one another; connect the two major regional trails – Glenwood Canyon Trail and the Rio Grande Trail; provide better circulation within the study area by breaking up the mega-blocks along West 6th Street with pathways, streets, or private drives; supplement walking, biking and driving with an efficient transit system; and support redevelopment by implementing a public parking structure and other parking mechanisms.

A master list of recommended projects was provided for implementation in the order of their priority which includes Short-Term Projects (0-5 years), Mid-Term Projects (5-10 years), and Long-term Projects (10+ years). The plan identifies a key next step that recommends for a 6th Street Corridor Task Force be organized to ensure transparency and inclusion.

Specific multi-modal improvements to the existing conditions in the 6th Street corridor include:

- Continuous, wide, and buffered sidewalks on both sides of the street in the Village Core
- Enhanced crosswalks
- Two-way protected bike lane from Olive to Laurel – this has been installed since the plan was produced

## Ride Glenwood Springs Transit Operations Plan (*May 2018*)

This plan is the City of Glenwood Spring's five-year planning, service, and implementation blueprint for the City's Ride Glenwood Springs transit service. The primary goal of the plan was to update the City's most recent 2010 Five-Year Transit Operations Plan to better respond to existing conditions and possible changes to travel patterns following the completion of the new Grand Avenue Bridge. The objective of the plan was identified to streamline RGS operations and promote full integration into and synchronization with regional Roaring Fork Transportation Authority (RFTA) services.

Outreach efforts were included for this plan that involved meetings with the transportation commission, Key Business Leaders, RFTA operations staff (including RGS drivers), and the general public. Gain feedback on the existing service including thoughts and perceptions on operational challenges and opportunities for enhancements. A community survey about the service indicated that the top three modes of transportation utilized in Glenwood Springs are private vehicles, walking, and biking. When public transit is used within Glenwood Springs, it is primarily for social and/or recreational purposes. Top reasons that people do not use Ride Glenwood Springs include proximity to desired destinations, not knowing which bus to take, duration of travel time, or preferring alternative modes (car, walk, bike).

Transit improvements to be considered, related to multi-modal activity, include installing more shelters or benches, bike racks on RGS buses, and bike parking at bus stops.

Planned improvements include a preferred phased approach for the City to advance a restructuring of RGS transit services and provide enhanced mobility for residents and visitors. Phase 1 includes working with RFTA to address fare integration and logistical issues relating to realigning local valley bus via North Glenwood Springs. Phase 2 includes realigning local valley bus via North Glenwood and City-Wide Ride-Hailing services.

## RFTA Destination 2040

The RFTA Destination 2040 provides a plan that addresses the region's current and future mobility needs. This plan comes with the expectations that population, employment growth and housing development in the region will continue to increase over the next 20 years. With this, RFTA foresees a need to increase multi-modal transportation options to help the region address expected traffic demand and congestion increases and implement new technology for traffic management and electric buses to meet the community's environmental goals.

Proposed improvements identified in the plan fall within the categories of improved mobility, environment, sustainability, and safety that utilize funds from a 2.65 million levy ballot measure that was passed in 2018. In order to establish a financial plan for the developed multi-modal and transit service alternatives and projects, a four-stage process was completed. The first stage of the process included defining the vision which included assessing plans, inventory of existing assets, and communicating with residents. The second stage included determining the future needs by analyzing future land use and transit ridership. The options were analyzed in the third stage with a financial plan developed during the fourth stage.

## "Glenwood: Moving Forward Together" Project – U.S. EPA Brownfields Area-Wide Plan (*February 2019*)

The Brownfields Area-Wide Plan (AWP) advances recent planning efforts to address long-term redevelopment planning needs of the defined area that includes three catalyst brownfields properties. The grant was awarded to the City of Glenwood Springs in partnership with the Downtown Development Authority (DDA). The plan advances initiatives that integrate land use, transportation, and economic development elements to create a comprehensive urban redevelopment strategy. The AWP serves as a guide to decision-makers in the redevelopment of the study area.

The guiding principles for reuse were defined through the community engagement process in addition to utilizing the goals from the 2017 Confluence Redevelopment Plan. The guiding principles included the development overall design, building type, scale, form, and massing and public and open spaces.

Three site reuse plan alternatives were developed (Alternative A-C). Each alternative consisted of unique key parameters such as RFTA ROW, structured parking, and street pattern/vehicular circulation as examples. Each of the plan alternatives consider opportunities to increase transit service, facilities, and ridership. In addition, specific transportation improvements were explored for the critical connector streets and intersections within the study area as well as connectivity enhancement of the existing Rio Grande Trail.


# Appendix B – Public Outreach Summary Report


move
MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY

# PUBLIC OUTREACH SUMMARY REPORT

Revised: May 2021

Provided by: Parsons + DHM Design

# Contents



# Introduction

## Public Outreach Summary Report Introduction

This document has been developed to summarize the public engagement process for the Multimodal Options for a Vibrant Economy project. It is intended to be a ready reference for the process as well as the results from the public outreach. This document is intended as a companion to the MOVE Final Report. The results of the outreach were synthesized into the evaluations and recommendations provided in the Final Report.

The outreach summary outlines the need for public engagement in the study process as well as the methods of outreach.

## Project Introduction

In 2019, the Roaring Fork Transportation Authority (RFTA) and the City of Glenwood Springs (The City) initiated a study to develop a long-term vision and program for transportation in and through the travel corridors of SH-82 (Grande Ave.), SH-6 (West Glenwood), I-70 and the RFTA Rio Grande Railroad Corridor. Focus was placed on the transportation, land use, environmental, economic and social needs of the City and the region.

The Multimodal Options for a Vibrant Economy (MOVE) study investigated various aspects of mobility for the City, including but not limited to transit, parking, and internal circulation.

## Vision

A community with safe, multimodal, and efficient connection options that makes Glenwood Springs a city of great vitality and quality of life.

## Purpose

To optimize the efficiency and utility of the transportation system within and through Glenwood Springs by developing, evaluating, and selecting transportation strategies and opportunities that align with the City's goals for mobility, land use, economic vitality, economic sustainability and quality of life.

## Project Goals

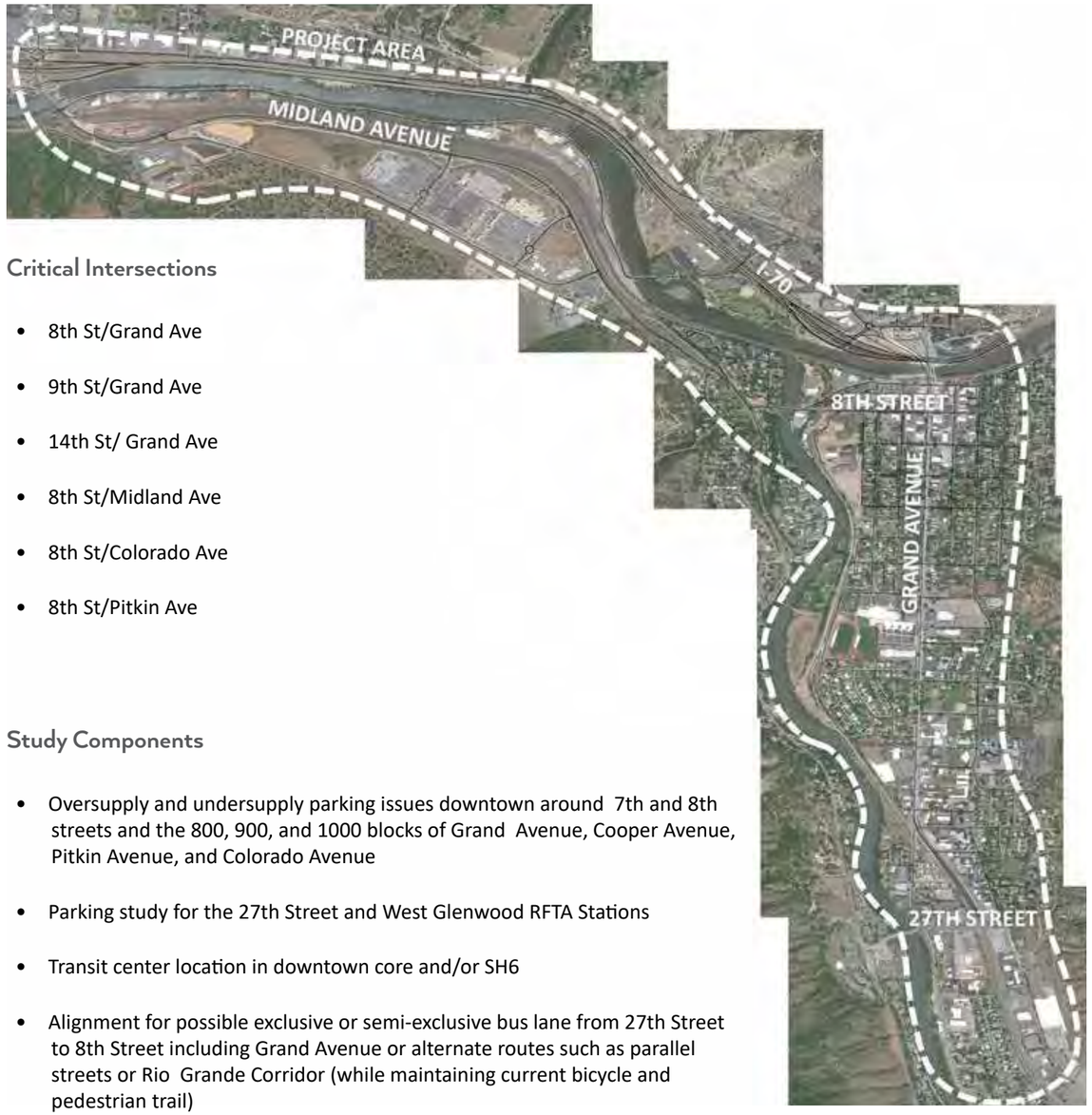
The project goals identified in the RFP included:

- Ensure mobility and accessibility for residents, visitors and workers of all ages and abilities;
- Improve safety for all modes of travel;
- Create a balanced, safe and affordable system for transit, autos, bikes and pedestrians;
- Identify SH82 optimization strategies for local and regional transit;
- Identify vehicle parking needs, parking management optimization plans, and the optimal scope and location for future parking facilities;
- Identify the optimal location(s) for regional and local transit stations;
- Evaluate the extension of BRT or other mass transit solutions to downtown Glenwood Springs and transit connections to the I-70 corridor for future potential BRT;
- Evaluate future changes to the local transit system, based on projected land use, population, and economic development; and
- Maximize the operational safety and efficiency of key intersections in the City's downtown core.

# Study Area

## Introduction

The study area focused on the travel corridors of SH-82 (Grande Ave.), SH-6 (West Glenwood), I-70 and the RFTA Rio Grande Railroad Corridor.




## Critical Intersections

- 8th St/Grand Ave
- 9th St/Grand Ave
- 14th St/ Grand Ave
- 8th St/Midland Ave
- 8th St/Colorado Ave
- 8th St/Pitkin Ave

## Study Components

- Oversupply and undersupply parking issues downtown around 7th and 8th streets and the 800, 900, and 1000 blocks of Grand Avenue, Cooper Avenue, Pitkin Avenue, and Colorado Avenue
- Parking study for the 27th Street and West Glenwood RFTA Stations
- Transit center location in downtown core and/or SH6
- Alignment for possible exclusive or semi-exclusive bus lane from 27th Street to 8th Street including Grand Avenue or alternate routes such as parallel streets or Rio Grande Corridor (while maintaining current bicycle and pedestrian trail)

# Outreach

## Strategic Purpose of Outreach

The project RFP provides the purpose of the outreach and engagement plan:

*The Public Involvement Plan is intended to be the framework to engage stakeholders throughout the process, to work in a cohesive fashion with the consultant and the project sponsor, and to complete all study tasks and deliverables, as appropriate. The goal of the public involvement process will be to help the City and RFTA narrow the range of possible alternatives to those that meet the community's needs and desires.*

Furthermore, transportation within and through the City, and parking in the downtown core are topics of keen public interest. Developing awareness of the project, creating a broad variety of opportunities to engage with the project, providing feedback, and seeing the responses to their input was a critical component of the success of the project.

## Key Outreach Audiences

There were two key audiences for the outreach process: project stakeholders and the public-at-large. The project stakeholders were directly identified and invited to participate in project progress meetings as a 'focus group.' Engagement of the public-at-large largely relied on successfully building awareness through advertising, social media, and targeted email newsletters; an interactive web site; and live webinars. In March of 2020, the original plan was modified to shift to a digital public outreach process. The two outreach series were modified to reflect the policy and public health concerns related the spread of the Covid-19 virus.

## Stakeholders

Since the use of the term 'stakeholder' can be misleading, it was important to define the term clearly. The stakeholder group was comprised of a variety of local, regional, and state entities/agencies; this group included the project sponsors and representation of local elected/appointed boards.

For this project the broader list of stakeholders was broken into three distinct groups: a Technical Advisory Committee, a Focus Group, and Decision Makers.

The *Technical Advisory Committee* included representatives from RFTA, City staff, CDOT, Garfield County, FTA, and FHWA. This group met multiple times over the course of the project to provide support and technical review of the visioning, planning studies, alternatives analysis/screening, and recommendations.

The Focus Group included invited members from local agencies, organizations, businesses, and transportation advocates. This group met during the visioning process and met again as the various alternatives were evaluated and bundled.

The *Decision Makers*, RFTA and City Council was directly involved throughout the process via staff involvement at all levels; additionally project status updates were provided to the RFTA Board and City Council during the visioning process and during the alternatives selection.

## Public-at-Large

For the purposes of this project, the public was defined as residents of Glenwood Springs and individuals employed in the same location, commuters traveling through the project area via any mode of transportation and visitors. Connecting with a broad cross-section of the public was important to: understand the user experience, identify key issues and challenges of transportation, identify parking in the project area, seek out potential solutions, and test the various alternatives with community needs and desires.

Due to the outbreak of Covid-19, the public outreach became web-based. Various digital and interactive elements were created as a way to engage with community members during a pandemic. The website, rftaglenwoodspringsmove.com, became home to everything related to public outreach.

# Calendar and Timeline

Introduction:

The MOVE study began at the end of 2019 with the formation of the team and the project kick off meeting. The process for this study included various meetings with Stakeholders, the Technical Advisory Committee and the public. In May of 2021, the MOVE team provided the Final Report for the project.

## Winter 2019:

- Team was selected.
- Project kick off.
- Base information gathered.

## Spring 2020:

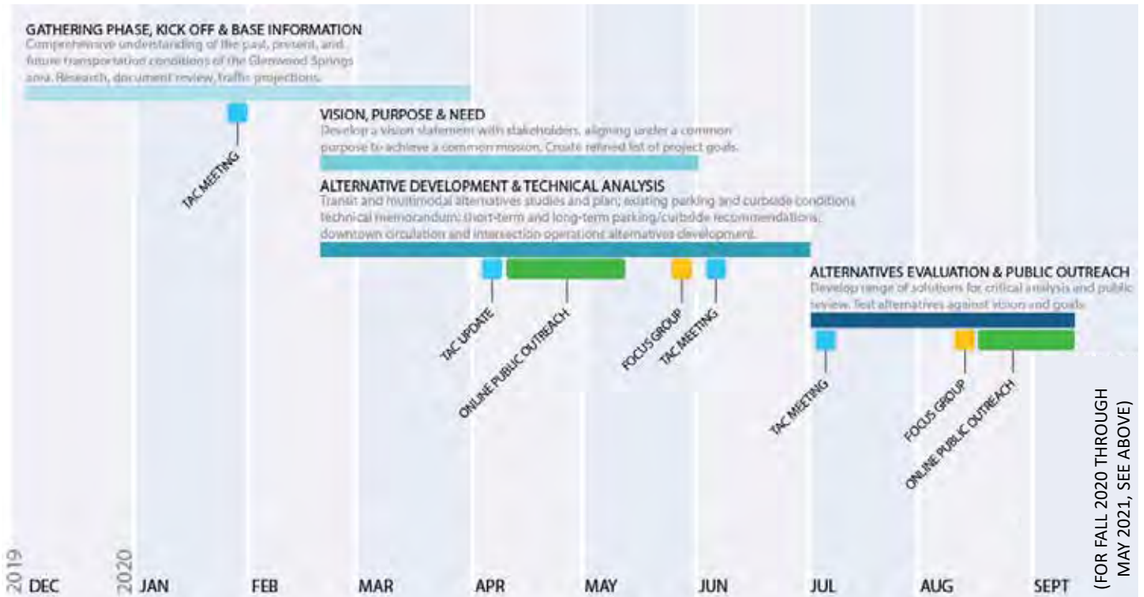
- Vision statement was developed.
- List of project goals was refined.
- Online public outreach 1 began.

## Summer 2020:

- Range of solutions.
- Tested possible solutions against visions and goals.
- New phase of online public outreach (2)

## Fall 2020 through May 2021:

- Incorporation of stakeholder and community feedback.
- Design team provides documentation for 2 preferred BRT alignment alternatives.
- Design team provides specific multimodal recommendations.



# Public Outreach 1

Introduction

Outreach 1 was originally intended to be a public in-person open house on March 16th 2020. Significant effort went into planning and advertising the event. Due to the spread of Covid-19, the City and RFTA decided to cancel the event and create a digital outreach effort later in the spring. The MOVE team created an entirely digital, interactive experience for the public to contribute their opinions on the future of transportation for Glenwood Springs. Digital advertising directed the public to learn about the project and acitvely participate.

## April 10, 2020 - May 10, 2020

Dates of Outreach I

**Participation:**

31
Days of Active Outreach

58
Total Number of Comments (50 Interactive Map Comments + 8 Website Comments)

110
Survey Responses

**Advertising:**

58
Total Radio Spots

31
Total Days Digital Newspaper Advertisements Ran (100,000 Impressions + 1 Day Large Banner)

18
Total Social Media Posts (Includes Roaring Fork Swap Posts and Project Updates)

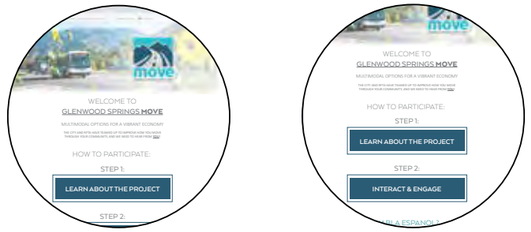
4
Total Community Briefs and PSA's Placed

2
Total Email Blasts

1
Total Number of Press Releases

## Project Website

With the spread of Covid-19 limiting face-to-face public outreach events, the development of a project website was deemed critical to facilitate valuable public feedback. An important component of the website was the interactive map and survey. In addition to the survey, the website served as a way to learn about the project and as an archive for project documentation.





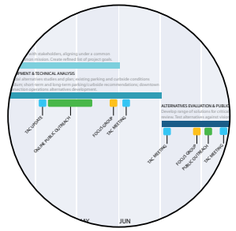


**Homepage:** The homepage welcomed the user and outlined 2 steps to participate. Step 1: Learn About the Project. Step 2: Interact and Engage

**Step 1: Learn About the Project**


**Project Intro Page:** a 7-minute project introductory video oriented users to the project. Key points were outlined below

**FAQs and Project Updates:** a list of frequently asked questions further introduced users to the project. Short videos with project updates were recorded and uploaded to the site to maintain engagement with the public through the first phase of outreach



**Project Schedule:** a graphic timeline represented the previous and next steps for the project

**Step 2: Interact and Engage**


**Survey Page:** a button on the website directed users to an online survey


**Online Survey:** users were asked to respond to nine questions

**Interactive Map:** directions taught users how to leave “Place Based Comments” on the interactive ArcGIS map below. The map included an outline of the project area and points where users had left comments

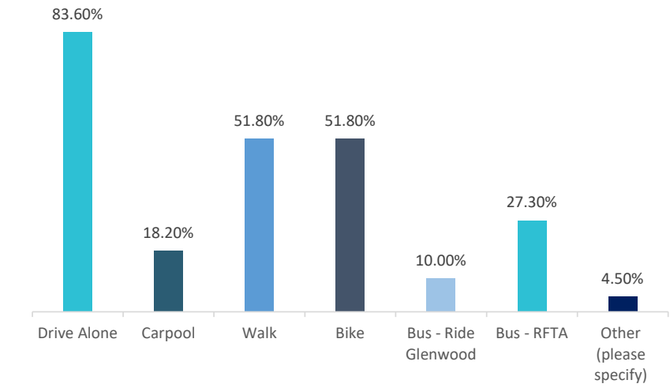




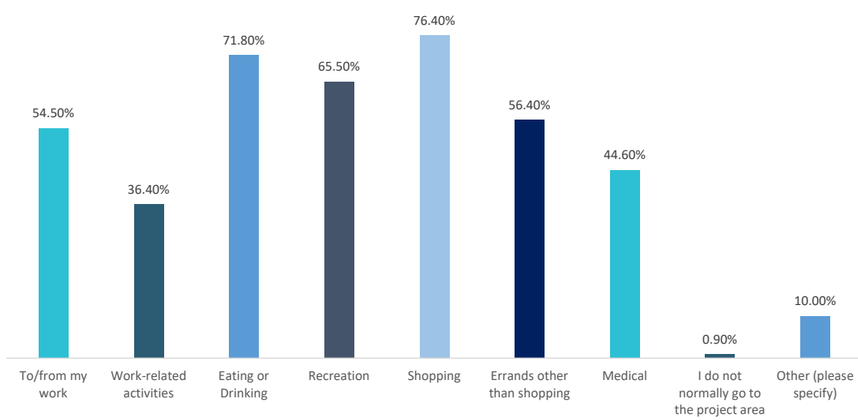
## Survey Results

The MOVE team received 110 survey responses. The survey consisted of nine questions that gathered information on the participants’ relation to the study area as well as feedback on various multimodal improvements. The survey also had comment boxes for open ended answers. All comments can be found in the appendix of this report. The questions and charts are illustrated below gives insight into the responses received from the study.

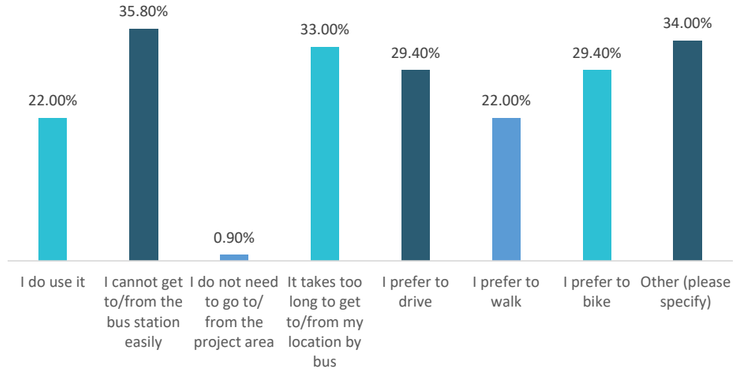
1.) How do you normally travel in and around the project area? Check all that apply.
*(110 Responses)*



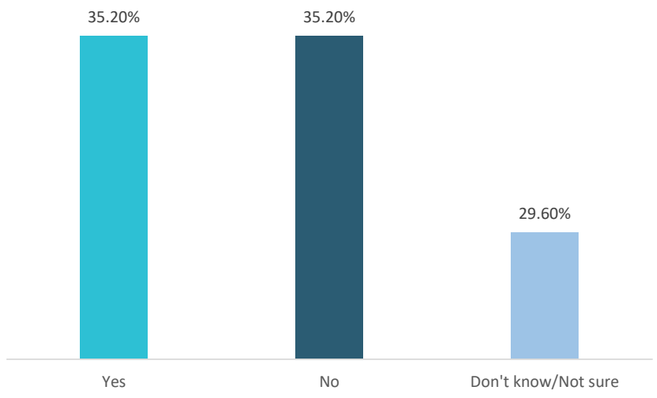

2.) Why do you normally go to/from the project area? Check all that apply.
*(110 Responses)*



3.) What issues prevent you from riding RFTA or Ride Glenwood, or what prevents you from riding those services more frequently? Check all that apply.
*(109 Responses, 1 skipped)*



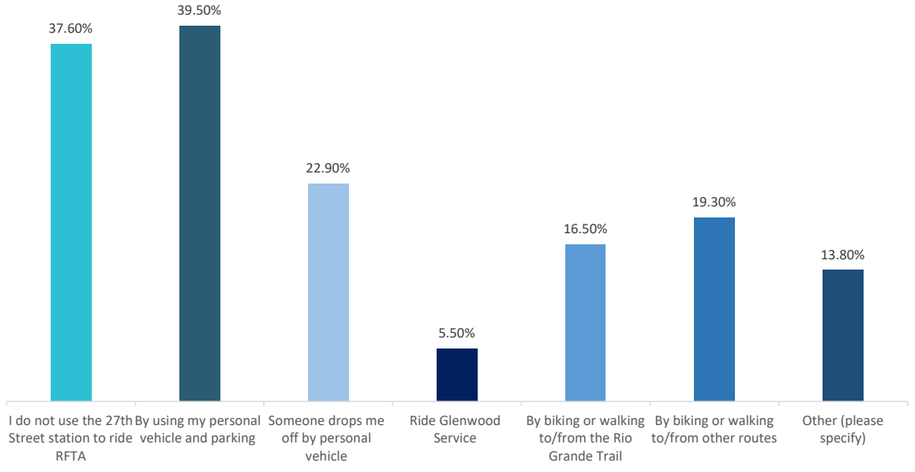

4.) If RFTA's VelociRFTA service went direct to/from 27th Street to downtown Glenwood Springs would you use it more?
*(108 Responses) (2 Skipped)*



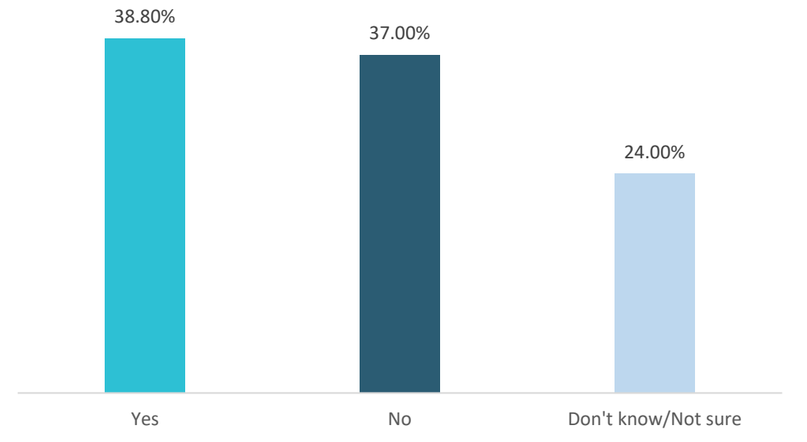





5.) If you use the 27th Street RFTA station to ride RFTA, how do you get to the station? Check all that apply.
*(109 Responses, 1 skipped)*

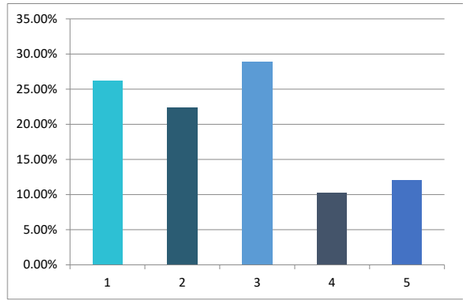



6.) Would you be more likely to use the 27th Street RFTA station if there was a pedestrian and bicycle overpass or underpass across SH-82 and 27th Street?
*(108 Responses) (2 Skipped)*

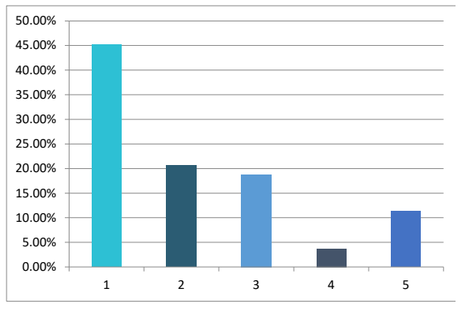


7.) On a scale of 1 to 5, please rate the degree to which each transportation component needs improvement: *(108 Responses) (2 Skipped)*
1—Yes, improve this right away
2—This should be improved sometime in the future
3—I feel neutral about this
4—This works pretty good now and probably doesn't need to be improved
5—This is excellent already and needs no improvements)

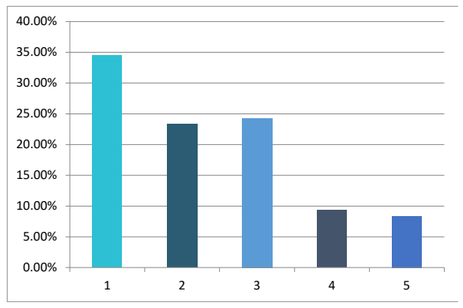
1.) DOWNTOWN PARKING



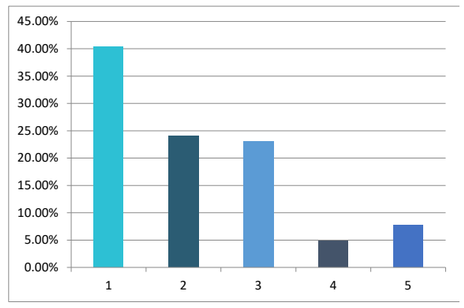

2.) PARKING AT THE 27TH STREET RFTA TRANSIT STATION



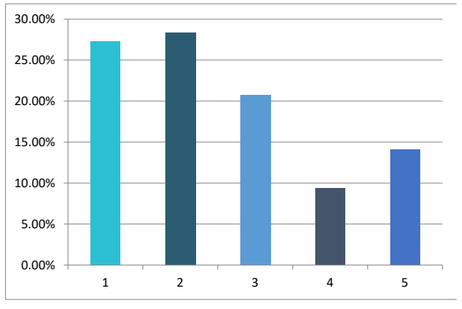

3.) BICYCLE AND PEDESTRIAN ACCESS TO TRANSIT



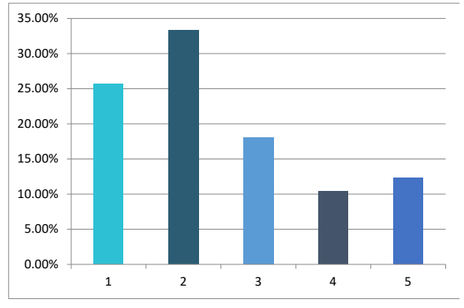

4.) INTERSECTION BACK-UP DOWNTOWN




5.) Adding a RFTA VelociRFTA stop downtown
(the bus would go direct to/from 27th Street station to downtown with no stops in between)



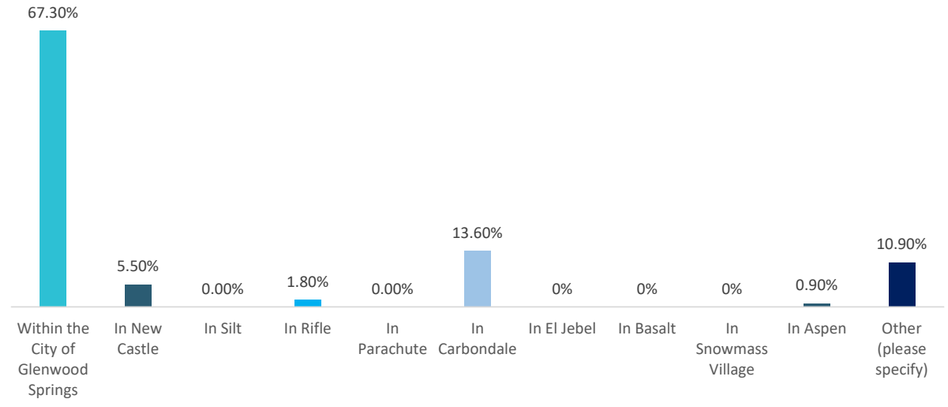

6.) Getting buses to be able to move between 27th Street and downtown quicker (examples include in an exclusive lane, semi-exclusive lane, and/or by having the traffic signals turn to green for them as they approach)



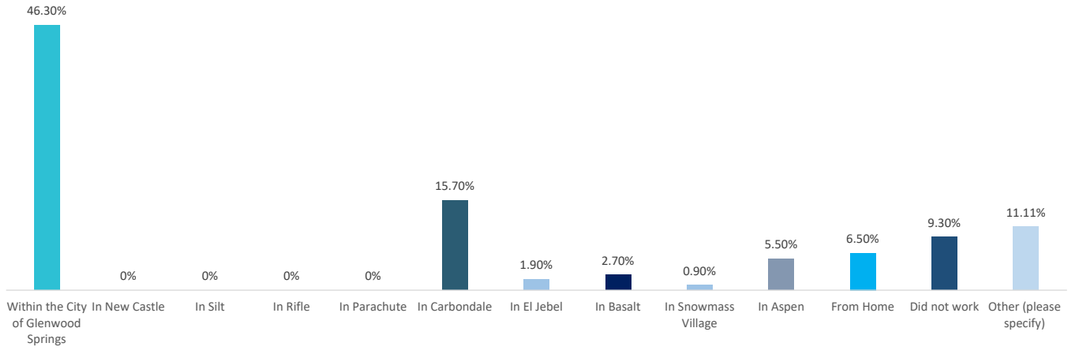





8.) I live?
*(110 Responses, 12 Comments)*




9.) Prior to COVID-19, I worked:
*(108 Responses, 12 Comments)*



## Advertising Material

A coordinated effort went into promoting the the study to increase public participation in the survey, interactive map and website. Below are the various methods the MOVE team used to advertise the project and outreach. The team also used media briefs and radio advertisements to increase awareness.



**Email Blasts:** a formatted email invitation to take the survey using a web link that led to the project website was sent to all previous participants, stakeholders, technical advisors and various organizations


**Newspaper Ads (Digital):** space in the Post Independent was purchased to direct the public to the website and to take the survey




**Social Media Posts:** the planned events were advertised in Spanish and English on both Instagram and Facebook through the City's and RFTA's accounts. The City's and RFTA's websites also included a blurb and link to the MOVE website

## Advertising Cadence

The chart below outlines the amount and scheduling of the various types of advertising. The chart continues to right.

**RFTA-Glenwood Springs MOVE**

| Public Outreach Series 1 Schedule - February/March 2020 | APRIL | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TASKS | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| Website - campaign runs 4/10-5/10 (Links to MOVE website on RFTA and City homepage) | | | | | | | | | | | | | | | |
| Website - stratagize layout w/o web-based outreach/end of campaign | | | | | | | | | | | | | | | |
| Website - website updates for end of web-based outreach | | | | | | | | | | | | | | | |
| Community Briefs and PSA's - Submit | | | | | | | | | | | | | | | |
| Community Briefs and PSA's - Run | | | | | | | | | | | | | | | |
| Post Independent - submit artwork | | | | | | | | | | | | | | | |
| Post Independent - big banner | | | | | | | | | | | | | | | |
| Post Independent - 3c's run | | | | | | | | | | | | | | | |
| Social - post to social channels at 11 am (facebook, instagram) (RFTA/Glenwood) | | | | | | | | | | | | | | | |
| Roaring Fork Swap - posts (Spanish and English) | | | | | | | | | | | | | | | |
| Project Updates - Post on Social and Website FAQ page | | | | | | | | | | | | | | | |
| Email Blasts - Partners to send to contacts | | | | | | | | | | | | | | | |
| Radio - spots run (Spanish and English) | | | | | | | | | | | | | | | |
| Radio - interview? | | | | | | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
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**Survey:** a Spanish version of the survey was available


**Project Introduction Video:** a script of the video was available in Spanish

## Spanish Outreach

In order to reach the Spanish speaking community of the Roaring Fork Valley, the MOVE team placed a high importance on making the website and advertising in Spanish.


**Website:** A menu bar enabled users to toggle between the same content in Spanish and English


**Advertising Material:** email blasts and social media posts were translated into Spanish, and radio advertisements ran in Spanish on La Nueva Mixta

# Public Outreach 2

## Introduction

The second phase of outreach was centered around an interactive survey that introduced participants to the project and the proposed design alternatives while gathering their feedback. The survey was placed on the homepage to encourage immediate participation. Users were also prompted to sign up and attend a live webinar that further informed the public about the alternatives

## August 20, 2020 - September 11, 2020

Dates of Outreach 2
( Webinar Occurred on 8/27 )

**Participation:**

| 23 | 198 | 15 | 330 |
|---|---|---|---|
| Days of Active Outreach | Survey Responses | Approximate Total Number of Live Webinar Participants | Approximate Total Views of Webinar on City's Facebook Page (as of April 2021) |

**Advertising:**

| 58 | 23 | 3 | 9 |
|---|---|---|---|
| Total Radio Spots | Total Days Digital Newspaper Ads Ran (100,000 Impressions + 1 Day Large Banner) | Total Number of Print Newspaper Ads | Total Social Media Posts (Includes Roaring Fork Swap Post) |

| 4 | 5 | 30 | 1 |
|---|---|---|---|
| Total Community Briefs and PSA's Placed | Total Email Blasts (Including Aspen Chambers Newsletters) | Approximate Total Flyers Printed and Hung | Total Number of Press Releases |

## Project Website

With the spread of Covid-19 limiting face-to-face public outreach events, the project website continued to be the home for public outreach. An important component of the website was the interactive survey. In addition to the survey, the website served as an archive for project documentation as well as a way to learn about the project.


**Homepage + Survey:** The homepage welcomed the user and introduced the study. Two options were then available to the user: 1) register for the live webinar or 2) take the survey (which was located below).

**Components of the Survey**

**Tabs:** a panel of tabs outlined the survey and allowed users to jump between questions

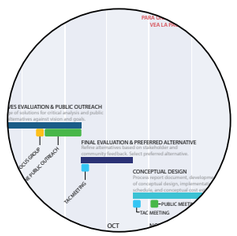
**Standard Questions:** users could respond various questions. Questions were formatted in various ways: scale bars, choose multiple, rate 1-5, etc.

**Tabbed Alternative Boards:** users could click through tabs to review the various alternative designs being proposed

**Additional Website Pages**

**Project Intro:** a quick introduction to the study process and study area with a map below. The project goals were also outlined

**FAQs:** a list of frequently asked questions further introduced users to the project.




**Project Schedule:** a graphic timeline represented the previous and next steps for the project

**Document Library:** an archive of important project documents





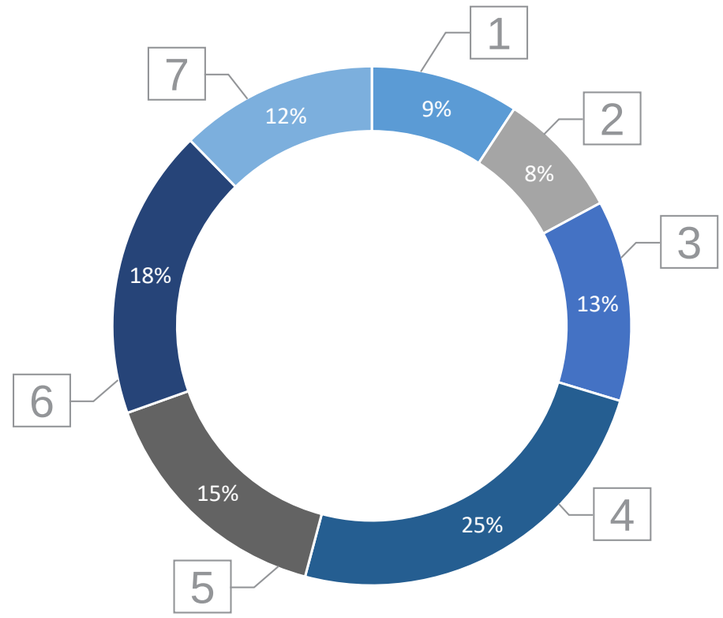
## Survey Results

The MOVE team received 198 survey responses. The survey consisted of 10 questions that measured the participants' priorities, introduced them to various alternatives, and gathered feedback on the alternatives and other multimodal improvements. Lastly the survey asked for information on the participants' relation to the study area. The survey had comment boxes to allow for more flexibility in answers. All comments can be found in the appendix of this report. The questions and charts provided below give a snapshot of the responses received from the study.

**Question 1**

**Begin by choosing what you believe to be the top 3 project priorities. These priorities will help guide future transportation improvements. Please tell us which ones are the most important to you?**

198 Responses Recieved



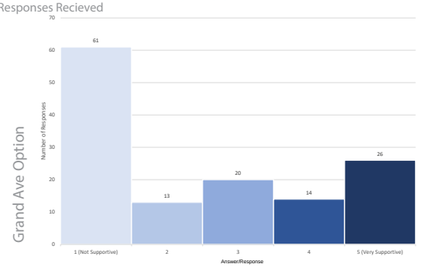

1. Minimize the costs of the proposed transportation and parking improvements
2. Emphasize safety and ease of automobile travel
3. Emphasize efficiency of transit
4. Promote easy and safety of walking and biking
5. Develop transportation and parking strategies that do not impact businesses
6. Develop transportation strategies that do not impact the existing Rio Grande Trail Corridor from 27th street to 8th Street
7. Minimize construction duration and impacts of proposed improvements

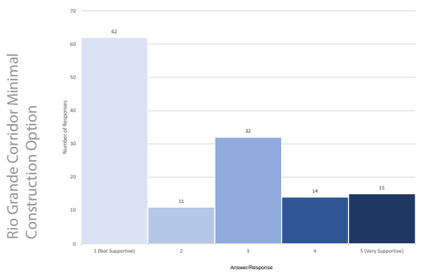
## Survey Results

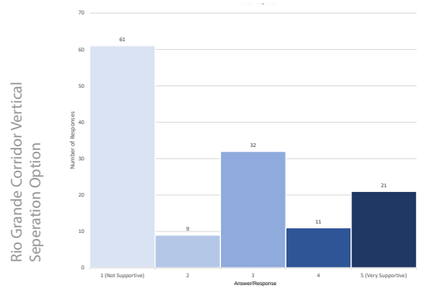
### Question 2

**How would you score these alignment options? Slide the scale from 1 (not supportive) to 5 (very supportive) for each:**

135 Responses Recieved



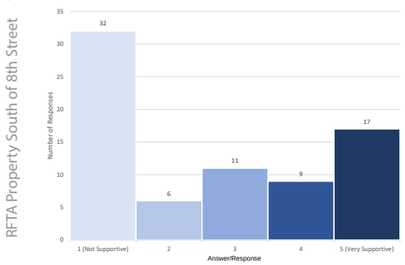



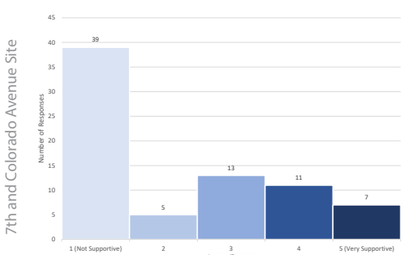



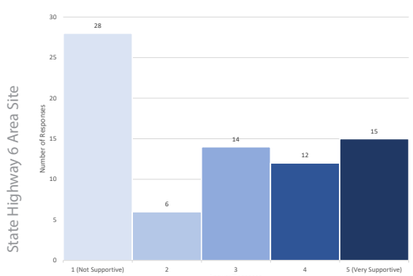

### Question 3

**How would you score these transit center location options? Slide the scale from 1 (not supportive) to 5 (very supportive) for each:**

75 Responses Recieved



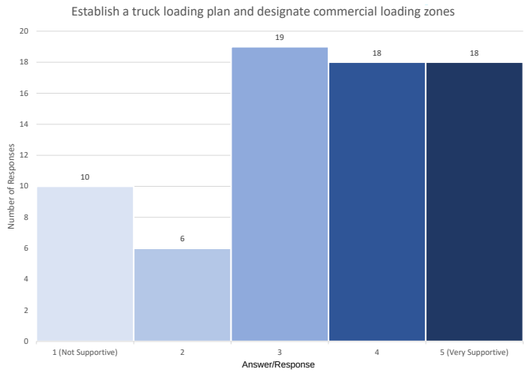





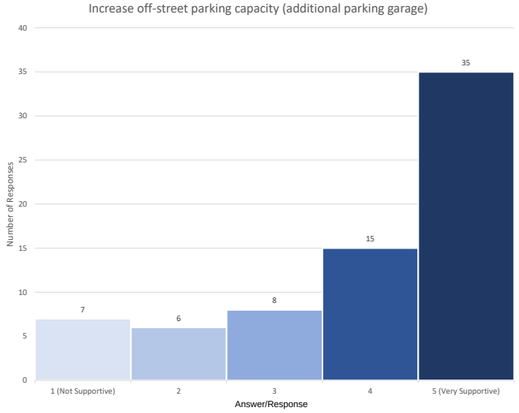


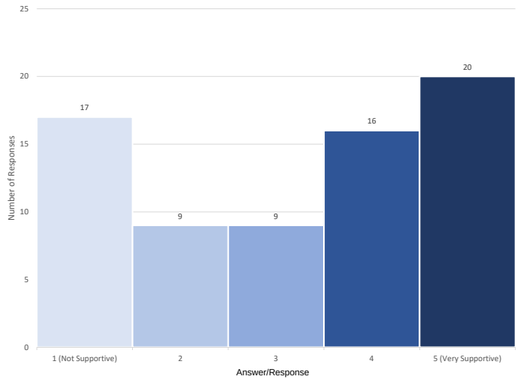

### Question 4

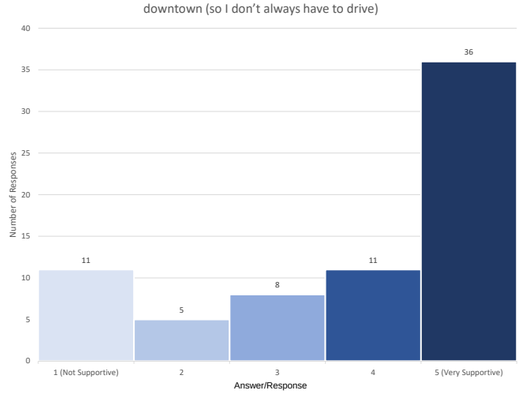
**How supportive are you of each of the following strategies to improve parking in the downtown core? Indicate your support on a scale of 1 – 5, where 1 is (not supportive) and 5 is (very supportive). Provide additional feedback with the "Comment" option.**

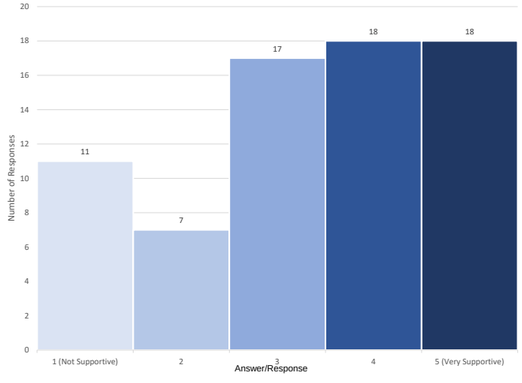






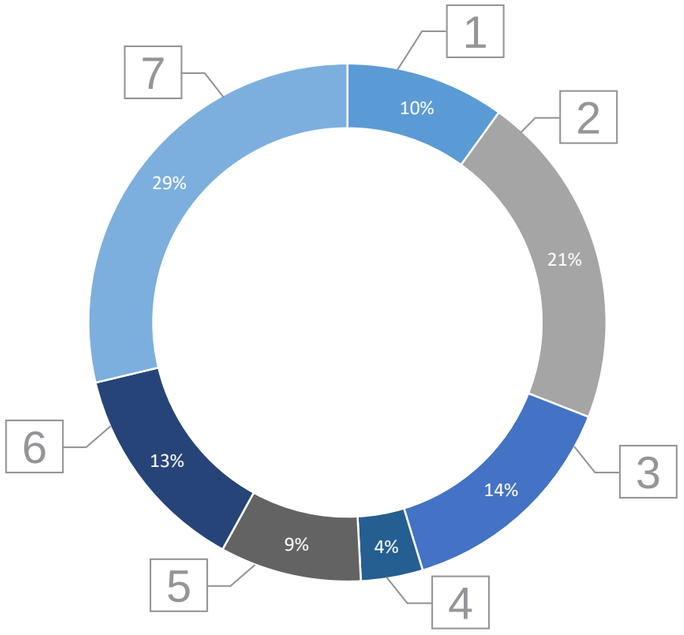



**Question 5**

**How can we best improve the pedestrian experience in the project area? Select your top 3 preferred strategies and provide additional feedback with the "Comment" option.**



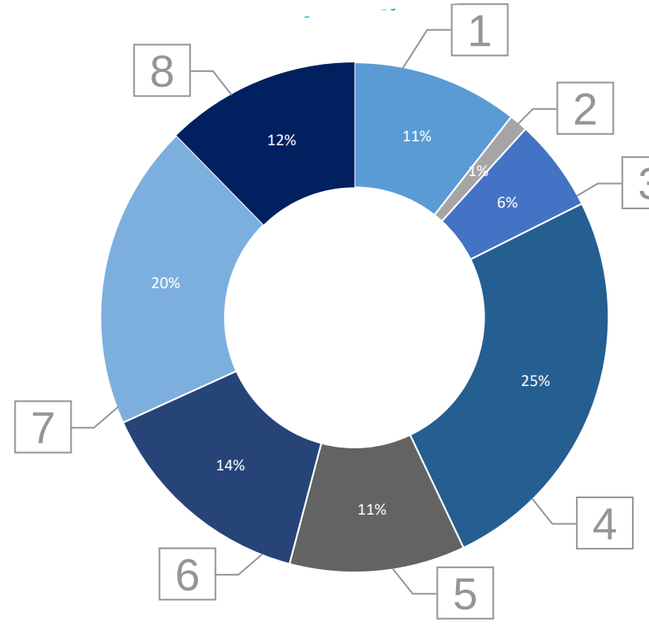

- 1. Repair downtown sidewalks and ADA ramps to improve accessibility
- 2. Improve signal timing to walk across Grand Avenue downtown
- 3. Improve structural and navigational (wayfinding) improvements at Rio Grande Trail and 27th Street to improve the safety at this intersection
- 4. Improve complete and intuitive wayfinding signs at major transit stops to provide directional information to users
- 5. Improve shelters at transit stops to improve the experience waiting for the bus.
- 6. Improve accessible shared-use paths and trails (i.e. improving trail access at Rio Grande Trail midpoint locations, remove rail tracks in the Rio Grande corridor) to improve safety and comfort for pedestrians
- 7. Maintain sidewalk, trail, and bicycle networks year-round to enable more use in the winter months





**Question 6**

**How can we best improve the pedestrian experience in the project area? Select your top 3 preferred strategies and provide additional feedback with the "Comment" option.**



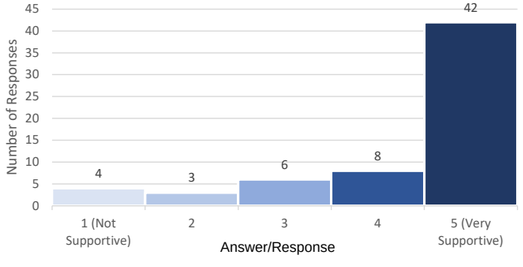

- 1. Improve secure, short-term and long-term bike parking to encourage bicycling to transit stations
- 2. Create bike service stations at major stations or a downtown parking garage to encourage bicycling to stations by enabling bike maintenance
- 3. Create bike share to provide better first- and last-mile connections between RFTA stops and stations and the downtown core.
- 4. Improve connected, dedicated bike networks (i.e. not utilizing sidewalks as designated bike route) to increase bicycle connectivity and minimize conflicts with pedestrians and vehicles.
- 5. Improve accessible shared-use paths and trails (i.e. improving trail access at Rio Grande Trail midpoint locations, remove rail tracks in the Rio Grande corridor) to improve safety and comfort for bicyclists.
- 6. Improve major bicycle connection intersections (striping, signal improvements, and geometric improvements) to increase bicycle comfort and connectivity through town
- 7. Maintain sidewalk, trail, and bicycle networks year-round to enable cycling through the winter months
- 8. Improve bike loading on buses, to aid and encourage first-/last-mile trips by bicycle

## Question 7

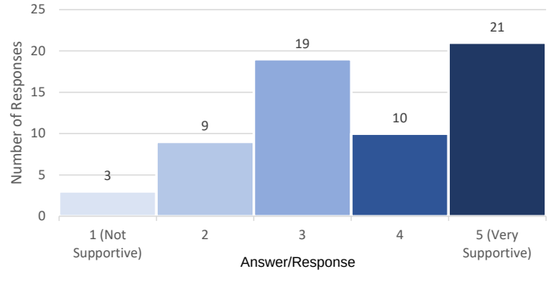
**How can we best improve the personal automobile experience and reduce traffic congestion in downtown Glenwood Springs? Indicate your support on a scale of 1 – 5, where 1 is (not supportive) and 5 is (very supportive). Provide additional feedback with the "Comment" option.**

Up to 63 Responses Recieved

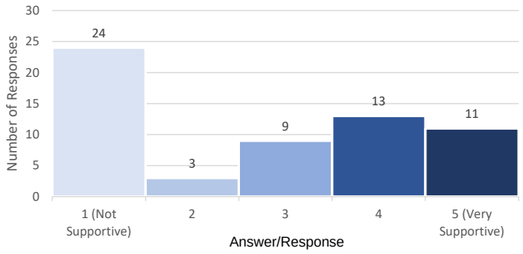
Improve traffic signal coordination/progression along Grand Avenue



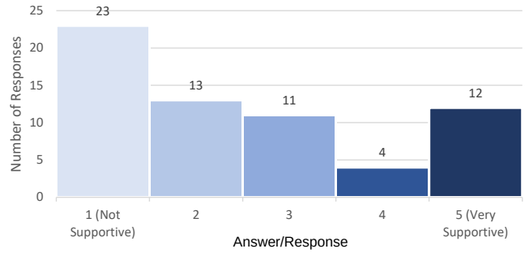

Reduce side street delays



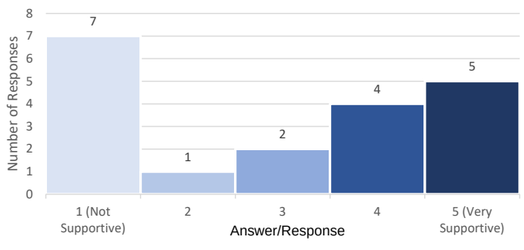

Change 8th Street and 9th Street into one-way pairs to improve side street flow




Restrict access to driveways from 15th to 13th to right in/right out to improve safety




Additional safety improvements – please describe below



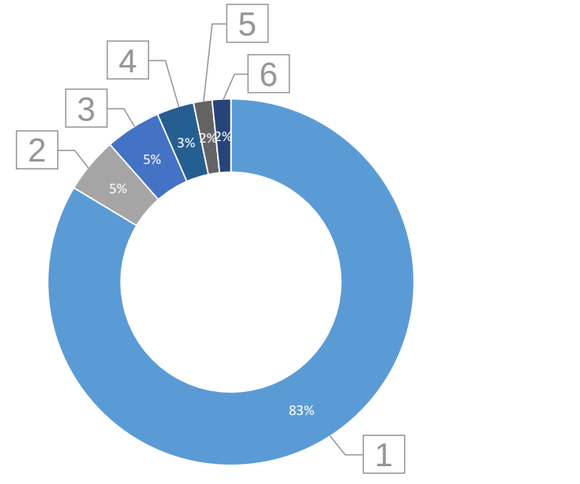





## Lastley...

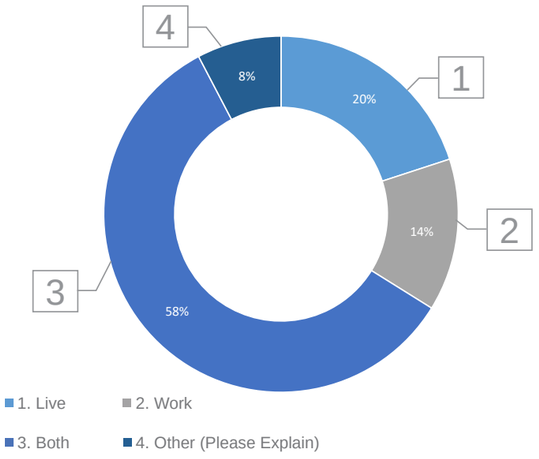
**What is your Zip Code?**

61 Responses Recieved



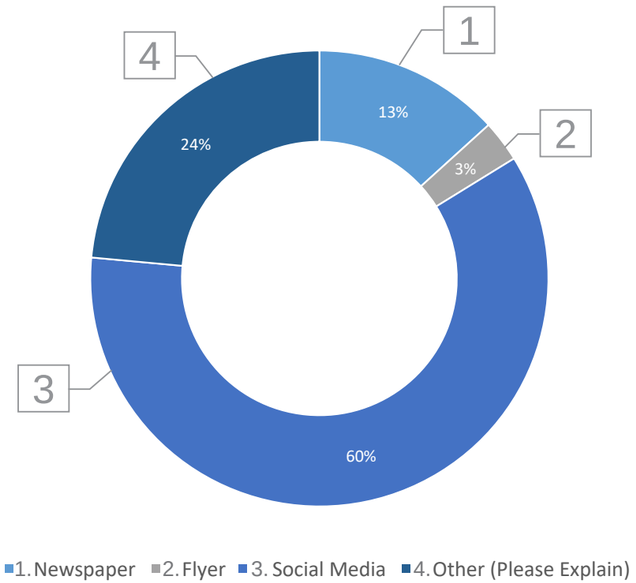

**Do you work or live in the City of Glenwood?**

65 Responses Recieved



How did you hear about the M.O.V.E. project? (Check all that apply)

68 Responses Recieved








## Webinar

The City of Glenwood Springs and RFTA hosted a live webinar on August 27th, 2020. The webinar was hosted on the City's facebook page and was available to all. The presentation introduced the project, reviewed the proposed alternatives and then took questions from participants. The webinar can viewed at https://www.facebook.com/GlenwoodSpringsCO/videos/243519826771257

**45**
Minute Presentation

**15**
Approximate Total of Live Webinar Participants

**330**
Approximate Total Views of Webinar on City's Facebook Page (as of April 2021)

**Presenters:** David Johnson from RFTA (Presenter) Terri Partch from CoG (Presenter) and Delia Bolster from OHM Design (Moderator)



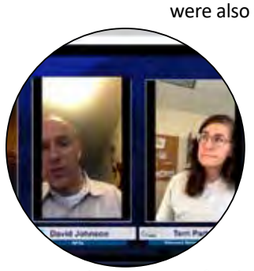
**Project Introduction:** Project purpose, goals, and needs were introduced. Process to date was reviewed.



**Alternatives Reviewed**: Alternative locations for a downtown transit station and BRT alignment to downtown were reviewed.



**Multimodal Improvments Reviewed:** Potential improvements for pedestrian, bike, parking, traffic and more were also discussed

**Next Steps and Questions:** The presentation concluded by reviewing the next steps for the project. The audience was instructed to ask questions in the comments section. The presenters then answered these questions verbally.

## Advertising Material

A concerted effort went into promoting the survey, the webinar and inviting public participation. Below are the various methods the MOVE Team used to advertise the outreach. The team also used media briefs and radio ads to get the word out.


**Email Blast:** a formatted email invitation to the project website and the webinar was sent to all previous participants, stakeholders, technical advisors, and various organizations


**Flyers:** flyers call to participate in the project survey as well as the date and times of the webinar were posted at various businesses in downtown Glenwood and Carbondale


**Newspaper Advertisement (Print and Digital):** space in the Post Independent was purchased to highlight the survey and webinar



**Social Media Posts:** the events were advertised in Spanish and English on both Instagram and Facebook through the city's and RFTA's accounts.

## Advertisement Cadence

The chart below outlines the amount and scheduling of the various types of advertising. The chart continues to the right.

**RFTA-Glenwood Springs MOVE**

Public Outreach Series 2 Advertising Schedule - August/September 2020

| TASKS | August | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| Website - campaign runs 8/20-9/11 (Links to MOVE website on RFTA and City homepage) | | | | | | | | | | | | | | | | | |
| Webinar - Live Event (5:30-6:30 PM) | | | | | | | | | | | | | | | | | |
| Website - stratagize layout w/o web-based outreach/end of campaign | | | | | | | | | | | | | | | | | |
| Website - website updates for end of web-based outreach | | | | | | | | | | | | | | | | | |
| RFTA and COG to Update Individual websites with link to MOVE website | | | | | | | | | | | | | | | | | |
| Community Briefs and PSA's - Run | | | | | | | | | | | | | | | | | |
| Post Independent - big banner | | | | | | | | | | | | | | | | | |
| Post Independent - print ads (1/3 page priority placement) | | | | | | | | | | | | | | | | | |
| Post Independent - 3c's run | | | | | | | | | | | | | | | | | |
| Social - post to social channels at 11 am (facebook, instagram) (RFTA/Glenwood) | | | | | | | | | | | | | | | | | |
| Roaring Fork Swap - posts (Spanish and English) | | | | | | | | | | | | | | | | | |
| Email Blasts - Partners to send to contacts | | | | | | | | | | | | | | | | | |
| Aspen Chambers Newsletter - Newsletter Runs | | | | | | | | | | | | | | | | | |
| Radio - spots run (Spanish and English) | | | | | | | | | | | | | | | | | |
| Radio - interview? | | | | | | | | | | | | | | | | | |





## Spanish Outreach

In order to reach the Spanish speaking community of the Roaring Fork Valley, the MOVE team placed a high importance in making the website and advertisements available in Spanish.



**Advertising Material:** all advertising material previously mentioned was sent out in Spanish as well as English, including Spanish radio ads on La Tricolor


**Website:** the main content of the website can easily be translated into Spanish by selecting the language in the menu bar

| | September | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| Website - campaign runs 8/20-9/11 (Links to MOVE website on RFTA and City homepage) | | | | | | | | | | | | | | |
| Webinar - Live Event (5:30-6:30 PM) | | | | | | | | | | | | | | |
| Website - stratagize layout w/o web-based outreach/end of campaign | | | | | | | | | | | | | | |
| Website - website updates for end of web-based outreach | | | | | | | | | | | | | | |
| RFTA and COG to Update Individual websites with link to MOVE website | | | | | | | | | | | | | | |
| Community Briefs and PSA's - Run | | | | | | | | | | | | | | |
| Post Independent - big banner | | | | | | | | | | | | | | |
| Post Independent - print ads (1/3 page priority placement) | | | | | | | | | | | | | | |
| Post Independent - 3c's run | | | | | | | | | | | | | | |
| Social - post to social channels at 11 am (facebook, instagram) (RFTA/Glenwood) | | | | | | | | | | | | | | |
| Roaring Fork Swap - posts (Spanish and English) | | | | | | | | | | | | | | |
| Email Blasts - Partners to send to contacts | | | | | | | | | | | | | | |
| Aspen Chambers Newsletter - Newsletter Runs | | | | | | | | | | | | | | |
| Radio - spots run (Spanish and English) | | | | | | | | | | | | | | |
| Radio - interview? | | | | | | | | | | | | | | |

# Summary of Outreach Effort

## Introduction

This document is intended as a companion to the MOVE Final Report. The results of the outreach were synthesized into the evaluations and recommendations provided in the Final Report.

## Participation:

**54**
Days of Active Outreach

**208**
Survey Responses

**15**
Approximate Total Number of Live Webinar Participants

**330**
Approximate Total Views of Webinar on City's Faceook Page (as of April 2021 )

**58**
Total Number of Comments (50 Interactive Map Comments+ 8 Website Comments)

## Advertising:

**116**
Total Radio Spots

**54**
Total Days Digital Newspaper Ads Ran (100,000 Impressions + 2 Day Large Banner)

**3**
Total Number of Print Newspaper Ads

**27**
Total Social Media Posts (Includes Roaring Fork Swap Post and Pro)

**8**
Total Community Briefs and PSAs Placed

**7**
Total Email Blasts (Including Aspen Chambers Newsletters)

**30**
Approximate Total Flyers Printed and Hung

**2**
Total Number of Press Releases

# Appendix



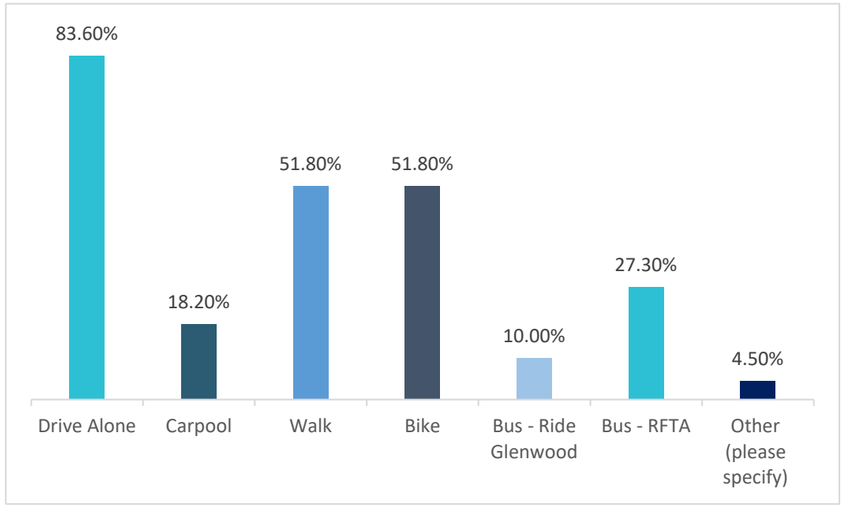
# Appendix A - Survey Results

**Outreach 1 Survey Results**

Glenwood Springs MOVE Participant Survey

**All Responses collected on Monday 5/19/2020** *(110 Responses Collected)*

1.) How do you normally travel in and around the project area? Check all that apply.
*(110 Responses)*

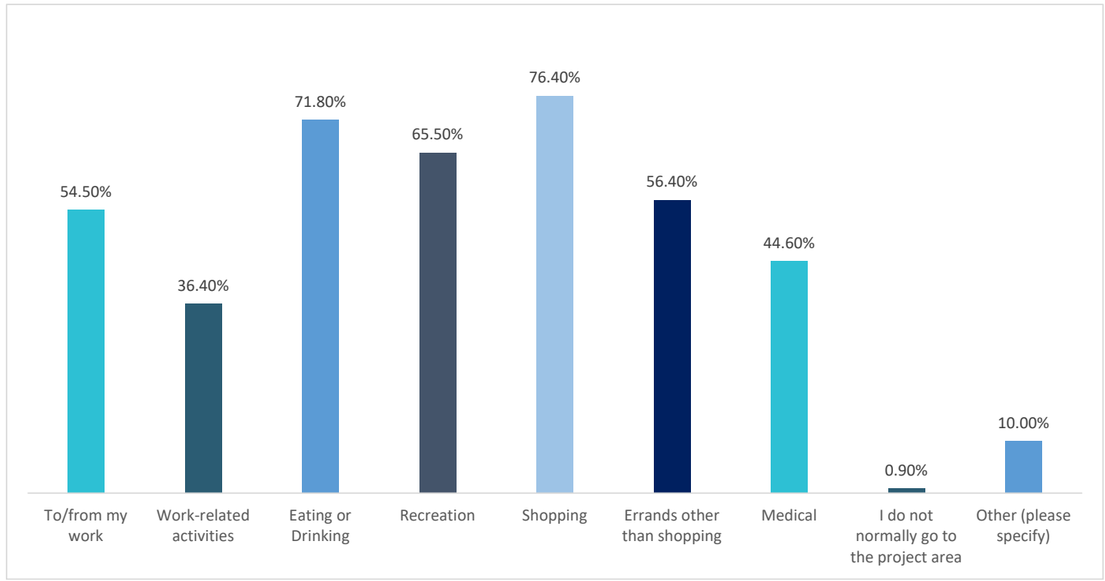



Other:

- school bus
- Ride Share
- rafting on the Roaring Fork and Colorado Rivers. visiting the hot springs
- Drive with 2-4 people
- driving to take kids to and from school for activities



2.) Why do you normally go to/from the project area? Check all that apply.
*(110 Responses)*

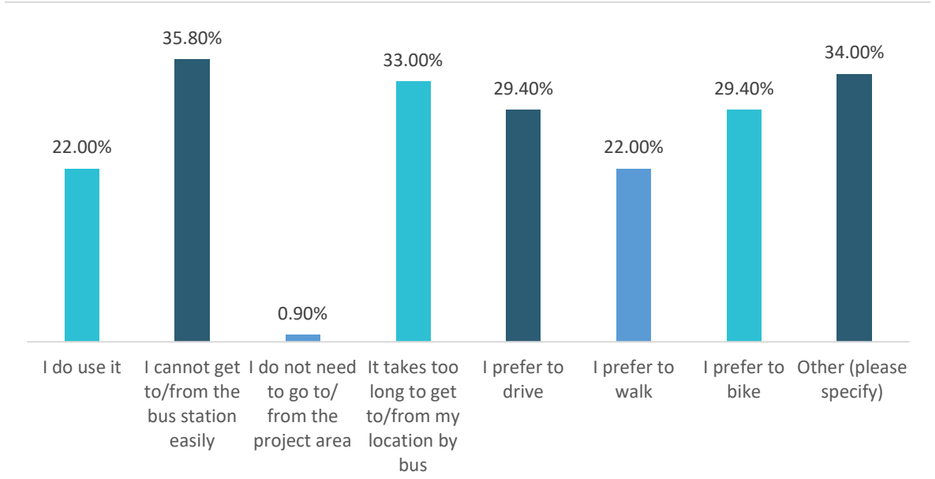



Other:

- I live in the project area (2)
- Schools
- Fishing and Boating
- rafting and hot springs
- auto repairs, attend church, walk dog, attend meetings
- To/from school
- Live in the core area
- skiing at sunlight
- School and children activities
- Trips to my son's school and summer camps

## 3.) What issues prevent you from riding RFTA or Ride Glenwood, or what prevents you from riding those services more frequently? Check all that apply.

*(109 Responses, 1 skipped)*



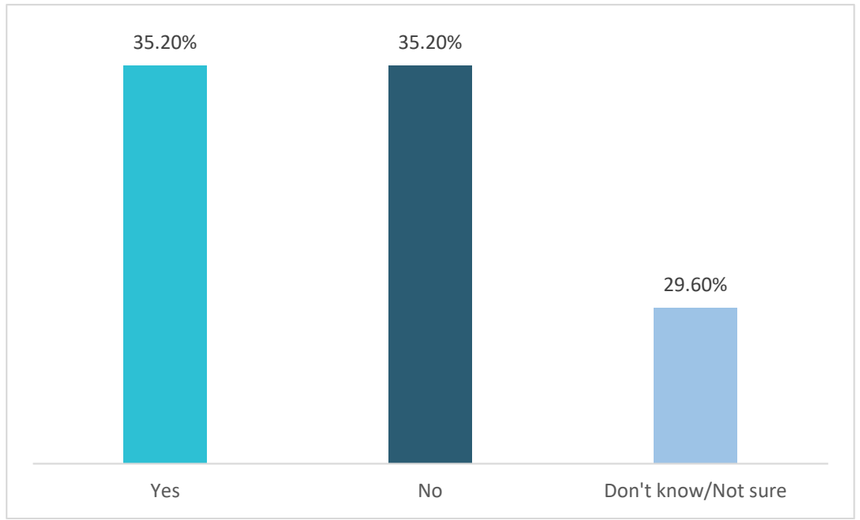

Other:

- I use RFTA 1-2 times per month, and I am willing to ride more, but I would love for BRT to stop at the CMC stop
- I only use rfta if heading to Carbondale for fun, i'd use it to access bike trails but not sure how that works or if teh schedule is convenient.
- There are 5 of us in the family so it's cheaper to ride in a car together
- safely and virus
- Since there is no connection from South Glenwood to RFTA, everyone that lives in South Glenwood must own a car and drive. Once you have driven as far as the nearest RFTA Park & Ride (which usually won't have any parking available, you might as well drive for the rest of your trip.
- short trips, varied times, quick stops and unable to wait
- Parking availability at bus stations
- I have not informed myself about RFTA/Ride options
- there are no real parking problems anywhere in town so bus is not competitive
- No place to park at the bus stop
- my dr says if i take the bus i will die, i am imono comprimised
- no routes to Sunlight!
- Transferring busses at 27th is a pain. Intervals between busses too long.
- Parking at areas, cost
- Live in Marble. No bus to get on until Carbondale
- Park and ride lot at Thunder River is always full. Many neighborhood cars, not commuters.
- There are not many West Glenwood bus stops
- Inconvenient stops/schedules
- Parking lot is full at 27th street station
- RFTA can be expensive from Glenwood to Aspen, additionally, there is no parking at 27th St ( it gets full)
- trips too short - transit adds too much time
- Ride Glwd service dropped in my neighborhood and lack of parking at 27th
- There is no bus stop on South Midland
- I mostly walk and bike everywhere but i do own a car so when I need to drive it just makes sense to hop in the car for trips within Glenwood. I do plan to ride RFTA up valley for bike rides in the summer, however.
- I do not want to die from Covid-19. The busses are dangerous.
- to expensive- and I pay property taxes in Gws- and no parking
- When my kids are with me, it's cheaper to drive a car.
- Usually have 3-4 places to go each day
- It doesn't connect to downtown and west glenwood park and ride
- If I'm running errands I have a lot of things to carry.
- schedule doesn't allow for timely or late evening return
- Not enough parking at 27th st station
- the downtown service is confusing and a bit unpredictable...ride glenwood vs local vs some locals that turn into brts, transferring at 27th, etc
- Limited parking at the 27th St. park and ride and no direct bus service from the other park and ride in west glenwood.
- Bus transfers...getting off at 27th kind of leaves you on the outskirts of town
- The truck ride does not arrive from west Glenwood to Sopris elementry school



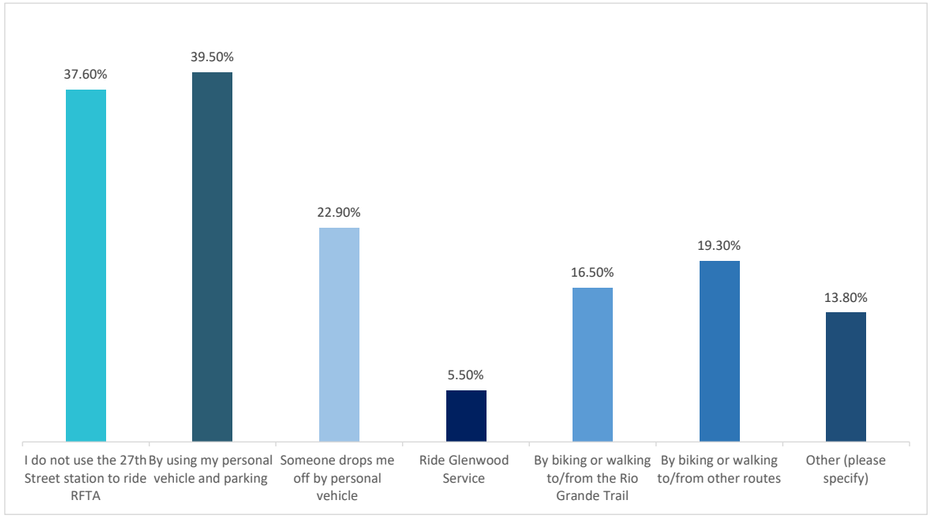
## 4.) If RFTA's VelociRFTA service went direct to/from 27th Street to downtown Glenwood Springs would you use it more?

*(108 Responses) (2 Skipped)*



5.) If you use the 27th Street RFTA station to ride RFTA, how do you get to the station? Check all that apply.

*(109 Responses, 1 skipped)*



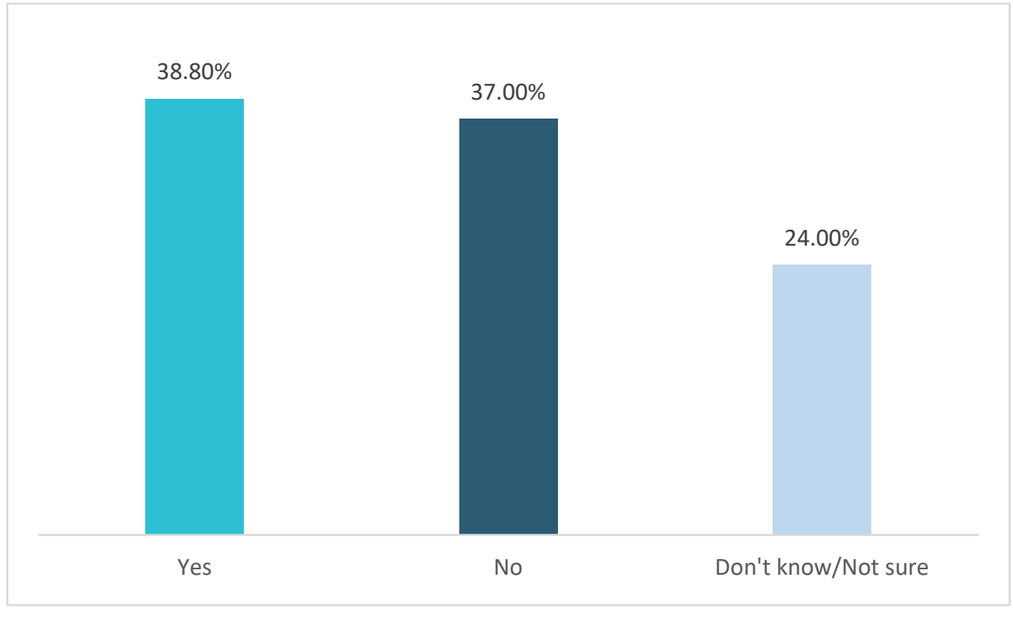

Other:

- 
- No parking at 27 th st. Need more!
- You can't depend upon parking being available.
- Again, inadequate parking
- RFTA is a huge hassle for the tax base who pays for it.
- add a route to Sunlight!
- Velocirfta drivers are actually really great about picking you up downtown if you flag them at a stop. It's probably breaking the rules, but it's the only thing that makes it convenient enough for people to do. (Plus google transit says velocirfta stops downtown).
- The connection at 27th St. from upvalley BRT to a downvalley local are poor. If I have a meeting in downtown GWS I now take a local bus from Carbondale b/c the only additional local stops are Aspen Glen and Walmart.
- No parking at 27 th st. Need more!
- The busses should be stopped until they are no longer a point of infection.
- Would ride the Glenwood service if it was expanded to Glenwood Park and surrounding neighborhoods.
- I get on the bus at the Carbondale Park n Ride
- Transfer from the Local
- local RFTA, transfer to BRT
- Use personal vehicle and park in walmart
- riding RFTA from up valley



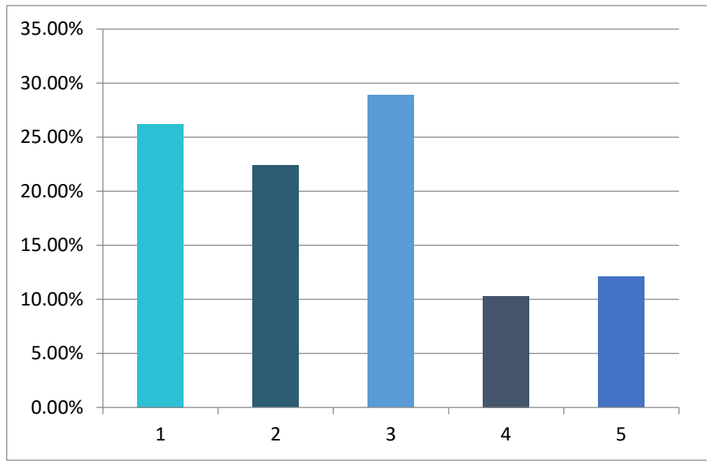
6.) Would you be more likely to use the 27th Street RFTA station if there was a pedestrian and bicycle overpass or underpass across SH-82 and 27th Street?

*(108 Responses) (2 Skipped)*

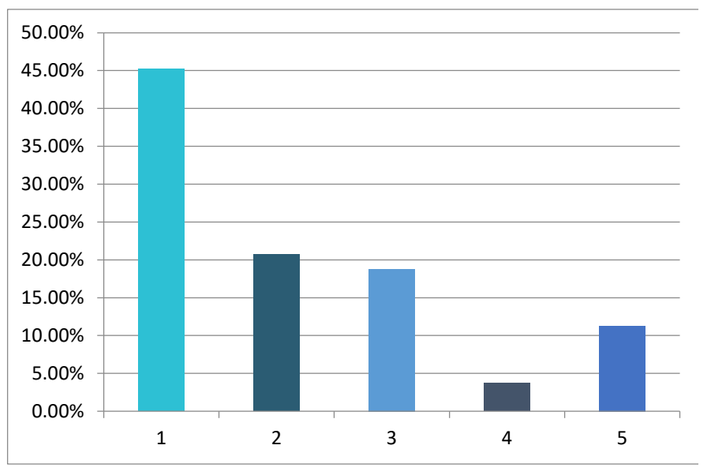


7.) On a scale of 1 to 5, please rate the degree to which each transportation component needs improvement: *(108 Responses) (2 Skipped)*
1—Yes, improve this right away
2—This should be improved sometime in the future
3—I feel neutral about this
4—This works pretty good now and probably doesn't need to be improved
5—This is excellent already and needs no improvements)

1.) DOWNTOWN PARKING - 107 Responses, 16 Comments

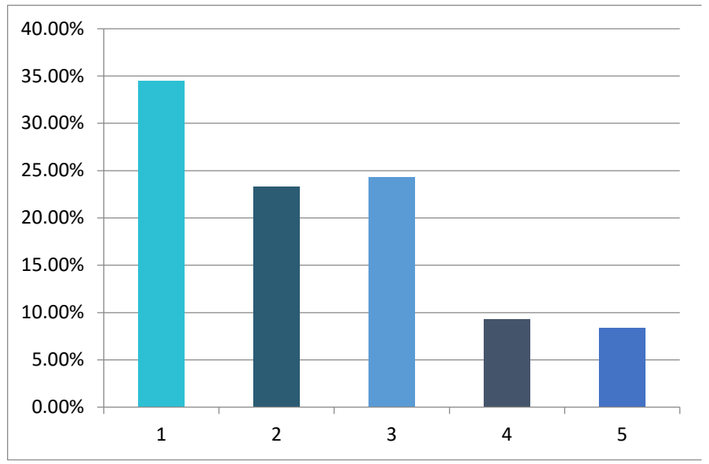



2.) PARKING AT THE 27TH STREET RFTA TRANSIT STATION - 106 Responses, 20 Comments

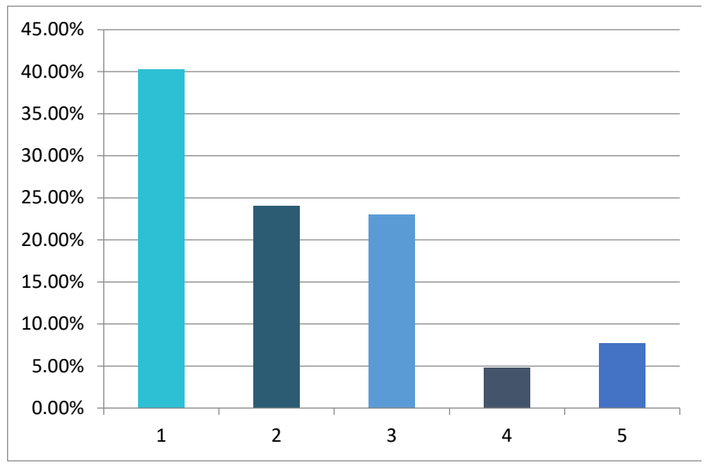




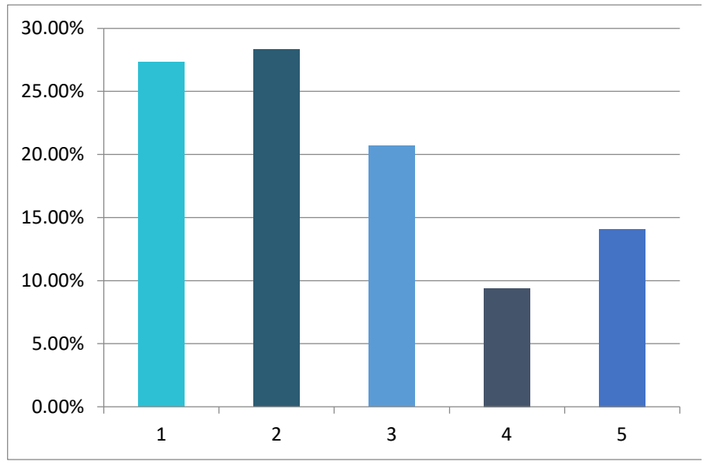

3.) BICYCLE AND PEDESTRIAN ACCESS TO TRANSIT - 107 Responses, 17 Comments



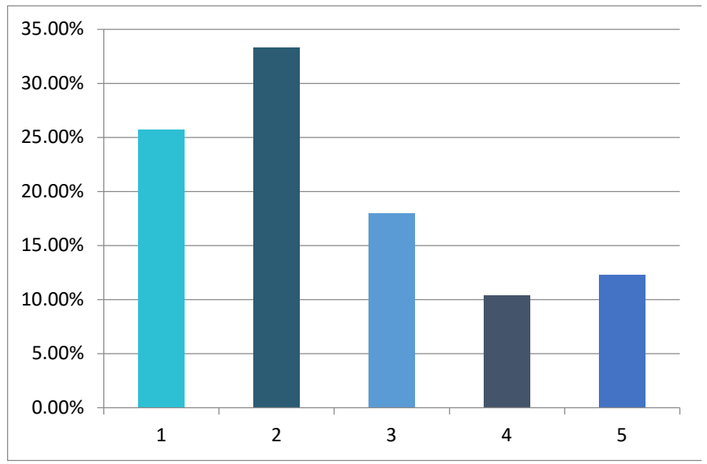

4.) INTERSECTION BACK-UP DOWNTOWN - 104 Responses, 16 Comments



5.) Adding a RFTA VelociRFTA stop downtown (the bus would go direct to/from 27th Street station to downtown with no stops in between) - 106 Responses, 16 Comments




6.) Getting buses to be able to move between 27th Street and downtown quicker (examples include in an exclusive lane, semi-exclusive lane, and/or by having the traffic signals turn to green for them as they approach) - 105 Responses, 18 Comments






## Downtown Parking

*16 Comments*

- Stop the busses. Covid-19 is not a joke. Keeping it open is criminal.
- Bussing, biking, and walking work fine
- #1 limiting factor
- Need designated Ride Share and Taxi drop off & pick up areas
- People will always complain about parking, reality is very limited space in downtown area - much more beneficial to have businesses and buildings that generates tax revenue and jobs than just parking lots
- I do use the parking garage, but there could be another garage in GWS
- Don't need Downtown parking much.
- The parking garage on 9th street is convenient & the EV chargers are added bonus
- There is a balance between providing commuter transit parking, and encouraging users to ride and bike more to/from stations. First-last mile solutions are often low cost.
- I am usually downtown in off peak times but parking isnt an issue.
- Lack of parking management is a bigger problem than lack of parking supply.
- I've lived here 20 years. I don't go downtown anymore because it's awful and congested. When will y'all realize you can't continie to add more buses and build More to solve this problem. Stop building!!!!
- Downtown parking is usually full from my experience
- I never have an issue parking downtown. Parking two or three blocks away from my dinner destination is a sign that our downtown is vibrant and worth visiting that evening.
- sometimes you have to park a couple blocks away but usually never have a problem
- Glenwood needs paid parking

## Parking at the 27th Street RFTA transit station

*14 Comments*

- Stop the busses. Covid-19 is not a joke. Keeping it open is criminal.
- Parking here is hilarious- big station- no parking
- People need access to RFTA busses if we're expected to use them
- I don't know
- I have given up taking the bus from 27th st to go skiing. The lot is always full.
- It's always full, I park at Walmart to use 27th st station
- Not an ideal park and ride situation
- not enough parking...
- Not for me, but I know there is enough parking there.
- I dont use this
- RFTA has a small footprint for parking at 27th St. Please encourage the City to open the Blake gate, which will free up traffic flow and adjacent parking opportunities with shared parking agreements.
- With proposed development at 27th and Palmer, additional parking for this location would be beneficial. As a recreational user of 27th street station, it is near impossible to find a parking space to use it as a true park n ride stop.
- I don't park there personally but frequently drop my husband off there and parking is always full.
- I have had to adjust my work hours to ensure that I am at the 27th street station early enough to get a parking space (especially in winter).
- I live up 4 mile road and need parking at 27th street to encourage me to use buses. I would like to be able to use buses.
- Better described as access. Parking need here can be reduced by better in-town connections to the station via transit or bike/ped
- There is no way to improve this situation. The city should have requuired underground parking from the get go. Too late now!!!
- Not enough spaces!
- I've had a hard time finding parking when trying to use the bus many times
- could use more parking here if no transit increases

## Bicycle and pedestrian access to transit

*17 Comments*

- Biking and walking to bus stops aren't too much of an issue
- Should have developed drop off and pick up for Ride Share and Taxi services at all RFTA park and rides, be inclusive
- 27th Street station is an island, really difficult to cross Hwy 82 as pedestrian/cyclist
- bike share at 27th Park-n-Ride and downtown GWS
- Most bus stops have no bike parking and bus users have asked for it in prior studies.
- Currently extremely inconvenient and feels unsafe
- If I am biking, I bike from carbondale to Glenwood for work and back. I do not mix riding and busing.
- This is a very congested area with lots of vehicles turning and trail users trying to cross busy SH 82.
- improve stops, bike parking, shelters, information
- I support a pedestrian crossing structure (either a bridge or tunnel) at 27th/Hwy 82. Since the station was built, foot traffic at this intersection has grown. Yet it seems like the traffic light timing has been changed to favor Hwy 82 vehicle traffic (understandably, since vehicle traffic has also increased). Pedestrians end up having to wait at the light for many minutes, sucking in exhaust. Also many vehicles will zoom through a yellow light or even a just-turned red light, which is unsafe for pedestrians. A crossing structure would be a great benefit to help pedestrians cross this intersection more quickly and safely.
- Increased ability to load bikes on transit would be amazing. I come from a town where all buses had front load bike racks for use.
- Especially more ease of access from Midland/4 mile road Corridor
- Is there adequate bike parking?
- Too many intersections to cross. Difficult to do with kids.
- GWS has made great strides in bike, ped access to transit but much much more needs to be done and it will really help with making transit more usable in GWS

## Intersection back-up downtown

*16 Comments*

- Only a bypass will correct the problem. Don't kid yourselves.
- Traffic gets horrible downtown
- We still need a bypass for downtown Glenwood Springs, poor planning results in pollution and traffic.
- High volumes of traffic
- I despise driving through GWS....it always seems congested
- It can take up to two minutes to cross 82/Grand once you hit the Ped button. This is awful for walkability and just about every other benchmark of a healthy community. Why the citizens of Glenwood have put up with this for so long is a complete mystery to me.
- There is some delay but it keeps people from speeding. Not like it is a huge problem in terms of efficiency, but it would be really great if transit lanes provided priority to busses through congestion
- Make the left hand turn lanes left only and combine the straight/right lanes, please.
- Yes, signal timing is an issue. The core problem is there are too many drivers. The new center of gravity for RFTA has shifted from Aspen to Glenwood. More and more commuters live west along I-70.
- I think you only solve this by somehow getting more commuters onto the bus.
- Do not wreck our downtown neighborhoods with RFTA.
- Stop building and the cars will stop gridlock in the highway!!!
- Signals for crossing 82 (in a car or as a pedestrian) need to be retimed. Two+ blocks of traffic on 8th waiting for a green is unnecessary.
- CDOT needs to synchronize the lights along GrandAvenue/Highway 82
- Clearly a problem at rush hours.



## Adding a RFTA VelociRFTA stop downtown (the bus would go direct to/from 27th Street station to downtown with no stops in between)

*16 Comments*

- Traffic gets so bad that it wouldn't be very rapid anymore. Also, it doesn't make too much sense to have Ride Glenwood, RFTA local, and RFTA BRT all servicing the same crowded area
- Not needed, what is needed is direct from west glenwood park and ride to 27th street.
- Not sure how much this would help if traffic still backs up on 82
- 27th St is too far from the downtown core...bike share would help
- Just makes sense.
- this could be nice, especially with transit priority lanes through congestion. Location of the downtown stop might influence the desire for this.
- This should be part of a route that goes to the West Glenwood RFTA station with stop on either side of 8th near City Hall. This will encourage a highly needed intercept lot in West Glenwood to alleviate traffic flow on Midland, 8th, and Grand Ave. Paid parking in the downtown core should be considered to encourage office and retail workers to use public transit. Intercept lots at West Glenwood Mall and near Walmart with frequent, inexpensive or free service along Hwy 6 and Grand Ave., ideally using smaller electric buses.
- No need more local stops between 27th and downtown
- This may help with parking demand at 27th street if customers are originating from downtown
- A critical component to make this effective is to have bus only lanes so buses dont get stuck in traffic.
- This is needed, but the highschool and grocery store should be priotized right along with a downtown stop.
- BRT buses should not go downtown but rather have Ride Glenwood pick up passé and take them into town and in out lying areas. Glenwood needs a better city bus system that serves the outlying areas rather than the same basic route that the RFTA buses cover.
- Need a shuttle downtown to West GWS
- If this helps relieve the downtown back-up, I would support it

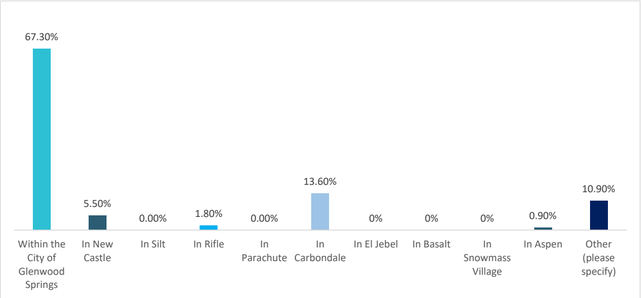
## Getting buses to be able to move between 27th Street and downtown quicker (examples include in an exclusive lane, semi-exclusive lane, and/or by having the traffic signals turn to green for them as they approach)

*18 Comments*

- traffic signals are a good idea- buy don't turn our roads into 1 street like aspen- we pat taxes for the roads to be used by the pubic. not exclusive for Rita
- It's not too bad, and I'd be hesitant to make traffic flow worse
- not sure
- BRT needs to connect to West Park and Ride and Bustang!!
- Should have planned a bypass and you would not need this, upvalley traffic going DV to Rifle etc would skip Glenwood altogether.
- If there is a semi-exclusive lane - would this remove street parking from 82? Not the worst idea - am sure residents would not like it - at same time they have off-street parking options and and can always park on the side streets. Not a constitutional right to park your car where you can see it.
- Explore other multi-modal options, not just expensive, loaud buses. electric street cars...or an elevated gondola along the Rio Grande corridor would be a great way to get through GWS. Bike share program would be a nice cheap addition to GWS
- I would not support automatic greens for buses if this would also result in more green time for cars on 82/Grand. They have enough already!
- Absolutely! Also, prioritize lights for bikes and Peds too, the lights currently prioritize cars and the cross-walk buttons are not responsive when pushed.
- stupid idea will all the traffic backed up for 2 people to use express lane
- Great idea. Please consider utilizing the RFTA Rio Grande Railroad Corridor. A busway, trail and stops can all co-exist with thoughtful design. E-bikes are a great commuting option for the Rio Grande Trail. Blake St. is also a great parallel bike route that goes through old town and connects to 27th St. BRT Station.
- A wide variety of options need to be considered for this as we do not want to push traffic off of Grand onto relatively quiet parallel residential streets.
- We saw this work during the GAB. If the bus gets traffic privileges it is more competitive.
- I think this is a critical component to make transit a priority.
- Yes! Making transit faster than driving during rush hour is the only way to boost ridership and provide an alternative that's actually useful.
- When there is an incentive to ride the bus, people will use it. Saving time spent in traffic is a great incentive.

## 8.) I live?

*(110 Responses, 12 Comments)*

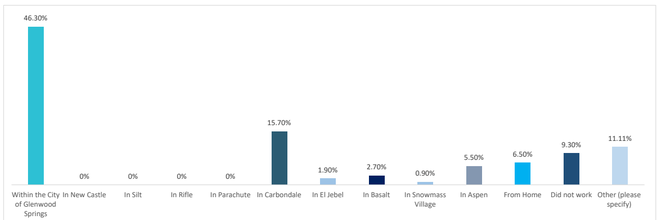



Other:

- No name
- City of Glenwood Four Mile Corridor
- Glenwood Spring unincorporated (2)
- Garfield County (2)
- In unincorporated Garfield County (2)
- On 3 Mile and use TAFTA to go up valley on a regular badis
- South Glenwood
- County outside GWS (4 mile)
- Marble

## 9.) Prior to COVID-19, I worked:

*(108 Responses, 12 Comments)*




Other:

- Student
- Retired (6)
- From Aspen to Rifle
- Within all of Garfield County
- Aspen to parachute
- work takes me throughout the region, would like to use transit more to and within GWS but it is not as easy to use transit to or within GWS as it is upvalley
- Throughout the Roaring Fork Valley.
- At CMC Spring Valley - between Glenwood Spgs and Carbondale





| Comments Collected from Outreach 1 (April 10th through May 10th, 2020) | |
|---|---|
| | **Bus** |
| **27th Street** | (-) (IN RESPONSE TO: WHAT ISSUES PREVENT YOU FROM RIDING RFTA/ RIDE GLENWOOD) Transfering at 27th is a pain. Intervals between busses are too long \| The connection at 27th St. from upvalley BRT to a downvalley local are poor. If I have a meeting in down-town GWS I now take a local bus from Carbondale b/c the only additional local stops are Aspen Glen and Walmart. \| Transferring busses at 27th is a pain. Intervals between busses too long. \| (IN RESPONSE TO; IF YOU USE THE 27TH STREET STATION, HOW DO YOU GET TO THE STATION -OTHER) The connection at 27th St. from upvalley BRT to a downvalley local are poor. |
| **Downtown/ Grand Ave** | (+) Bus lane so the bus doesn't get stopped in traffic (8th and Grand) \| A peak commuter period bus lane would help give priority and preferential treatment to riding the bus. CDOT successfully implemented a lane during the GAB project. (S. Glen Ave) \| consider ride glenwood/or some version to move off grand closer to neighborhoods to increase use? and decrease vehicle trips (11th and Blake) \| Waiting for busses on 82 is a drag. A rfta stop one block off would be nice.(9th and Cooper) \| This is the most important transit destination in the City. High school & groceries. A rfta stop here would be more useful and equitable than a downtown stop (although both are needed). (Grand Ave btwn 14th and 15th) (IN RESPONSE TO QUESTION 7; ADDING A RFTA VELOCIRFTA STOP TO DOWNTOWN) \| BRT buses should not go downtown but rather have Ride Glenwood pick up passe and take them into town and in out lying areas. Glenwood needs a better city bus system that serves the outlying areas rather than the same basic route that the RFTA buses cover. \| This is needed, but the highschool and grocery store should be priotized right along with a downtown stop. \| This may help with parking demand at 27th street if customers are originating from downtown \| (IN RESPONSE TO QUESTION 7; GETTING BUSES TO BE ABLE TO MOVE BETWEEN 27TH STREET AND DOWNTOWN QUICKER) If there is a semi-exclusive lane - would this remove street parking from 82? Not the worst idea - am sure residents would not like it - at same time they have off-street parking options and and can always park on the side streets. Not a constitutional right to park your car where you can see it. \| Yes! Making transit faster than driving during rush hour is the only way to boost ridership and provide an alternative that's actually useful. \| Great idea. Please consider utilizing the RFTA Rio Grande Railroad Corridor. A busway, trail and stops can all co-ex- ist with thoughtful design. E-bikes are a great commuting option for the Rio Grande Trail. Blake St. is also a great parallel bike route that goes through old town and connects to 27th St. BRT Station . \| Explore other multi-modal options, not just expensive, loaud buses. electric street cars...or an elevated gondola along the Rio Grande corridor would be a great way to get through GWS. Bike share program would be a nice cheap addition to GWS (-) (IN RESPONSE TO QUESTION 7; ADDING A RFTA VELOCIRFTA STOP TO DOWNTOWN) \| Traffic gets so bad that it wouldn't be very rapid anymore. Also, it doesn't make too much sense to have Ride Glen- wood, RFTA local, and RFTA BRT all servicing the same crowded area \| Not needed, what is needed is direct from west glenwood park and ride to 27th street. \| Not sure how much this would help if traffic still backs up on 82 \| 27th St is too far from the downtown core...bike share would help \| No need more local stops between 27th and downtown |
| **West Glenwood** | (+) BRT and Bustang need to connect! Needs better waiting area here-seating/shade/shelter. Needs overnight parking option for Bustang. (west glenwood park and ride) \| Need a shuttle downtown to West GWS \| more buses running in west Glenwood Springs and there needs to be a bus stop in Buffalo Valley |
| **Midland** | (+) consider more ride glenwood access on donegan so residents may opt for fewer vehicle trips (Donegan Road) \| restore and increase ride/public trans to south glenwood to reduce auto trips (Old Gardiff Bridge and Midland) |
| **South Glenwood** | (+) Some transit-oriented development (housing people can afford please) would be great here. But don't allow a sea of parking, let it actually be transit oriented (South of 27th) \| Bus service needed here thank you! (Midland and Mt. Sopris Dr) |
| **Rio Grande Trail** | N/A |
| **General** | (+) We know that many people need to use the bus daily to go to our jobs, and we are at a very high risk of getting COVID-19 from other people, and there are some people who, when sick with flu, cough very close to other passengers. I would like RFTA to be able to do new projects putting new bus services for people going or coming to the airport for a trip. RFTA should have separate trucks for travelers, or no longer carry them with suitcases, which they use only taxis and also have other trucks for skiers who come from these towns, it would be another service for skiers. Thank you, this is my opinion. \| I only use rfta if heading to Carbondale for fun, i'd use it to access bike trails but not sure how that works or if the schedule is convenient. \| BIKE ONLY LANES (-) (IN RESPONSE TO: WHAT ISSUES PREVENT YOU FROM RIDING RFTA/ RIDE GLENWOOD) cheaper to ride in a car together \| Since there is no connection from South Glenwood to RFTA, everyone that lives in South Glenwood must own a car and drive. Once you have driven as far as the nearest RFTA Park & Ride (which usually won't have any parking available, you might as well drive for the rest of your trip. \| short trips, varied times, quick stops and unable to wait \| There are not many West Glenwood bus stops \| Inconvenient stops/schedules \| It doesn't connect to downtown and west glenwood park and ride \| the downtown service is confusing and a bit unpredictable...ride glenwood vs local vs some locals that turn into brts, transfer- ring at 27th, etc \| RFTA can be expensive from Glenwood to Aspen \| no routes to Sunlight! \| Would ride the Glenwood service if it was expanded to Glenwood Park and surrounding neighborhoods. \| BRT needs to connect to West Park and Ride and Bustang!! |

## Bike

| | |
|---|---|
| **27th Street** | (+) Remains dangerous for bicycle riders and peds. would appreciate more caution/control of right turn drivers (south) onto Grand. Perhaps flashing on demand crossing sign. Also, all train tracks should be removed or covered over for bike safety. (27th and S Glen) \| A separated-grade bicycle-pedestrian crossing of Glen Avenue at 27th may represent an unnecessary (and extreme) expense. More clearly marked crossings, improved lighting, all-stop traffic cycles for motor traffic to allow safer bicycle-ped crossing may work as well or better. In any design, the current sidewalk along 27th between Old South Grand and Glen Avenue should be widened to 10 feet (at least eight) and fully maintained for safe use all year (especially including continuous snow clearing during winter). (IN RESPONSE TO QUESTION 7) improve stops, bike parking, shelters, information \| bike share at 27th Park-n-Ride and downtown GWS \| Should have developed drop off and pick up for Ride Share and Taxi services at all RFTA park and rides, be inclusive (-) (IN RESPONSE TO QUESTION 7) Biking and walking to bus stops aren't too much of an issue \| 27th Street station is an island, really difficult to cross Hwy 82 as pedestrian/cyclist |
| **Downtown/ Grand Ave** | (+) Consider green lane on established bike paths for additional safety and separation. At least consider 20 to 30 yards from intersections if whole lane is cost prohibitive (8th and Pitkin) \| I get nearly right hooked at these intersections all the time. Ped lead times and bike boxes would do wonders. (9th and Grand) \| We need at least one E/W number street downtown to be a bike route with lanes. Right now all our bike lanes are N/S only. (10th and Grand) \| The EB bike lane ends here, and most drivers want to turn right... which makes queueing a mess. A through bike lane or bike box would be real nice. (8th and Grand) \| (-) All sort of bike tire grabbing shenanigans here when you cross the tracks (23rd and Grand) \| GWS has made great strides in bike, ped access to transit but much much more needs to be done and it will really help with making transit more usable in GWS (-) (IN RESPONSE TO QUESTION 7) Too many intersections to cross \| Most bus stops have no bike parking and bus users have asked for it in prior studies \| Currently extremely inconvenient and feels unsafe \| If I am biking, I bike from carbondale to Glenwood for work and back. I do not mix riding and busing. \| This is a very congested area with lots of vehicles turning and trail users trying to cross busy SH 82. \| Too many intersections to cross. Difficult to do with kids. |
| **West Glenwood** | N/A |
| **Midland** | (+) bike / ped access between midland and devereux would be a game changer (Midland and Devereux Road) |
| **South Glenwood** | (-) Continue to make this a safter/smoother bike access to the Rio Grande Trail. Gravel and old RR bed is dangerous. |
| **Rio Grande Trail** | (+) The Rio Grande Trail Corridor s a great place for e-bikes, as well as a design that allows a bus-only lane to quickly access a downtown BRT station near the confluence. |
| **General** | (+) (IN RESPONSE TO QUESTION 7) Increased ability to load bikes on transit would be amazing. I come from a town where all buses had front load bike racks for use. \| prioritize lights for bikes and Peds too, the lights currently prioritize cars and the cross-walk but- tons are not responsive when pushed. \| Bicycle-pedestrian connections associated with West Midland, Eighth Street, and Seventh Street -- Several excellent-to-good bicycle-pedestrian components already in place--separated path paralleling West Midland, marked bicycle lanes on Pitkin Avenue, River Trail and associated ramps at Eighth Street, and reduced motor-traffic route on Seventh Street--are compromised by confusing and hazardous gaps and distractions. Needed improvements needed include: wider separated bicycle-pedestrian path parallel to Eighth Street between Roaring Fork River and Colorado Avenue (or clearly marked and maintained bicycle lane; wider sidewalk/bicycle path parallel to West Midland between Red Mountain Drive and Roaring Fork River; clear crossing signs, pavement markings, and motor traffic controls connecting River Trail ramps with Seventh Street. |

## Pedestrian

| | |
|---|---|
| **27th Street** | |
| **Downtown/ Grand Ave** | (+) seems like most downtown/core sidewalks need repair for ped. /senior/ada safety and access \| Work with cdot for more ped friendly crossing options and signals in downtown. Barnes Dance!! (8th and S Glenwood) \| Pedestrian crossing light used to change almost immediately after the button was pushed, but now the light doesn't change for many minutes. Consider changing it back so pedestrians going to/from Sayre Park can spend less time inhaling exhaust fumes.(Hyland Park and Grand Ave) \| Pedestrian tunnel under Hwy 82: improve lighting and visibility in and around the tunnels. I would use them more but they feel really creepy and dark and I do not feel safe there when walking alone. (12th Street Ditch and Grand Ave) \| Some corner ped refuge needed here for the gaggles of teenager that walk to City Market to cheetos for lunch every day. (15th and Grand) \| Can we make the 12th street ditch a place my mom would feel comfortable walking? (12th Street Ditch) \| We should get in the habit of providing a ped refuge in the center every time there's an intersection that doesn't need a turning lanes. (Hyland Park and Grand) \| (-) Dangerous bike/ped & vehicle intersection. Better visibility/signage (W. 6th and Linden) \| This signal timing is way off. Way too long of a wait to cross 82 on 8th.(8th and Grand) |
| **West Glenwood** | N/A |
| **Midland** | (+) A riverfront trail would be amazing here. It'd boost connectivity and propbably lead to some better / more appropriate land uses here too. People should eat and drink and walk and be happy by our river. (Devereux Roiad) |
| **South Glenwood** | N/A |
| **Rio Grande Trail** | (+) Trail connection would be nice here. Although the bushwacking makes me feel adventurous. (Rio Grande Trail and 14th Street) (-) This is easily the most dangerous bicycle pedestrian crossing in Glenwood Springs. While recent CDOT improvements to traffic-controls timing and to crossing markings have helped, more structural and educational improvements are needed. (Rio Grande Trail crossing 27th) |
| **General** | (-) (IN RESPONSE TO QUESTION 7) It can take up to two minutes to cross 82/Grand once you hit the Ped button. This is awful for walkability and just about every other benchmark of a healthy community. |



## Car

| | |
|---|---|
| **27th Street** | (+) Change the left lane to left (south) turns and forward (west) traffic, and make the right lane into right turn only. I frequently get stuck in the right lane (waiting to turn right/north) behind a vehicle waiting for the light to cross forward/west. (27th and Grand) |
| **Downtown/ Grand Ave** | (+) do not open existing palmer to northbound traffic If blake is south only, make palmer the same to minimize more traffic /cut through in neighborhood(s) (26th and Palmer) \| (IN RESPONSE TO QUESTION 7) There is some delay but it keeps people from speeding. Not like it is a huge problem in terms of efficiency, but it would be really great if transit lanes provided priority to busses through congestion \| CDOT needs to synchronize the lights along GrandAvenue/Highway 82 \| traffic signals are a good idea- buy don't turn our roads into 1 street like aspen \| (-) Traffic back-up at 8th and Grand both sides. Pedestrian light on north side adds to the backup (8th and Grand) \| Signal timing for crossing 82 is so bad that traffic regularly backs up to 8th and Blake, creating gridlock in Front of the fire station. Not a great place for bumper-to-bumper traffic (8th and Cooper) \| This is a very congested area with lots of vehicles turning and trail users trying to cross busy SH 82. \| (IN RESPONSE TO QUESTION 7) High volumes of traffic \| Only a bypass will correct the problem. Don't kid yourselves. \| Traffic gets horrible downtown \| We still need a bypass for downtown Glenwood Springs, poor planning results in pollution and traffic. \| Yes, signal timing is an issue. The core problem is there are too many drivers. The new center of gravity for RFTA has shifted from Aspen to Glenwood. More and more commuters live west along I-70. \| Stop building and the cars will stop gridlock in the highway!!! \| I think you only solve this by somehow getting more commuters onto the bus. |
| **West Glenwood** | N/A |
| **Midland** | N/A |
| **South Glenwood** | N/A |
| **Rio Grande Trail** | N/A |
| **General** | (-) Gosh, this one-way street is full of baloney! (Colorado Ave) |

## Parking

| | |
|---|---|
| **27th Street** | (+) RFTA has a small footprint for parking at 27th St. Please encourage the City to open the Blake gate, which will free up traffic flow and adjacent parking opportunities with shared parking agreements. \| (IN RESPONSE TO QUESTION 7) • I do use the parking garage, but there could be another garage in GWS \| People will always complain about parking, reality is very limited space in downtown area - much more beneficial to have businesses and buildings that generates tax revenue and jobs than just parking lots (-) MORE PARKING AT RFTA PARK AND RIDE..... NEEDS TO BE ADDRESSED..... fills up by 7AM (27th and Grand) \| (IN RESPONSE TO: WHAT ISSUES PREVENT YOU FROM RIDING RFTA/ RIDE GLENWOOD) Parking lot is full at 27th street station \| lack of parking \| (IN RESPONSE TO, IF YOU USE THE 27TH STREET STATION, HOW DO YOU GET TO THE STATION -OTHER) No parking at 27 th st. Need more! \| You can't depend upon parking being available. \| Again, inadequate parking \| (IN RESPONSE TO QUESTION 7; PARKING AT 27TH STREET STATION) I have given up taking the bus from 27th st to go skiing. \| The lot is always full. \| It's always full, I park at Walmart to use 27th st station \| Not an ideal park and ride situation \| not enough parking \| With proposed development at 27th and Palmer, additional parking for this location would be beneficial. As a recreational user of 27th street station, it is near impossible to find a parking space to use it as a true park n ride stop. \| I don't park there personally but frequently drop my husband off there and parking is always full. \| I have had to adjust my work hours to ensure that I am at the 27th street station early enough to get a parking space (especially in winter). \| I live up 4 mile road and need parking at 27th street to encourage me to use buses. I would like to be able to use buses. \| Better described as access. Parking need here can be reduced by better in-town connections to the station via transit or bike/ped \| There is no way to improve this situation. The city should have requirired underground parking from the get go.. \| Not enough spaces! \| I've had a hard time finding parking when trying to use the bus many times \| could use more parking here if no transit increases |
| **Downtown/ Grand Ave** | (+) (IN RESPONSE TO QUESTION 7) Need designated Ride Share and Taxi drop off & pick up areas \| The parking garage on 9th street is convenient & the EV chargers are added bonus \| Glenwood needs paid parking \| (-) parking garage fills up early and is not available after that through much of the day (9th and Cooper) \| not enough parking for the hotel/hot springs zone (6th and Olive) \| This parking is a bit too close to the corner. Makes it impossible to see pedestrians waiting to cross 82 until it's too late.(8th and Grand) \| Great overflow parking for downtown. Bad pedestrian connectivity (and bad drainage!).... also lots of long-term trailer parking here kills the vibe and eats up actual parking. (7th and Bennett) \| (IN RESPONSE TO QUESTION 7) Lack of parking management is a bigger problem than lack of parking supply. \| Downtown parking is usually full from my experience \| ALWAYS FULL |
| **West Glenwood** | N/A |
| **Midland** | N/A |
| **South Glenwood** | N/A |
| **Rio Grande Trail** | N/A |
| **General** | (+) Glenwood needs paid parking (-) Park and ride lot at Thunder River is always full. Many neighborhood cars, not commuters. \| No place to park at the bus stop \| Please don't add stops without additional parking. My commercial lot fills up with people trying to park and ride. \| No parking availability at bus stations |

| General | |
|---|---|
| **27th Street** | (-) (IN RESPONSE TO: WHAT ISSUES PREVENT YOU FROM RIDING RFTA/ RIDE GLENWOOD) RFTA can be expensive from Glenwood to Aspen, additionally, there is no parking at 27th St ( it gets full) \| trips too short - transit adds too much time |
| **Downtown/ Grand Ave** | (+) Consider additional signage/traffic/speed calming along this stretch of aouth grand. Many kids and school bus stop and peds and bikes. (Oriole St and Grand Ave) \| please follow through with promised calming/study as resources allow. Consider additional calming and signage and speed control from 20th to 13th! Consider making school zone speed more active and make school zone by CMC/and preschool there as well (Hyland Park and Blake Ave) \| Seas of parking and forest of curb cuts makes this stretch of sidewalk feel more like a tightrope. Landscaping and a wider, better sidewalk with more distance from traffic is very needed here. (Grand Ave btwn 14th and 15th) \| The combo of drivers looking for parking and sleepy pedestrians leaving the pizza place makes this right hook heaven. Bump outs por favor! Curb extensions si vous plait! (8th and Colorado) \| Would it be more beneficial to build "mini" stations spread along the entire corridor? That would avoid creating intense park&ride parking pressure in one area (particularly the downtown core), and place more high-functioning transit stops within walking or biking distances of homes, commerce, workplaces, schools all the way from West Glenwood to South Glenwood. |
| **West Glenwood** | N/A |
| **Midland** | N/A |
| **South Glenwood** | N/A |
| **Rio Grande Trail** | (+) Perfect place to connect the trail to downtown! \| While the RFTA tax-election proposal to build a separated-grade crossing for the Rio Grande Trail could increase safety, it has several potential draw-backs. These include: extreme cost for the project; potential corresponding delay in implementation, compared to potentially simpler solutions; structural challenges in maintaining grades and continuity usable by bicyclists of all skill levels (especially in the case of an overpass version--stairways or elevators are not appropriate at this crossing of 27th); potential sense of insecurity or discomfort for bicyclists and pedestrians (especially in the case of an underpass version); and maintenance and aesthetics issues. A range of other solutions should be evaluated and compared, including: all-stop traffic control cycles to allow unfettered at-grade crossing of 27th by bicyclists and pedestrians, perhaps supplemented by stop-cycle crossing gate for east-to-southbound motor traffic; otherwise enhanced signalling, marking, lighting, and enforcement features for safer at-grade crossing. Location 2) Bicycle-pedestrian connection at intersection of Glenwood Springs River Trail (on RFTA right-of-way), Red Mountain Trail, and Coach Miller Drive -- This is a very important connection point between the primary trunk-line bicycle/pedestrian route through Glenwood Springs and a series of important destinations: high school; parochial school; neighborhoods; hospital and medical clinics; commercial offices and service shops; major city park; churches; primary grocery store; other mid-town shopping; Colorado Mountain College; popular dog-walking park; and river bridge connecting to west-side neighborhoods (plus truck access to major municipal snow dump). The current connection is a dangerous and off-putting hodge-podge of loose and spreading gravel, traffic-worn potholes and ice patches, exposed railroad tracks, and abrupt pavement edges. The full truck-width of the east-west crossing should be paved between Coach Miller Drive and the Red Mountain Trail (completing paved connections with River Trail), with base and thickness sufficient to stand up to heavy truck traffic; the full width of the crossing should be left permanently open to bicycle and pedestrian access, perhaps supplemented with removable bollards to keep unauthorized motor traffic out. |
| **General** | (+) (IN RESPONSE TO QUESTION 7) •There is a balance between providing commuter transit parking, and encouraging users to ride and bike more to/ from stations. First-last mile solutions are often low cost. \| CDOT needs to synchronize the lights along GrandAvenue/Highway 82 \| Make the left hand turn lanes left only and combine the straight/right lanes, please. \| I support a pedestrian crossing structure (either a bridge or tunnel) at 27th/Hwy 82. Since the station was built, foot traffic at this intersection has grown. Yet it seems like the traffic light timing has been changed to favor Hwy 82 vehicle traffic (understandably, since vehicle traffic has also increased). Pedestrians end up having to wait at the light for many minutes, sucking in exhaust. Also many vehicles will zoom through a yellow light or even a just- turned red light, which is unsafe for pedestrians. A crossing structure would be a great benefit to help pedestrians cross this intersection more quickly and safely. \| This should be part of a route that goes to the West Glenwood RFTA station with stop on either side of 8th near City Hall. This will encourage a highly needed intercept lot in West Glenwood to alleviate traffic flow on Midland, 8th, and Grand Ave. Paid parking in the downtown core should be considered to encourage office and retail work- ers to use public transit. Intercept lots at West Glenwood Mall and near Walmart with frequent, inexpensive or free service along Hwy 6 and Grand Ave., ideally using smaller electric buses. \| Primary transit stops should be located and designed to facilitate and encourage commuter access without need for driving. More medium-scale stations may prove more functional than fewer major stations (the latter necessarily draw from a larger residential base and require additional motor parking). Certainly, the idea of a major downtown transit center seems ill-advised; more motor traffic and parking demand downtown is not helpful \| A suggestion ... The former Safeway store property is sitting idle. Would this property work for mixed use transit station, park & ride lot/structure, residential and commercial? Redevelopment of this property would take significant pressure off the 27th Street Station and bring other benefits -- new TOD housing, commercial opportunities. Transportation 2040 has assumed that a new transit station should/would be built in the downtown core. Is there another way to look at this? |

* (+) positive or solution oriented comments, (-) negative comments that highlight an existing issue

**Color legend: comments submitted from survey | comments from website | comments from interactive map





move
MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY

# OUTREACH 2 SURVEY RESULTS

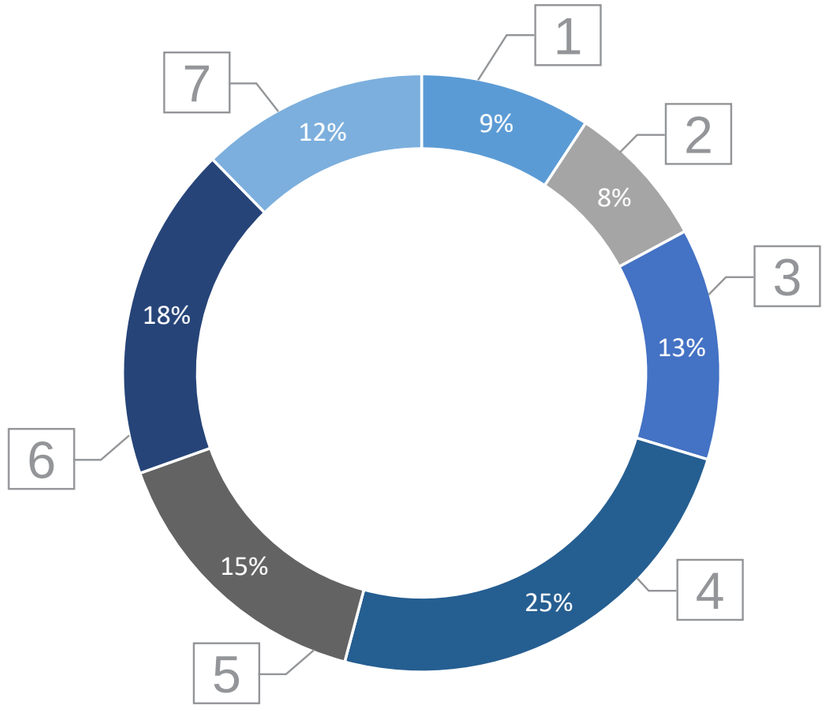
Outreach began August 20th, 2020
and concluded September 11th, 2020.

Provided by: Parsons + DHM Design
September, 2020

## Question 1

### Begin by choosing what you believe to be the top 3 project priorities. These priorities will help guide future transportation improvements. Please tell us which ones are the most important to you?

198 Responses Recieved




1. Minimize the costs of the proposed transportation and parking improvements
2. Emphasize safety and ease of automobile travel
3. Emphasize efficiency of transit
4. Promote easy and safety of walking and biking
5. Develop transportation and parking strategies that do not impact businesses
6. Develop transportation strategies that do not impact the existing Rio Grande Trail Corridor from 27th street to 8th Street
7. Minimize construction duration and impacts of proposed improvements

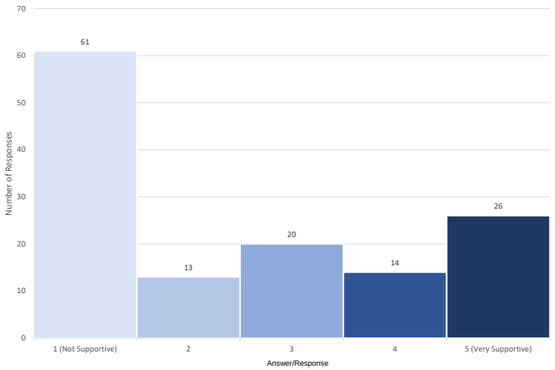


## Question 2

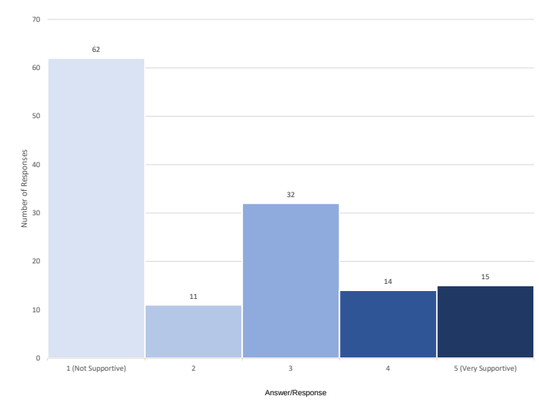
### How would you score these alignment options? Slide the scale from 1 (not supportive) to 5 (very supportive) for each:

135 Responses Recieved

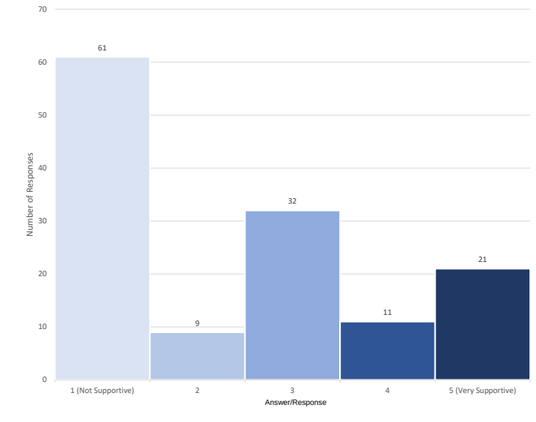
Grand Ave Option




Rio Grande Corridor Minimal Construction Option




Rio Grande Corridor Vertical Seperation Option



## Question 2: None of the Above  (Please Explain)

1. I don't believe that Glenwood can afford this, nor do I believe that it will provide any significant benefits. The South Glenwood area, 20% of the City has no public transit. If you have to drive from South Glenwood anywhere else, you might as well drive the directly to your destination
2. None of the above.
3. At this time where ridership is around 20% why are we not looking to improve ridership as opposed to spending more money on this company. Part of the Rio Grande Trail comes extremely close to GSES and that creates other safety concerns that don't seem to be addressed or even looked at. Not really excited to put more money into a company that can't even sustain themselves.
4. Bond issue passed last year..11.5 million grant received....pandemic....low ridership now...transportation may look different in 2 years.....WAIT AND SEE....
5. Both of these options will be harmful to businesses and the quality of life and property value for tax payers who have property adjacent to Rio Grande trail and The Roaring Fork River.
6. Can we consider a light rail option? Is that viable? From Downtown Glenwood to Aspen. One day Rifle to Glenwood.
7. Glenwood does not need BRT in downtown. Leave it as it is.
8. Glenwood does not need a BRT running through downtown Glenwood. Or along the Rio Grande Trail. This is a complete waste of money and time. There should have been a bypass built years ago. Now everyone will suffer the consequences of stupidity.
9. How many people are really riding these busses?
10. I don't Believe there needs to be any addition efforts put forward to expedite bus routes. Local small businesses depend on the accessibility of the parking near their businesses
11. I have serious concerns as to the benefit of any of these options. Who is going to use a system that extends between the 27th Street station and downtown? What would the connection to the Rio Grande trail From Glen Avenue look like and how would that function during various times of the day? Is the expenditure required for either Rio Grande option justified by whatever added ridership might be assuming there would be added ridership?
12. I just don't think the b r t riders even live or shop or even dine downtown
13. I would agree BRT, sure would help traffic flow and safety. Anytime any current parking spots r going to be removed than we MUST have more parking garages built immediately. Everyones initial complaint is they can never find a parking spot in this town. Please stop taking out the parking! Its hard enough to conduct a business when Glenwood has been marketed as the most fun town, but when they arrive "where the heck can I park?".
14. If you want to remove parking, are there plans to supplement it with another level to the parking garage? If so then go through grand. If not, leave our trails alone.
15. If you yake anymore parking away, I'll just quit eating downtown. Altogether.
16. Keep motorized vehicles on Grand Ave.
17. No dedicated bus lanes. No using the bike path. Dedicated bus lanes screw up traffic upvalley, please don't mess ul Glenwood.
18. No one parks on grand avenue anyway if they don't want their side view mirror smashed. Leave the bike path alone.
19. None of these are feasible. You cannot remove that much parking in downtown, you cannot completely up in the entire quart of Glenwood to realign something. Instead of starting an entirely new project that is going to cost millions of dollars, why not improve light efficiency, provide better patrol for downtown Glenwood. None of these options are acceptable.
20. Other options may include further horizontal separation and enhancement of the Rio Grande Trail closer to the river. Reducing the traffic on Hwy 82 should be a goal. Getting more commuters onto transit before they drive through Glenwood springs - such as a West Glenwood park and ride just off I-70, and more Hogback service.
21. Please dont mess up our town. Dedicated bus lanes made a mess of Aspen traffic. Leave the bike path alone.
22. Rafta is a huge money grab. Not providing adequate needs for the funds wasted
23. Rfta Already gets enough of our money and dominates traffic in Glenwood enough. You don't need to take away our parking, impact our business is our trails in neighborhoods any further.
24. River trail options are not worth 1/2 to 2 minute time savings, and not worth the cost. River corridor is tremendous asset. Having buses traveling next to path would ruin the whole experience! Grand Ave option better, but not good either - parking already limited, and green times on Grand are already too long for side street traffic -- why spend the money?
25. The Grand Ave. option is terrible. The two Rio Grande options are better but still impactful. RFTA's service through Glenwood is not beneficial to most residents of Glenwood, yet the impacts imposed upon Glenwood and its residents continues to grow as they move to expand. While public transportation is nice, it doesn't work for a majority of travelers (and never will).
26. The amount of people and traffic that funnels through Glenwood is substantial. Increasing/prioritizing a bus service that less than a quarter of residents take is foolish. A solution for the current parking and traffic debacticle we have should be a higher priority before fixing something that isn't broken.
27. The buses don't need dedicated space, shouldn't take away valuable parking for downtown businesses and shouldn't be behind the elementary school Making the school less safe!
28. The citizens of Glenwood would be sacrificing their quality of life and tax dollars for the benefit of commuters to up valley jobs. The downtown corridor has too much congestion already and any transit stations should be located on the outskirts of town with adequate connections.

*Note: We have included all comments exactly as entered.*



29. There is no proof that this project is needed-
30. What's wrong with the current setup??
31. Why are these changes needed?
32. You continue to ignore South Glenwood
33. You do not need to ruin the properties from 16th to 23rd street by putting a bus in the back yards...Do not take the bike path and change it where there are buses running along side...for the usage I see on the busses in town, I believe this is an added expense that isn't necessary and the busses are doing the job designed to do right now...if you think this change will add ridership you are sadly mistaken as it won't change peoples habits and get them out of their cars...the problem is the routes do not accommodate the publics needs and they don't cover the areas where people needs stops, RFTA can't even service South Glenwood area at all and you want to spend millions on a change that will serve no purpose except to cause unneeded construction...spend your money on service to South Glenwood 1st before making this boondoggle happen...
34. Your saying they would either take parking from us, which is hard to come by and goes against the idea of bringing people downtown, or putting buses on a trail that is extremely close to GSES. None of these options were made for the benefit of Glenwood Springs.
35. stay away from downtown.
36. why not take a real lane of grand ave for buses only?

## Question 2: Additional Comments

1. We don't need more busses in town
2. Anything that decreases downtown parking is a terrible idea.
3. BRT on the Rio Grande Corridor is a horrible idea for all stakeholders except those passing through town on a bus. With or without vertical separation, BRT on the Rio Grande Corridor effectively cuts off downtown and neighborhoods to the south from the Roaring Fork River. Yes, there are a few access points across the bus lane, but the ease and desirability of access is ruined. This usage also greatly detracts from the experience of those recreating on the Roaring Fork River and Rio Grande Trail. Glenwood Springs is fortunate to have plentiful river access and use in town - it's part of what makes this place special for visitors and residents alike. I am a daily, year-round user of the Rio Grande Trail and can tell you that it is a valuable and well-used / enjoyed connection to nature and the outdoors. With buses along the Rio Grande corridor, instead of the peaceful float, walk or ride we have now, users will experience a regular reminder that moving people through town is more important than quality of life - we will see, hear and probably smell that reminder every day. Finally, the impact to residents in the Wildwood Condominiums on 14th Street, riverfront homes on Midland Avenue, and perhaps most importantly, the South Park neighborhood cannot be overstated. Project planners have undoubtedly seen how close the BRT alignment is to homes on Park Drive and the Wildwood Condominiums. This usage will devastate the investment homeowners have made in their properties and will lead to neighborhood decline. It will put homes currently in a quiet but conveniently located area directly on a major transportation corridor. I urge you to keep BRT on Grand Avenue. It makes the most sense. Keep the traffic where it is, do not cut-off the town from the Roaring Fork River with a third transportation corridor in our narrow part of the Valley. Residents and visitors should not bear the brunt of Up and Down Valley transportation needs in our neighborhoods and natural gems. The Grand Avenue option not only maintains quality of life and improves automobile performance through town, this lower cost option likely also allows for a budget to improve the existing Seventh Street parking lot to compensate for lost parking spaces on Grand Avenue; make it a parking garage/ramp instead of the Transit Center. This makes the most sense for downtown and adds to the reasons why Highway 6 is the logical choice for the Transit Center. Most frequent users of the BRT will be those commuting between Down Valley communities and Up Valley ones. The Highway 6 site keeps cars out of Glenwood proper and decreases congestion on Midland and Grand Avenues at rush hour times. It allows for more parking than the downtown site and keeps bus traffic on Grand Avenue, which protects downtown from that added traffic on side streets. Please preserve the qualities that attract so many to live, work, and recreate in Glenwood Springs by supporting the Grand Avenue Option. Thank you for your consideration.
4. Creating a bus lane along the Rio Grande bike trail would severely impact the natural aspect of the walking and biking trail - creating bus traffic, noise, and overall gross stuff along this beautiful part of the trail. I love this trail as it is because it runs alongside the river and allows bikers and walkers to appreciate the beauty of the Roaring Fork River. If you were to add buses to this, it would ruin the current atmostphere.
5. Do NOT take parking away from the downtown businesses. Most are barely hanging on after the bridge replacement, COVID-19 and the fire during peak season.
6. Don't mess with the current bike path!!!
7. Downtown Glenwood has such a poor pedestrian experience due to massive traffic impacts as it is. Do not harm the human character of downtown by adding a bus lane and making it feel even more like a highway than it already is.
8. First option would be good if there was an additional parking structure downtown. Free during the week and charge on weekends
9. For any of the options, particularly the RG options, how and where will snow be plowed? Could any option work utilizing the "left turn lane" on SH 82/Grand Ave.? Such as prohibiting left turns during peak commute times to allow buses to use this lane? AND to construct safe pedestrian islands at stops to allow passengers to board/deboard buses? I have seen these in cities with light rail stops. AND with using the left turn lanes to also do the "preferential traffic signal" technology. This option

could preserve parking spaces, but could be problematic in the winter as snow is currently plowed to the middle and stored there until removed. As CDOT has responsibility for plowing SH 82/Grand Ave. and the City of GWS removes from the center, have they been consulted with the Grand Ave, BRT option?

10. Forget about the buses and think strategically. Build a light rail from Glenwood to Aspen
11. I live in the South Park area on park drive, and have always known that the RG corridor was been allotted years ago for future transportation issues. I use the RG trail every day and love it so I am glad that the goal is to keep (and even improve) the trail. As for an alternate for transportation The time has come to use the RG corridor. . If the construction is done well keeping beauty in mind and ensuring that the trail is west of the BRT lane so that trail users can continur to enjoy the river views... this is clearly the best option in my opinion. Quicker transit, won't impact local businesses. GWS has demonstrated with the grand ave bridge and 7th street aesthetics that we can do this right. My choice is the RG corridor even though I recognize we'll hear bus traffic. Not a major downer in my opinion.
12. If a parking is eliminated downtown...will there be a parking structure built to handle parking? The two existing are always full as is.
13. Impacts to the local residents of Glenwood Springs should be minimized.
14. In the description Is of the 2 rio grand options, The material claims that these options are low cost and low construction. However in the bullet points the projects cost More and are more construction intensive. So that is confusing.
15. It's important to maintain a quiet and serene scene along the bike path
16. Keep motorized traffic on Grand Avenue so bicyclists and pedestrians can continue to use Rio Grande trail.
17. Keep the buses on SH82!!
18. Keeping automobiles off the Rio Grande corridor should be a top priority.
19. Need to get the traffic lights synced on Highway 82/ Grand Ave. through town.
20. Option 1 - hate to see downtown parking spaces eliminated. Option 2 & 3 - If electric powered buses (only) would be guarantee for run on this route, it would make the offer more attractive. Minimize noise and pollution along the Rio Grande bike trail and an easier get more buy in.
21. Please do not remove parking from downtown. This project is not in the best interest of citizens.
22. Putting a bus route on the Rio Grande corridor is an abhorrent idea. People need more exercise and fresh air, and less congestion and havoc. Sacrificing a beloved pedestrian area for more motorization, mechanization and crowds is counter-productive and unnecessary.
23. RFTA has already secured this corridor and in the interest of being a good partner and showing care for our community, they should have planned for and prepare to use the "best" option which is the Rio Grande corridor in a manner that keeps the trail.
24. Really hate the idea of giving up parking by local businesses and the thought of more construction on Grand avenue during a pandemic is not appealing.
25. Rfta is the biggest waste of taxpayer money. You have a great scam going. Keep up the good work. Also you should be proud to be one of the biggest contributors to pollution in our valley.
26. Sliders aren't working. RG Vert sep 5, RG min const 4, GA 3.
27. The Grand Ave option is a terrible idea!!! Parking downtown is already difficult enough without RFTA taking away all those places. In addition, RFTA drivers are notorious for being unaware or uncaring of drivers and pedestrians around them. If the bus lane removes the bike lane I would be willing to bet there will be RFTA driver caused deaths and accidents daily. Bikers will have to swerve into car traffic to avoid RFTA drivers who drive like there is no one around.
28. The Grand Ave. option is easily implemented on a trial basis, and should improve vehicle flow on Grand Ave. as well.
29. The downtown businesses are already suffering so much and now you want to take away their parking. Infuriating.
30. This is insane. We don't need busses downtown!
31. This whole idea worries me, as the beauty of the trail is that you really have no idea that just a couple of blocks over from you is an extremely busy Grand Ave. Having buses right next to the trail will take away from the gift that the trail brings to our community. If anything I would love to see more trees planted to help with the areas that are extremely hot during the afternoon as much of the trail provides no shade. I use the trail almost daily to commute to work from West Glenwood to 23rd. Thank you...
32. Though expensive, a real solution would be to use the Rio Grande Corridor for a bypass that both passenger vehicles and public transportation vehicles could use. The will has not been there to accomplish the goal of improving Glenwood's transportation needs. We will continue to kick the can down the road and only make it worse with further lane dedications to RFTA and signal priority to 82. The decisions we make today will only further limit our future options. These ideas take away from the residents of Glenwood Springs - they are a gift to those that live down valley and want to travel through Glenwood to get to their up valley jobs.
33. You should not eliminate parking downtown and why ruin the rio grange trail
34. find a cost-effective way to provide congestion relief
35. the impact on the residences from 16th to 23rd will be great and having a bus in their back yard isn't the answer...having a bus along the bike path is bullshit! Ruins the entire experience, leave the path alone from 8th to city limits!

*Note: We have included all comments exactly as entered.*

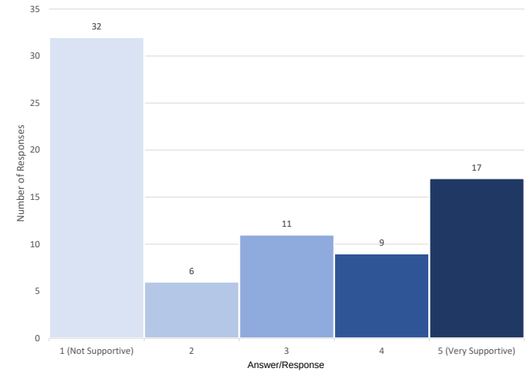


# Question 3

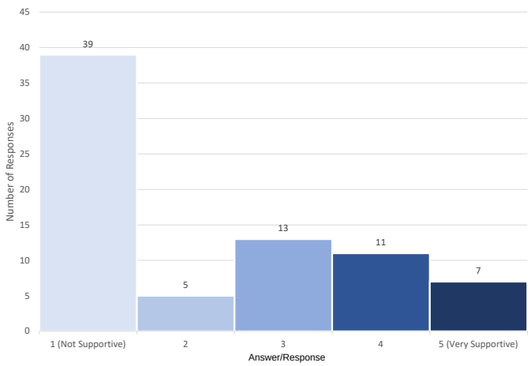
## How would you score these transit center location options? Slide the scale from 1 (not supportive) to 5 (very supportive) for each:

75 Responses Recieved

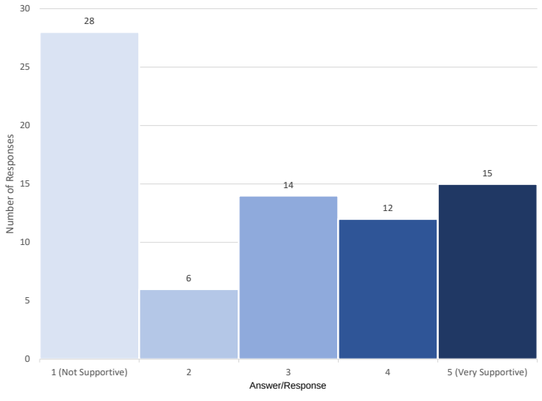
RFTA Property South of 8th Street




7th and Colorado Avenue Site




State Highway 6 Area Site



## Question 3: None of the Above  (Please Explain)

1. Again shouldn't be next to elementary school making school less safe. Move to 6th st for hotel guests as locals don't use glwd bus much anyway.
2. All of these sites could be resturaunts or shops a bus hub would be a complete waste.
3. Do not take over the downtown area! It's the heart of our town and the generator of the money you want to spend!!
4. Do you actually listen to area residents??
5. Downtown already has a parking shortage, why would we want to sacrifice more parking for transit? All of these options will attract more traffic to areas that already have too much traffic.
6. Glenwood does not need BRT downtown.
7. If there is evidence that people coming from West Glenwood or the communities to the west of Glenwood Might park at the 6th Street location and shuttle into downtown, there would be a usefulness for that location. Few people would be willing to walk from that location or the confluence location at the Rio Grande to downtown. The 7th and Colorado location looses too many parking spots.
8. Just keep the buses where they are.
9. Let's NOT bring even MORE traffic to downtown Glenwood!
10. Please keep downtown Glenwood alone. Transit center makes more sense in West Glenwood on the other side of the grand avenue bridge from downtown.
11. RFTA and the City of GS need to stop raiding the Downtown for their projects. Downtown on-street parking over the years has been "taken" street by street. Numerous attempts have been tried by the City to make downtown PAID-PARKING. Ride Glenwood is a failed bus system (no longer does the City publish the cost of rider-trip each month). BUS RIDERSHIP is a POLITICAL catch-phrase. Bus ridership is not successful, nor is it anywhere close to economical (cost per rides traveled) in Glenwood. RFTA does not attempt to see that the Ride Glenwood schedule is supplemented by the RFTA schedule (if the 2 systems were efficiently 'set-up'- there could be 20-minute service through Glenwood....but there is not an efficient scheduling). The Ride Glenwood and RFTA buses go through Glenwood 90% to 95 % EMPTY for most of their trips (agian....there are no published figures from the City any longer. The City stopped publishing ridership through Glenwood when the figures became dismal. The systems running through Glenwood neither meet the need of the population for frequency or cost. Ridership going 'up-valley' from the 27th St bus stop is the only Glenwood stop that is successful by any industry standards.
12. RFTA is obsolete because of COVID and should be disbanded
13. Rfta has a bus barn in West Glenwood. Create a station there. You have a large station at 27th.Dont use prime space for a bus station.
14. The Hwy 6 option has enough land and could compliment the network without cramming a transit center in the heart of downtown.
15. These locations have been studied in the past- and were overwhelmingly rejected by the people polled
16. This is not needed.
17. West Glenwood??? No available parking downtown.
18. What seems to be the problem where the existing transit station is? Bus routes in town get you to the station and you switch busses to where you need to go...we don't need a transit station in downtown! US 6 is the worst idea...too far from the core....

*Note: We have included all comments exactly as entered.*



## Question 3: Additional Comments

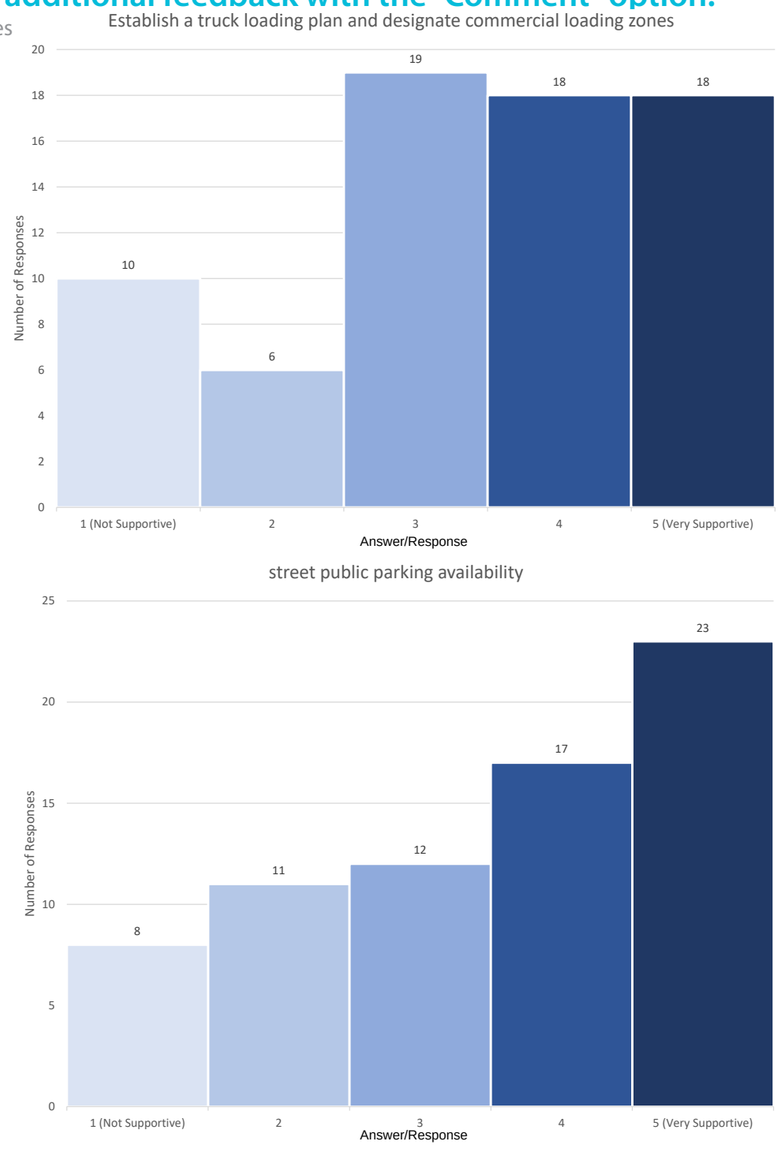
1. Adding a bus center to the downtown area would make it into more an industrial zone, instead of the movement towards pedestrian and bike-friendly area it has become over the past decade. It would make much more sense to add it the Hwy 6 area, which is not in the core of downtown and more auto-friendly.
2. Again you are taking scarce parking away from downtown businesses or putting an unsupervised parking lot next to an elementary school. How these seem like good ideas are beyond me
3. Did you consider the city owned property at Midland and 8th? That could flow nicely if the midland corridor is used.
4. Do none of these...
5. How much of Glenwood Springs are we willing to sacrifice to supply workers to Aspen? Perhaps the City and Garfield County should reconsider using the millions of dollars we give to RFTA each year to satisfy their unquenchable thirst to convert our whole valley into a bus system to programs that make it more livable for the people who live here.
6. I feel that the downtown area is so congested that adding the transit center to the cluster would be too much. I prefer the 7th street over the 8th and think the 6th street area option is the best. I think the more we can keep the river area in its natural state, the better.
7. Insane!
8. Keep transit out of the confluence area
9. Rfta property is an unused area. And an eyesore. Spiff it up and use it as it should be used. Don't take away the 7th street parking.
10. The highway 6 option will result in more cars. Also access is not very safe for bikes and peds
11. The location on 8th isn't terrible but I would be concerned about the proximity to Glenwood Elementary School. Having young children near a bus depot does not seem like an intelligent nor informed choice.
12. The station at 7th would eat up significant downtown parking - which is desperately needed. People riding the bus are probably wanting to get to their cars and head home - not shop and hang out in downtown Glenwood. FYI - you're map shows the BRT station consuming parking, but also one of the most thriving blocks in Glenwood Springs. The State HWY 6 option is at least out of the way and tucked out of sight with sufficient parking. The 8th Street land could be used/developed into something much more functional.
13. This is the best site at this time. We need to make sure it will not interfere with future plans for the Confluence area master plan. I would suggest the parking lot to the east of the old waste water plant site and then integrate the transit center with 7th street and an improved connection to 8th via the street in front of the police station. No commercial or residential will want to built that close to the railroad track, therefore this site lends itself perfectly for a civic amenity. Add structured parking for non patron use and you'll have a double win for the downtown area.
14. Vote for Rio grande corridor site if a Rio grande corridor (elevated preferred) is created.
15. With potential development in the area north of the elementary school and west of City Hall, that could be a factor in ridership. Parking availability could also be a factor. Proximity to businesses for both south of CO River locations is fine. IF SH 6 option decreases the amount of traffic coming into GWS core areas, that would be a preference and works with the Grand Ave. BRT choice.
16. Just like downtown aspen the buses take up 3 or so city blocks. Parking is difficult enough
17. Keep it out of downtown
18. Put transit hub downtown

*Note: We have included all comments exactly as entered.*

## Question 4

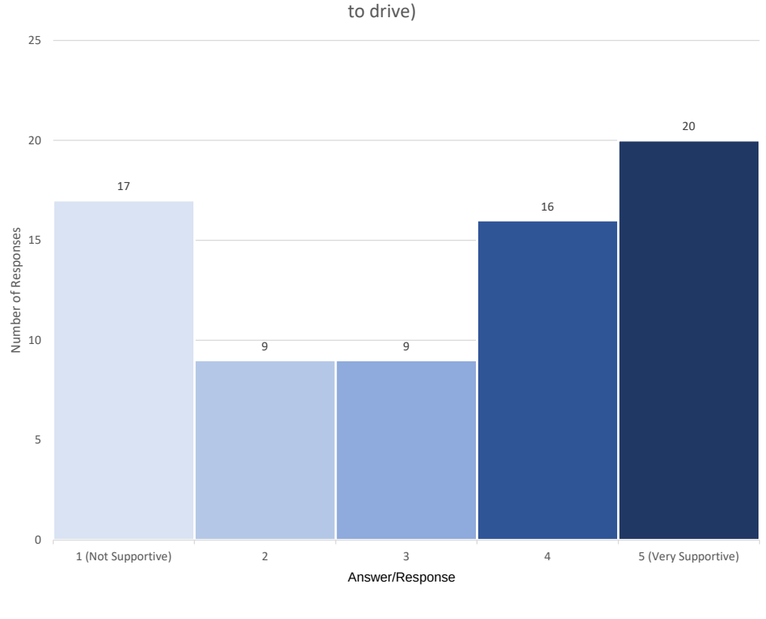
**How supportive are you of each of the following strategies to improve parking in the downtown core? Indicate your support on a scale of 1 – 5, where 1 is (not supportive) and 5 is (very supportive). Provide additional feedback with the "Comment" option.**

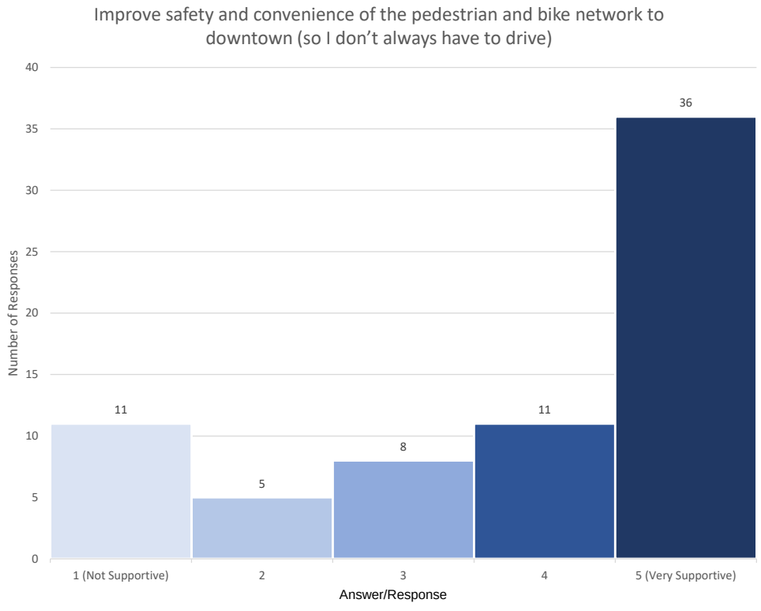
71 Responses Recieved

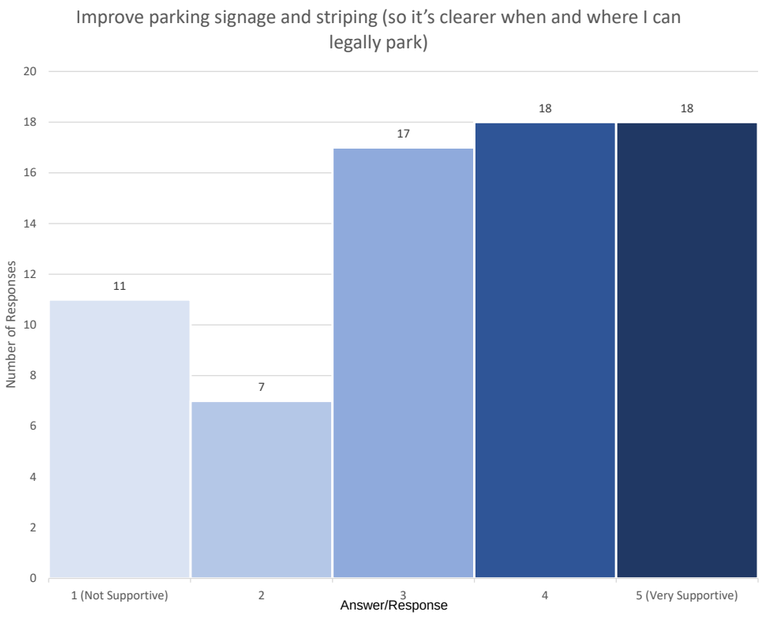










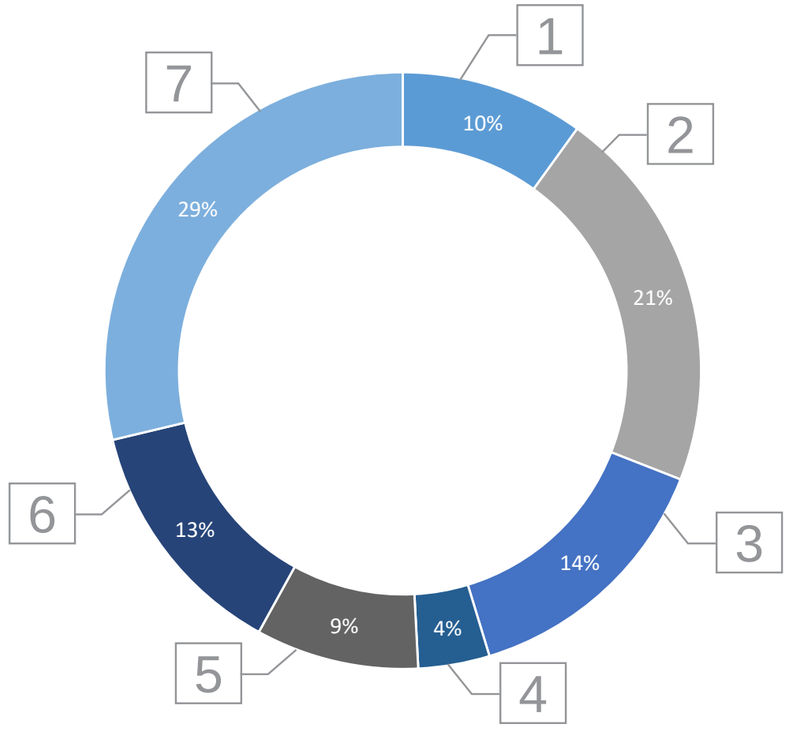

## Question 4: Additional Comments

1. "The improvements listed in the remaining questions were developed based on the issues you that were identified from the previous public process and we would like to understand which are most important to you." ...The above is the statement that you sent out. If the City cannot even compose/proof-read a sentence that should make sense- we probably do not need for the City to take on an expensive, unnecessary project that is not needed, a project where there is NO PROOF that it will be successful (either in terms of numbers of riders, or in terms of money being expended).
2. All of these will have unnecessary and unintended consequences. The city should focus on what they have and look for improvements that they can implement - they don’t need RFTA telling us what we should or should not be doing in our downtown, particularly as it relates to parking. RFTA should focus on their bus system, not community planning.
3. An off grand Ave parking garage would add more spaces so busses can use a bus lane on grand avenue instead of messing with the bike path.
4. Downtown parking is critical. Most people drive and ride bikes or walk and bus service is low priority.
5. I think I'd like to see more RFTA usage (Ride Glenwood) before I'd recommend the need for improvements. I rode the bus all winter the past couple of years, and the ridership remained the same, with mostly high school students in the morning. I question why they don't have a bus and have to pay $1 each day to get to and from West Glenwood to the High School. Maybe there is a bus and they don't want to ride it? The rest of the year I ride my bike, walk or occasionally drive. The options are all great to get from West Glenwood to downtown, but are not in the best shape. Sidewalks abruptly end and you have to cross the street to continue, crossings on Grand are scary as cars rush through the lights while you've started your journey to cross the street. Wait times to cross are long... Further, the trail that runs along 6th is really in bad shape. Some improvement was made to the large gaps in the pavement, but many still remain. It's uneven, gets a lot of gravel on it, etc. My point being it all has great potential, but is not well maintained. On the River trail the lines are gone on a lot of it, and they are really helpful to keeping us all on the right side of the trail. Anyway, thank you for doing this survey. More is not always better...Improve what we have is what I'd like to see.
6. I think instead of adding parking to downtown, we need to improve the accessibility of downtown via bike paths and pedestrian zones. Limiting auto access will keep downtown more pedestrian-friendly.
7. Insane
8. Should have made 27th street lot a parking garage.....
9. Time for paid parking!

*Note: We have included all comments exactly as entered.*

## Question 5

### How can we best improve the pedestrian experience in the project area? Select your top 3 preferred strategies and provide additional feedback with the "Comment" option.




- 1. Repair downtown sidewalks and ADA ramps to improve accessibility
- 2. Improve signal timing to walk across Grand Avenue downtown
- 3. Improve structural and navigational (wayfinding) improvements at Rio Grande Trail and 27th Street to improve the safety at this intersection
- 4. Improve complete and intuitive wayfinding signs at major transit stops to provide directional information to users
- 5. Improve shelters at transit stops to improve the experience waiting for the bus.
- 6. Improve accessible shared-use paths and trails (i.e. improving trail access at Rio Grande Trail midpoint locations, remove rail tracks in the Rio Grande corridor) to improve safety and comfort for pedestrians
- 7. Maintain sidewalk, trail, and bicycle networks year-round to enable more use in the winter months



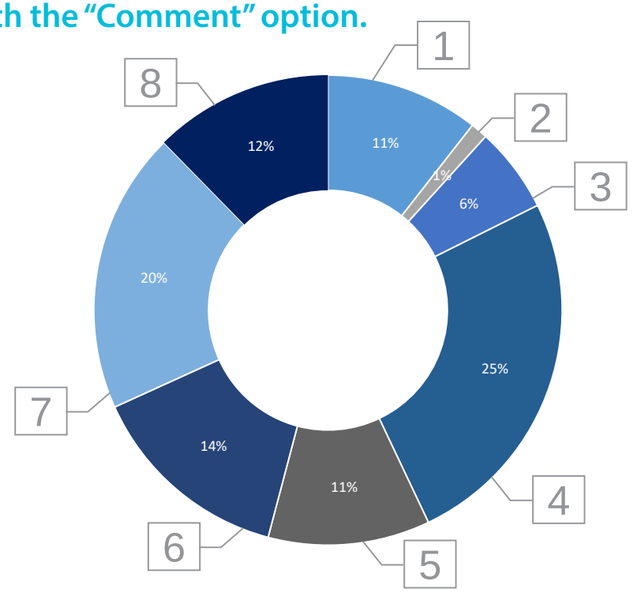
## Question 5: Additional Comments

1. Build for safe and comfortable pedestrian and bicycle access along all streets and the Rio Grande corridor. This is not exclusive of vehicles, but prioritize routes in neighborhoods and commercial districts where people want to gather and access their homes. Use the RFTA rail r-o-w for BRT and claim it as a transit corridor. That is what it was purchased for, and will give transit an advantage over automobile traffic for commuting through the city. Highlight the access to schools, downtown, and grocery, as well as neighborhoods. Use quiet clean busses.
2. Crosswalks, stop signs, bike lanes, and electronic speed limit sensors would improve the pedestrian experience. Honor school zones with slower speed limits and a preferred bike routes.
3. Pedestrian and bike trails are pretty good north-south in Glenwood's downtown. It's the east-west access that is more of a struggle because of the lack of dedicated trail to get commuters from the current RGT into downtown. Prioriy should be to create a more biker/walker route from the river into downtown from south, mid, and north of downtown.
4. Removing rail tracks for ped safety is also important
5. Since the increase in traffic and pedestrian over the years , I truly believe this town now needs a overhead walkway on 8th and grand ave. I realize many people feel that a walkway such as that would take away from our little town look and feel, well we are not a little town any longer and we must move people across a busy hwy safely. We can make it look great.
6. Stop the bleeding (dollars). Wait to see how this pandemic will change our world!
7. The lights in grand already take a long time. Please time the bus lights to coordinate with existing lights so they don't result in a significant increase of wait times.
8. There certainly seem to be a lot of ways the City Staff has come up with to spend money. How about lowering the number of projects, and reducing our abominably high sales tax?
9. These are all items that should already be happening - we don't need a study or survey to tell us this. Why wouldn't bus users want better shelters? Why shouldn't the city already be maintaining sidewalks and complying with ADA requirements? Grand Avenue is SH-82 and CDOT controls signal timings to move traffic.
10. clowns all of you
11. improve the drainage for the underpass at 12th, too muddy if you're going to work

*Note: We have included all comments exactly as entered.*

## Question 6

**How can we best improve the pedestrian experience in the project area? Select your top 3 preferred strategies and provide additional feedback with the "Comment" option.**




1. Improve secure, short-term and long-term bike parking to encourage bicycling to transit stations
2. Create bike service stations at major stations or a downtown parking garage to encourage bicycling to stations by enabling bike maintenance
3. Create bike share to provide better first- and last-mile connections between RFTA stops and stations and the downtown core.
4. Improve connected, dedicated bike networks (i.e. not utilizing sidewalks as designated bike route) to increase bicycle connectivity and minimize conflicts with pedestrians and vehicles.
5. Improve accessible shared-use paths and trails (i.e. improving trail access at Rio Grande Trail midpoint locations, remove rail tracks in the Rio Grande corridor) to improve safety and comfort for bicyclists.
6. Improve major bicycle connection intersections (striping, signal improvements, and geometric improvements) to increase bicycle comfort and connectivity through town
7. Maintain sidewalk, trail, and bicycle networks year-round to enable cycling through the winter months
8. Improve bike loading on buses, to aid and encourage first-/last-mile trips by bicycle

## Question 6: Additional Comments

1. We have tried bike sharing in the past.... the bikes were all stolen. 2) VERY FEW people are interested in riding bikes in snowy conditions.... no matter what IMPROVEMENTS are made to sidewalks/trials 3) There is no box to check as to EDUCATING the bike-riding-population as to rules of the road... where it is proper to ride a bike... how to look out for pedestrian... how to ride on a bike trail without endangering the walking public
2. Encourage no bike use on grand avenue by making other connections to the rio grande trail better and easier to find.
3. How much will the tax payers have to subsidize a bike share program? How much does Basalt and Aspen subsidize their programs? Do these bike share programs really serve last mile needs or do they really just provide a convenient bike rental option for tourists that would take business away from our local bike rental shops? Shouldn't the city already be maintaining the bike paths?
4. Use residential streets as designated bike routes with white striping - Blake, Cooper, Colorado, Pitkin. Keep heavy traffic, buses, on Grand Ave.
5. clowns all of you

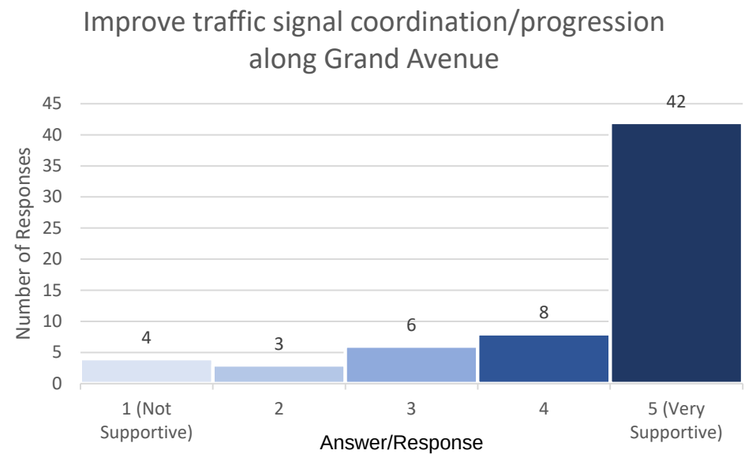
*Note: We have included all comments exactly as entered.*

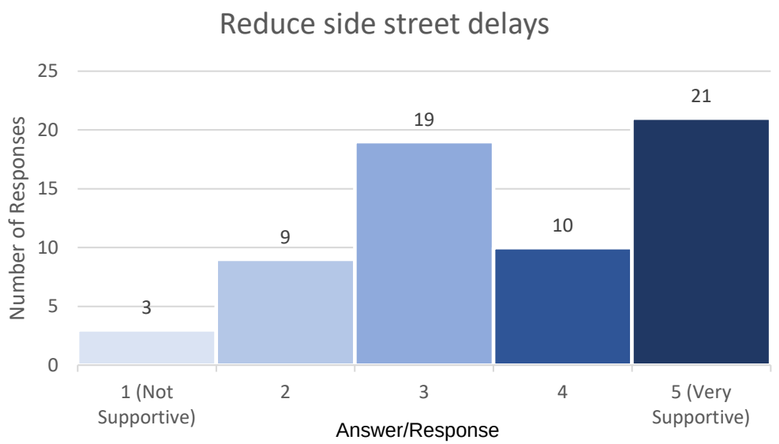


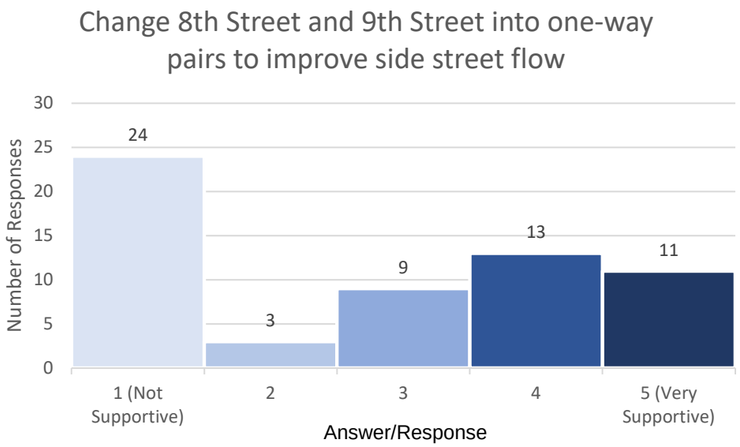
## Question 7

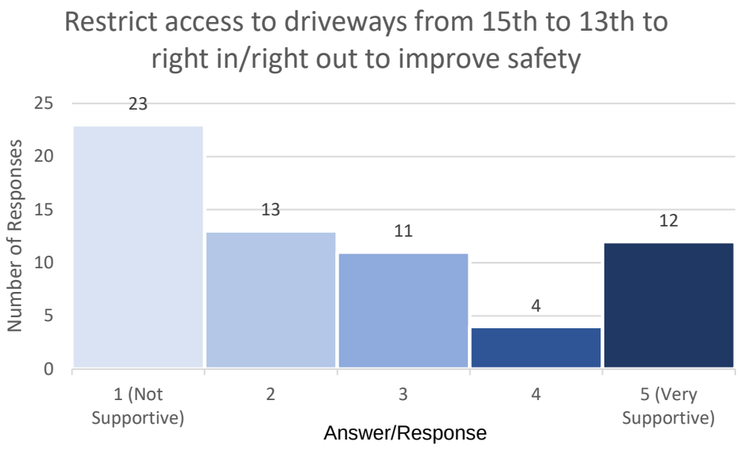
**How can we best improve the personal automobile experience and reduce traffic congestion in downtown Glenwood Springs? Indicate your support on a scale of 1 – 5, where 1 is (not supportive) and 5 is (very supportive). Provide additional feedback with the "Comment" option.**

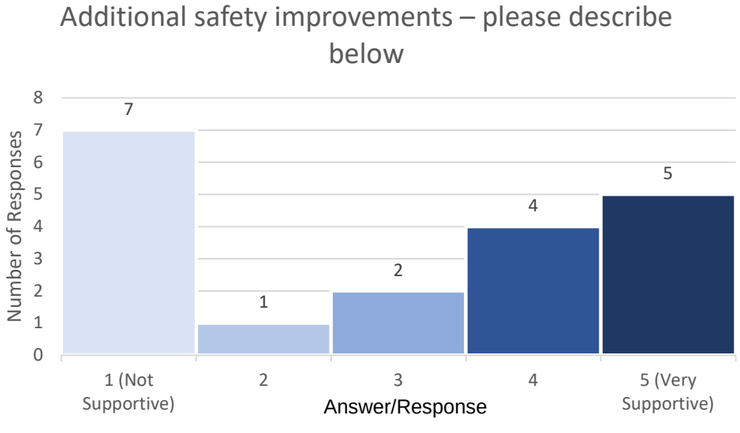
Up to 63 Responses Recieved






## Question 7: Additional Comments

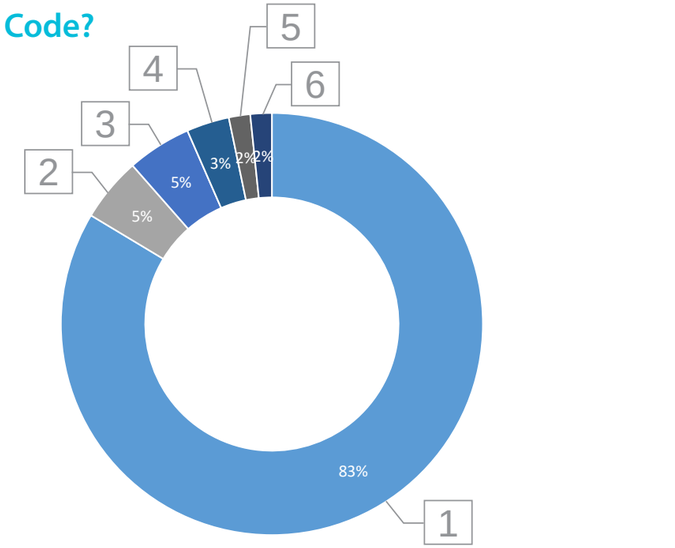
1. Better enforcement of speed limits. Consider on-demand bike/ped traffic signal and crosswalk at 13th and Grand Ave.
2. Consider making Blake from 26th to 23rd street one-way South with sidewalks and a bike lane, to keep commuters in cars off Blake Ave and allow safe access to the RFTA station
3. Get some of the busses off of Grand Ave. Encourage more telecommuting and work from home - get vehicles off the road. Post Covid-19 encourage more van pools and company truck pools for construction crews. Reduce transit travel time through GWS, not automobile travel time - create more incentive for transit ridership. (reduce side street delays)
4. Increase bus routes to more surrounding areas of Glenwood, like Four Mile and Iron Bridge
5. Judging by the one sided nature of this survey, someone hasn't had air in quite a while. Come out for air
6. Just because I have a drivers license doesn't mean I'm a traffic engineer. Since when did planning and engineering become a popularity contest? Let the engineers and planners do their jobs and present alternatives with real data.
7. Lights should coordinate better, specifically 8th $ 9th with the i70/ 6th st cluster that occurred after bridge replacement. Getting off of highway, you sit abnormally long at each light due to back up which could be fixed with better coordination.
8. Manage vehicle speeds and red light infractions. Issue citations for vehicles blocking intersections at side streets. Route pedestrian traffic crossing grand ave. to 7th rather than 8th street.
9. Monitor motorist speeds and running of red lights. Maybe the cameras that send tickets?
10. Please remember people live in Glenwood. Not everyone is just driving through. We have to wait a long time to get from one side of grand to another and it is frustrating. Time lights better. Sometimes there is no traffic on grand but a bunch of people waiting on side streets. Timing or smart lights could eliminate that problem.
11. Slow and enforce traffic speed limits along Grand Avenue. RFTA must slow down to go through our town. We as citizens should not have to compromise our quality of life to accommodate RFTA. Why not route RFTA along Midland from west park and ride to 23rd?
12. Specifically for the intersection between 27th St (East side) & Hwy 82, make the left lane for turning left or going straight, and make the right lane for turning right with the option to turn on red. The light now takes many, many minutes to change to green and therefore vehicles needing to turn right often end up stuck behind other vehicles waiting to move straight/across Hwy 82.
13. Stop growth and promoting Glenwood Springs.
14. The stop light at society market on the east side of Grand Ave is a nightmare. It needs to be widened for a right turn lane + a straight/left lane.
15. There are too many driveways between 15th and 13th. Close most of them off and design better entrances and exits to these businesses,
16. These suggestions for question 7 are ridiculous and don't align with the problem you are trying to solve!!
17. Turn the lights on Grand Ave to blinking yellow during rush hour. People wishing to cross would have to go south on side streets and turn into the traffic flow before turning again to get across Grand. As traffic would flow relatively quickly North on Grand, there woukd be a great reduction of people using the side streets to escape the jam.
18. We DID reduce the number of cars on Grand Ave---- for a period of time----That is when we ran Ride Glenwood bus system through town (Walmart to 8th street on Hwy #82/Grand, then over the bridge, and to the K-Mart Mall via 6th/then over to Target) and back. Service was EVERY 20 minutes each way...and the Ride Glenwood bus was FREE to the rider (The bus system is paid by the local & tourist taxpayers) . There was a NOTICEABLE drop in vehicular traffic throughout town There was a HUGE increase in bus ridership (from locals/families, school age kids/ the homeless and Tourists.) The tourists were giddy with happiness about free rides through town, and about a bus system that serviced the places they wanted to BE.... ....but City officials hated 1) dealing with homeless riding 'for-free', and 2) were not crazy about teens on the bus. 3) The bus drivers felt pressured by the schedule. So we discontinued what worked, and instituted a failed Ride Glenwood Bus system (that did not service 6th street on a consistent & frequent schedule....6th is where so much of the apartment/employee housing is) All of the choices that are offered (above) fail to address WHY people drive a car instead of ride a bus. FREE & FREQUENT bus service on the RIGHT ROUTES do work and have worked to get people to use city-transit... the other things mentioned above do not.
19. Whatever happened to the traffic calming islands on Grand Ave between 8th and 14th street?
20. if the bus is faster than cars, more people will use it. make 82 1 lane for cars so the bus can make it as scheduled

*Note: We have included all comments exactly as entered.*

## Lastley...

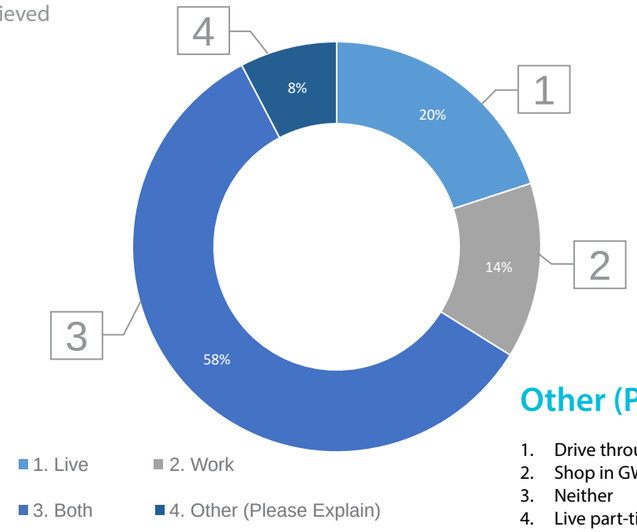
### What is your Zip Code?

61 Responses Recieved




### Do you work or live in the City of Glenwood?

65 Responses Recieved



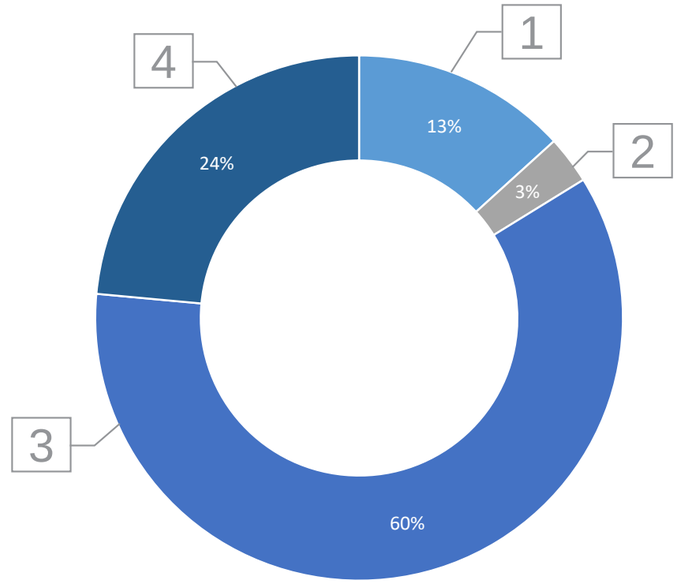

### Other (Please Explain)

1. Drive through Glenwood 2x/week
2. Shop in GWS
3. Neither
4. Live part-time in downtown, work and have commercial property & residential property in Downtown
5. Other (No response)



### How did you hear about the M.O.V.E. project? (Check all that apply)

68 Responses Recieved




### Other (Please Explain)

1. KMTS radio
2. Friends told me
3. Heard about this questionairre on Facebook
4. Word of mouth
5. GWS government
6. City notices
7. RFTA and traveler employee
8. ACRA newsletter
9. City Council
10. Friends
11. Email from friend
12. Email from friend
13. Friends
14. Email from collegue
15. 3 people left blank

## General Comments Submitted through the Website

1. Please do not threaten the financial success of this town in the name of slightly faster service, which will be relatively meaningless if we don't have tourists
2. I live right next to the high school and would love to hear about what is going on
3. This is not a brief questionnaire. You should publish the questions (and your proposed answers) on another site that is noted in your introduction- so people can prepare their answers before they get to the SUBMIT site.
4. Thank you for your work and opportunity to comment.
5. Parking and congestion on grand are always an issue. Getting the busses off grand (onto the RG corridor) and keeping parking spaces for our local businesses makes the most sense to me even if I will be somewhat impacted by bus noise /traffic since I live on park drive. We'll get used to that.
6. The Rio Grande option would be a disaster to homeowners on the trail between 8th street and 27th street! The potential for lowering property values aside, the increased noise, activity, and pollution would be a permanent discomfort to those of us that live here. Tearing up parts of the existing trail, as well as the natural surrounding habitat would also be detrimental to the community.
7. I would like to be on your mailing lists, I missed the survey deadline but am greatly opposed to this project. The rio grande trail and the community that lives along it do not deserve yet another poorly designed road project to be in their back yard. RFTA and the city of Glenwood have many issues to solve and creating 10 blocks of faster bus traffic will not solve any of the problems or boost bus ridership. People live in the mountains to be able to enjoy them, please don't ruin our trails and where our families recreate.
8. Keep up the good work!
9. leave the bike path alone in town!

## Requests to Stay Informed Submitted through the Website

1. Please add me to the email list
2. Interested in staying involved.
3. thank you
4. please keep me informed
5. Hello



# Appendix B - Engagement Plan




move
MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY

## PUBLIC OUTREACH AND ENGAGEMENT PLAN

Revised: May, 2020
Provided by: Parsons + DHM Design

# Contents







## Outreach and Engagement Plan Introduction

This document has been developed as to guide for the overall project team in planning and executing the public engagement process for the Multimodal Options for a Vibrant Economy project. It is also intended to be a ready reference for the goals of the project and the strategic approach to outreach, supporting alignment across the project team for content, timing, specific activities, and efficient leveraging of project resources.

The outreach plan outlines the purpose and need of the project, project goals, strategic purpose of the outreach, the various tools to be employed, and the timeline of outreach tied to the overall project schedule. Additional details are identified for the first outreach series, with an outline for the second and third outreach series. This document will be updated prior to each outreach series.

## Purpose and Need of the MOVE Project

Per the original solicitation, the purpose of the project is:

*To identify, evaluate and implement transportation strategies and opportunities that will optimize the efficiency and utility of the transportation system through Glenwood Springs and that will align with the City's goals for mobility, land use, economic vitality, economic sustainability and quality of life.*

The solicitation further adds key areas, topics of study, and goals:

*(The project will) develop a long-term vision and program for transportation within and through Glenwood Springs, focusing on the I-70and SH-82 corridors, recognizing the transportation, land use, environmental, economic and social needs of the City and the region. The study will investigate various aspects of mobility for the City, including but not limited to transit, parking, and internal circulation.*

The Purpose and Need statements will be further developed through coordination with stakeholders and technical advisors during the first round of outreach described in this document.

## Project Goals

The project goals identified in the RFP include:

- Ensuring mobility and accessibility for residents, visitors and workers of all ages and abilities;
- Improving safety for all modes of travel;
- Creating a balanced, safe and affordable system for transit, autos, bikes and pedestrians;
- Identifying SH82 optimization strategies for local and regional transit;
- Identifying vehicle parking needs, parking management optimization plans, and the optimal scope and location for future parking facilities;
- Identifying the optimal location(s) for regional and local transit stations;
- Evaluating the extension of BRT or other mass transit solutions to downtown Glenwood Springs and transit connections to the I-70 corridor for future potential BRT;
- Evaluating future changes to the local transit system, based on projected land use, population, and economic development; and
- Maximizing the operational safety and efficiency of key intersections in the City's downtown core.

Recent, local open house hosted by project team members

## Strategic Purpose of Outreach

The project RFP provides the purpose of the outreach and engagement plan:

*The Public Involvement Plan is intended to be the framework to engage stakeholders throughout the process, to work in a cohesive fashion with the consultant and the project sponsor, and to complete all study tasks and deliverables, as appropriate. The goal of the public involvement process will be to help the City and RFTA narrow the range of possible alternatives to those that meet the community's needs and desires.*

Furthermore, transportation within and through the City, and parking in the downtown core, are topics of keen public interest. Developing awareness of the project, creating a broad variety of opportunities to engage with the project, provide feedback, and see the responses to their input is a critical component of the success of the project.

## Project Name, Logo, Use

Following the project kick-off in late 2019, the project sponsors directed a process to designate a unique name for the project to establish an identity and to differentiate this planning process from other transportation-related work. The consultant team developed a list of potential names and the project sponsors selected the title "Multimodal Options for a Vibrant Economy," with the acronym "MOVE." This name is intended to encapsulate the comprehensive nature of the transportation and parking alternatives to be studied. The project partners subsequently developed an accompanying logo. This title and logo will appear on all project collateral, including print and web elements, and will be used to designate activities associated with the planning process. The identifying logos of the project sponsors will also be included on project collateral and will be subordinate to the MOVE logo. In cases of limited page space, such as print advertisements, the project sponsors may be identified by name instead of logo to maintain the clear identification of project-related activities. The MOVE logo and the project sponsor logos are provided below.

move
MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY

GLENWOOD SPRINGS
COLORADO

RFTA

## Key Outreach Audiences

There are two key audiences for the outreach process: project stakeholders and the public-at-large. The project stakeholders are directly identified and invited to participate in project progress meetings as a 'focus group.' Engagement of the public-at-large largely relies on successfully building awareness through advertising, social media, and targeted email newsletters; an interactive web site; open house meetings; and on-site 'pop-up' events. In March of 2020, this plan was modified to shift to an all-digital phase 1 of outreach. The remaining two outreach series will be modified as needed based on current policy and public health information available at the time of the planning of those outreach activities.







## *Stakeholders*

The use of the term 'stakeholder' can be misleading and it is important to define it clearly. The stakeholder group is to be comprised of a variety of local, regional, and state entities/agencies; this group will include the project sponsors and may include representation of local elected/appointed boards.

For this project the broader list of stakeholders is broken into three distinct groups: a Technical Advisory Committee, a Focus Group, and Decision Makers.

The *Technical Advisory Committee* includes representatives from RFTA, City staff, CDOT, Garfield County, FTA, and FHWA. This group will meet six times over the course of the project to provide support and technical review of the visioning, planning studies, alternatives analysis/screening, and recommendations.

The *Focus Group* will include invited members from local agencies, organizations, businesses, and transportation advocates. This group will meet during the visioning process and again as the various alternatives are evaluated and bundled. The chart below provides a list of stakeholder organizations and participants to be involved as part of the MOVE Study's Focus Group.

The *Decision Makers*, RFTA and City Council, will be directly involved throughout the process via staff involvement at all levels; additionally project status updates will be provided to the RFTA Board and City Council during the visioning process and during the alternatives selection.

A potential stakeholder list was included in the RFP and is provided below.

Potential stakeholders from the RFP:

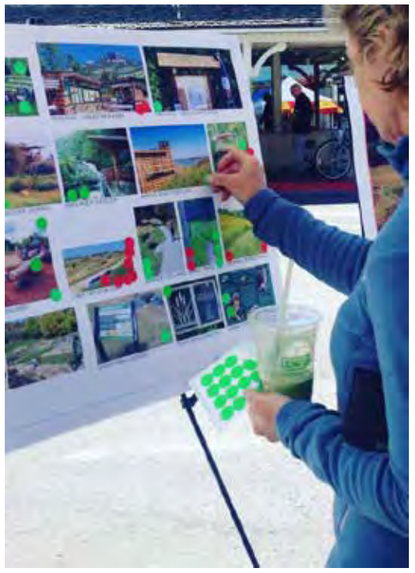
- The Roaring Fork Transportation Authority
- The City of Glenwood Springs (Council and Transportation Commission)
- The Downtown Development Authority
- The Glenwood Springs Chamber of Commerce
- Colorado Department of Transportation
- Roaring Fork School District
- Garfield County BOCC
- Valley View Hospital
- Glenwood Caverns
- Iron Mountain Hot Springs Pool
- Hotel Colorado
- Hotel Denver
- Glenwood Springs Bicycle Advocates
- Imagine Glenwood

The final stakeholder list is to be developed in coordination with the project sponsors.

| **FOCUS GROUP** | | |
|---|---|---|
| ORGANIZATION | NAME | EMAIL |
| Glenwood City Council | Shelley Kaup | shelley.kaup@cogs.us |
| Glenwood Chamber/Economic Development | Angie Anderson | angie@glenwoodchamber.com |
| RE1 School District | Jared Raines | jrains@rfschools.com |
| Parks and Recreation | Jasmin Ramirez (also on School Board) | jasramirez8@gmail.com |
| Transportation Commission | Rob Gavrell | gavrell@gmail.com |
| Garfield County | Sheryl Bower | sbower@garfield-county.com |
| | Angie Martell | amartell@garfield-county.com |
| Downtown Development Authority | Laura Kirk | dda@dhmdesign.com |
| Bicycle Advocates | Steve Smith | ssmith@rof.net |
| Imagine Glenwood/P&Z | Sumner Schacter | sumnerschachter@gmail.com |

### *Public-at-Large*

For the purposes of this project, the public can be defined as residents of and individuals employed in Glenwood Springs, commuters traveling through the project area via any mode of transportation, and visitors. Connecting with a broad cross-section of the public is important to understand the user experience, identify key issues and challenges of transportation and parking in the project area, seek out potential solutions, and to test the various alternatives against community needs and desires.



Identifying public priorities with interactive materials

## Public Engagement Methodology

It is well understood that the public is broadly interested and vested in transportation in Glenwood Springs, whether they are local residents, employees, commuters, or visitors. We also know that it can be challenging to expect the public to be activated and engaged; busy schedules and the reality of limited dates/times for open houses make creative outreach necessary. To achieve widespread awareness of the project, and substantive quality and quantity of feedback, the plan needs to allow for numerous modes of engagement. This section describes the various tools and methods for building awareness of the project, focusing on three 'series' of public engagement activities during the project process.

Due to the outbreak of COVID-19, two outreach processes have emerged. The original process includes in-person pop ups and open houses. The web-based outreach was created as a way to interact with community members during a pandemic. The MOVE team hopes to use both approaches to engage with the public--the in-person outreach for when public health allows it and web-based outreach as the pandemic continues.

### *Awareness / Advertising*

The foundation of the public engagement process is building awareness. For each outreach series, awareness is to be built by leveraging social media, print/web media, posters/flyers in print and pdf format, radio advertising, and direct emails.

Social Media - This tool has a significantly short shelf-life, given the constant turnover of information on individual social media accounts. However, it is effective in quickly reaching large audiences and the project sponsors each have active social media accounts. The schedule of the posts varies depending on the type of outreach. The consultant team will provide formatted social media posts to the project sponsors for posting to their individual channels. Stakeholders with social media channels should be tagged with each post; that list will be developed by the project sponsors with the first post and used as a template for each subsequent post. Social media will be used to advertise both web-based outreach and in person outreach. For the web-based outreach, a weekly video will be posted to the City's and RFTA's social media accounts that addresses a common or interesting question or aspect of the project.








Example of social media post for recent, local project

Print/Web - Utilizing the Post Independent, print advertisements will be placed starting two weeks before open house events, and will run every other day for a total of six 1/3-page ads. Each 1/3-page ad, with priority placement, will cost approximately $370. The consultant team will provide ad layout and supply content to the Post Independent for placement. Additionally, a banner ad will be place on the Post Independent web site to capture web-only viewers. Each outreach event will also be submitted to various publications' community briefs to raise awareness throughout the valley. For outreach series that are entirely web-based (with no physical pop-ups or open houses), advertising will leverage only digital platforms.

Poster/Flyer/Newsletter - For each event, the consultant team will develop a printable and email-able flyer. This will be shared with the project sponsors for email distribution, and will be posted at key locations in the project area where public notices are allowed and when public health policy permits. Flyer contents will include a call to attend a specific open house event and an invitation to view the project information at the web site. This will also include links (for digital flyers) or QR codes (for print materials) directing users to the project website or a survey. Working with the project sponsors, the team will develop a list of organizations who may also be motivated to share the outreach flyer with their email databases. This list will include but may not be limited to the project stakeholders. Posters and flyers will only be used for in-person outreach. The email newsletter or blast will be used for both types of outreach.

Radio - 'Drive time' radio ads will be placed on KSPN, KMTS, and La Nueva Mixta. The number of placements and schedule vary depending on if the outreach is in-person or digital.

Project Web Site - A custom, project-specific web site, using the url rftaglenwoodspringsmove.com was established in late February. This web site includes a project summary, timeline, goals, updates, and a general feedback form that will allow visitors to submit comments. Additionally, outreach collateral will be posted and available for public download and viewing. The site will be updated ahead of key outreach series and with pertinent updates as the project progresses. For the duration of the web-based outreach, the website is the home of digital interactions with the community--see the 'Outreach Series 1 Plan' section of this document for further explanation of how the website is formatted and used.


Screen capture of draft project web site

Spanish Outreach - The majority of the advertisment and outreach materials will be translated into Spanish. Where possible, a Spanish speaker will be present at in-person events.

### *Open House Meetings*

The project schedule has identified three key public open houses; these open house meetings are the 'marquis events' around which other outreach activities will be organized. For the in-person outreach, the open houses will be held at local Glenwood Springs venues. For each open house, the project team will develop display boards with information, prompts for feedback, and interactive activities. The format of the meetings will include a short presentation mid-way through the session, with printed display boards staffed by the project team in an open forum. Participants will be encouraged to interact with the display materials in a variety of ways, including adding sticky notes to maps, filling out questionnaires, and/or writing open comments. The team will also take notes of conversations with individual members of the public, and will keep a general head-count of number of attendees.

For the first web-based outreach event, the website was updated to welcome participants and instruct them to learn about the project and participate. "Learning About the Project" consisted of a video presentation, key points, a Frequently Asked Questions page and project updates. Participants were then encouraged to interact and engage via a survey, an interactive map, and/or a comments and questions form.

Following each open house or web-based outreach "event" the team will summarize the feedback received in an outreach memorandum.

The first open house was to be held during the development of the Corridor Vision. This meeting was scheduled for Mid-March of 2020. Due to the COVID-19 outbreak, the open house was reformatted as a web-based "event" starting April 10th and running through May 10th, 2020. The intent of this phase of outreach is to inform the public of the goals and parameters of the project, describe the need for the project, and seek feedback on specific issues and opportunities.

The second open house will be held after the alternatives have been developed and screened by the project team and Technical Advisory Committee. The intent of this meeting is to test the alternatives for alignment with community needs and desires. This meeting is anticipated to be held in August of 2020.

The third open house will allow for the public to see the results of the alternatives analysis and to review and comment on the recommended Locally Preferred Alternative. The products will illustrate the process to date, responsiveness to the various modes of feedback, and identify the package of recommendations in draft form. This meeting is scheduled for October of 2020.


Public open house event

### *Pop-Up Events*

Associated with the second and third open houses, the project team will identify three locations for pop-up events. These events may be co-scheduled with other well-attended community events such as the Glenwood Downtown Market; hosting pop-ups at key transportation sites (such as the 27th street RFTA station) may also be effective in capturing relevant user groups. The consultant team will develop a list of potential venue locations and community activities to target for pop-ups. These events will utilize the display materials developed for the associated open house. Similar to the open house events, feedback received will be summarized and included in the outreach memo for that series.

Pop-up outreach event







### *Event Series Scheduling*

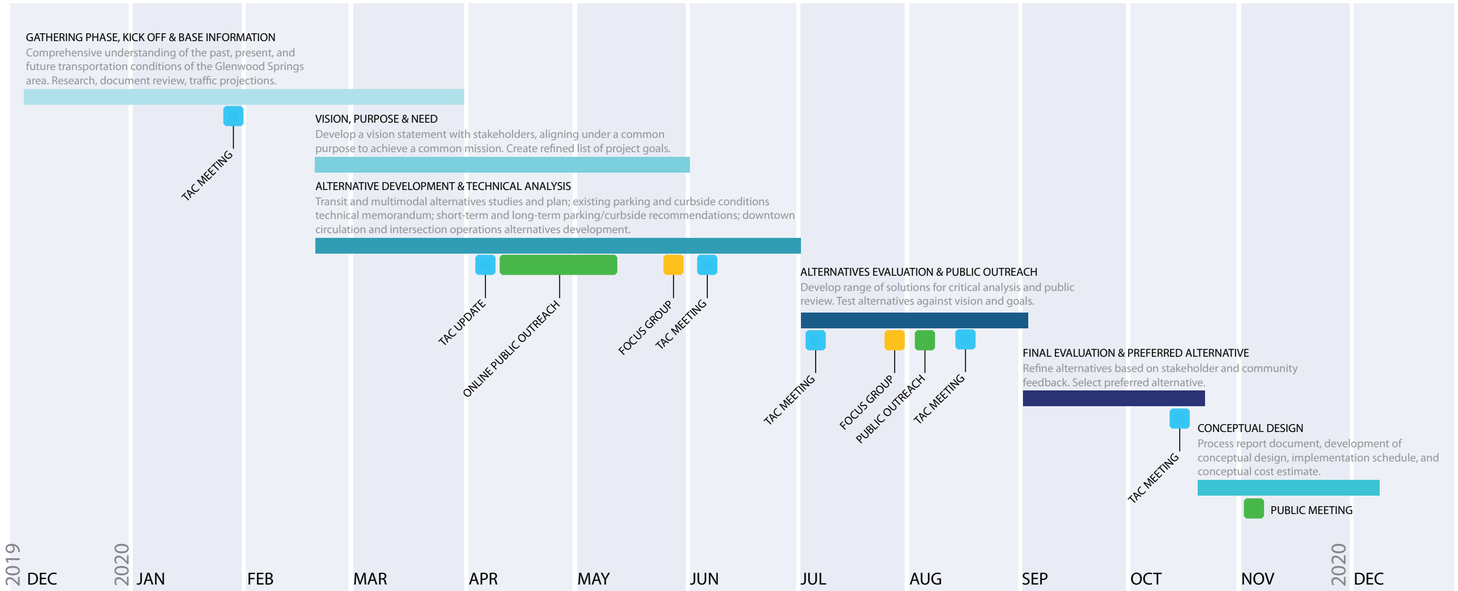
For each event series, the consultant team will develop a schedule of tasks in preparation for the outreach activities. This schedule will include critical-path items, deadlines and responsible parties. Additionally, a budget for advertising and each event will be prepared for approval. The schedule will be finalized approximately three weeks ahead of the event series.

### *Evaluation of Success of Outreach Events*

Following each outreach series and concurrent with the public outreach summary memorandum, the team will evaluate the efficacy of the outreach. As most of the feedback from the public outreach will be qualitative in nature, the summary memo will identify themes and trends heard from the public; 'outlier' comments will be recorded and identified. Totals for participation will be tallied, including outreach interactions (approximate head count), quantity and quality of feedback, number of survey responses and web site comments, and approximate number of email communications.

Based on the evaluation of the outreach, the team will identify adjustments to the approach for the following outreach event. This information will be reflected in the outreach report.

## Project Timeline










## Outreach Series 1 Plan

### *Web-Based Outreach*

The outreach series 1 process was formatted to allow the public to learn about the project and provide feedback through their devices on their own schedule. Via the advertising and awareness campaign, participants were directed to the MOVE website to learn and engage with the project.

The website was reformatted and updated to enable engagement and participation. The home page included a welcome statement and instructions (step 1: learn about project; step 2: interact and engage). The website pages were mirrored in Spanish to create a seamless and equivalent Spanish-language experience.

Step 1 directed the user to a narrated presentation video and listing of the project goals. Participants were then invited to learn more about the project by visiting the frequently asked questions page or watching the project updates. Otherwise, users could go straight from the project introduction video to step 2.

Participants were able to interact and engage with the project three ways: a survey, an interactive map or a questions and comments form. A link directed users to a survey which included prompting questions about various forms of transportation, use of the corridor, modes of travel, and specific known areas where improvements may be considered. Additionally, wsers were invited to give place-based comments by dropping a ‘pin’ and a comment in an interactive map of the project area. Lastly, the website included a simple, open comment form for users to write questions or comments. Another way for users to participate and elicit feedback. Users were encouraged to leave their email to be contacted with future updates and engagement opportunities.

The web-based outreach began April 10th and allowed 30 days from launch for the public to participate from.

### *Outreach 1 Schedule*

The schedule of tasks and budget for the first outreach series is provided on the following page. Similar schedule/budget information will be developed for outreach 2 and 3.

### *Outreach 1 Budget*

A draft of the budget for outreach 1, including advertising and venue costs, is provided on the following pages. outreach 2 and 3 budget is expected to be similar to outreach 1.

## RFTA-Glenwood Springs MOVE

Public Outreach Series 1 Schedule - February/March 2020

| | APRIL | | | | | | | | | | | | | | | | | | | | | | | | | | MAY | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **T A S K S** | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Website - campaign runs 4/10-5/10 (Links to MOVE website on RFTA and City homepage) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Website - stratagize layout w/o web-based outreach/end of campaign | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Website - website updates for end of web-based outreach | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Community Briefs and PSA's - Submit | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Community Briefs and PSA's - Run | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Post Independent - submit artwork | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Post Independent - big banner | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Post Independent - 3c's run | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Social - post to social channels at 11 am (facebook, instagram) (RFTA/Glenwood) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Roaring Fork Swap - posts (Spanish and English) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Project Updates - Post on Social and Website FAQ page | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Email Blasts - Partners to send to contacts | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Radio - spots run (Spanish and English) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Radio - interview? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| RFTA-Glenwood Springs MOVE | | |
|---|---|---|
| Public Outreach Series 1 Budget | Approximate cost | Notes |
| **T A S K S** | | |
| Venue and refreshments | $700 | Need to verify venue cost. Assume $400 for venue, $200 for refreshments/light snacks, $100 allowance |
| Presentation - printed boards | $500 | Assume in-house printing and mounting by DHM |
| Flyer - printed | $200 | Assume in-house printing by DHM; posting included in contract labor |
| Print/web ads - PostIndependent | $2,500 | Assumes 6 ads with priority placement, and web banner |
| Social | $200 | Allowance for 'boosting' |
| Radio | $500 | Assumes KSNO and KSPN, 4x daily, drive time, 4 days - 32 individual ads |
| Outreach Open House 1 Estimated Total | $4,600 | |





# Appendix C - Advertising Materials

## Outreach 1 - Email Blasts


In the spirit of community and public health, public outreach for the Glenwood Springs MOVE project will now be a web-based experience. RFTA and the City of Glenwood Springs have partnered to improve how you move through your community—and we need to hear from you! From the comfort of your own living room, you can interact and stay engaged with your community. Let's talk bussing, walking, biking and parking.

(Para una versión en español, desplácese hacia abajo)

CLICK HERE TO VISIT THE GLENWOOD SPRINGS MOVE WEBSITE AND PARTICIPATE

It's as easy as two steps.

1. Go to the MOVE website and learn about the project,
2. Then leave your feedback through a survey, interactive map and question/comments form.

Know of some friends who you think would also like to participate? Forward this email and invite them along. Stay home. Stay engaged.

*Wishing you health and happiness,*

**The Glenwood Springs MOVE Team**

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En el espíritu de la comunidad y la salud pública, los esfuerzos del alcance público para el proyecto MOVE de Glenwood Springs ahora será una experiencia basada en la web. RFTA y la ciudad de

estacionacionamiento en Glenwood Springs.

## HAGA CLIC AQUÍ PARA VISITAR EL SITIO WEB Y PARTICIPAR

Es tan fácil como dos pasos.

1. Vaya al sitio web de MOVE y aprenda sobre el proyecto,
2. Luego deje sus comentarios a través de una encuesta, un mapa interactivo y un formulario de preguntas / comentarios.

¿Conoces a algunos amigos que crees que también les gustaría participar? Reenvíe este correo electrónico e invítelos. Quedarse en casa. Mantente comprometido

*Deseándote salud y felicidad,*

**El Equipo MOVE de Glenwood Springs**

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View this email in your browser

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Last chance to participate! The time is almost up to tell the City of Glenwood Springs and RFTA how to improve transportation in Glenwood Springs. The second phase of outreach for Glenwood Springs MOVE ends this Friday, September 11th. Let's talk extending the BRT downtown, transit center locations, and more!

(Para una versión en español, desplácese hacia abajo)

**CLICK HERE TO VISIT THE GLENWOOD SPRINGS MOVE WEBSITE AND PARTICIPATE**

It’s incredibly easy to participate. Just go to the MOVE website and take the survey.

Know of some friends who you think would also like to participate? Forward this email and invite them along.

*Sincerely,*

**The Glenwood Springs MOVE Team**

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¡Última oportunidad de participar! Ya casi es hora de decirle a la Ciudad de Glenwood Springs y a RFTA cómo mejorar el transporte en Glenwood Springs. La segunda fase del alcance público para Glenwood Springs MOVE finaliza este viernes 11 de septiembre. ¡Hablemos de extender BRT al centro, las ubicaciones de los centros de tránsito y más!



Es increíblemente fácil participar. Simplemente vaya al sitio web de MOVE y realice la encuesta.

¿Conoces a algunos amigos que crees que también les gustaría participar? Reenvíe este correo electrónico e invítelos.

*Sinceramente,*

**El Equipo MOVE de Glenwood Springs**

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# PRESS RELEASE

## Glenwood Springs MOVE Outreach Phase 1 occurs April 10th, 2020 through May 10th, 2020

**Contact:** Terri Partch, City Engineer, City of Glenwood Springs, 970.384.6413 or terri.partch@cogs.us; David Johnson, Director of Planning, Roaring Fork Transportation Authority, 970.384.4979 or djohnson@rfta.com

**Glenwood Springs, Colorado –** In 2018--as part of the RFTA Destination 2040 planning project—several transit and trail improvements were identified in Glenwood Springs. The City of Glenwood Springs partnered with the Roaring Fork Transit Authority to create the Glenwood Springs MOVE project and a corresponding team to study these improvements. The MOVE (Multimodal Options for a Vibrant Economy) team is tasked with gathering public input to narrow the range of possible alternatives for those improvements. The MOVE Study team will facilitate the community conversation and present the study process and mobility options.

The City of Glenwood Springs and the Roaring Fork Transit Authority is working with consultants Parsons Corporation and DMH Design to engage the public and stakeholders in this project and develop transit solution alternatives.

Per the original solicitation, the purpose of the project is: *To identify, evaluate and implement transportation strategies and opportunities that will optimize the efficiency and utility of the transportation system through Glenwood Springs and that will align with the City's goals for mobility, land use, economic vitality, economic sustainability and quality of life.* Ultimately, the goal of the study to guide the creation of a more vibrant and safer community by improving transportation within the Grand Avenue and I70 corridor.

As transportation within the City and parking in the downtown core are topics of keen public interest; outreach is an integral piece of the MOVE project. Developing awareness of the project, creating a broad variety of opportunities to engage with the project, provide feedback, and see the responses to their input is a critical component of the success of the project.




The 12-month study has started with gathering information and developing a project vision. The team will use the public's feedback from this outreach to refine the purpose and need and priorities of the project. The development of the technical options has started, and the analysis of these options will continue for a few more months leading to selecting a preferred alternative. At the end of the study, a conceptual design will be developed including a cost estimate and implementation schedule.

Due to current public health concerns, the first phase of outreach has been moved online. The MOVE team built an interactive website and process to engage the public with the project. Participants can go to rftaglenwoodspringsmove.com to learn about the project, take the survey, interact with a map of the project area and leave comments.

The Public-at-Large will have three formal opportunities to connect with the project; as well as possible pop-up events, public meetings, and they will be able to provide input via the project website throughout the duration of the project.

The current phase of outreach is an introduction to the project. In August, the public will be able to review the initial analysis of alternatives; and in October, the community will be able to review the results of the alternative analysis and provide feedback on the recommended Locally Preferred Alternative.

More information can be found at rftaglenwoodspringsmove.com.

**Radio Copy 4/10-5/4**

The City of Glenwood Springs and the Roaring Fork Transportation Authority have teamed up to improve how you move through your community. We want to talk bussing, walking, biking, driving and parking with you! Visit rftaglenwoodspringsmove.com to learn about the project and participate in the community outreach. Again, go to rftaglenwoodsprings-M-O-V-E.com and tell us how to improve transportation in your community.

**MOVE is spelled out in the last mention of the website. Do no pronounce the dashes*

**Radio Copy 5/4-5/10**

The time is almost up to tell the City of Glenwood Springs and RFTA how to improve transportation in Glenwood Springs. The first phase of outreach for Glenwood Springs MOVE ends this Sunday, May 10th. We want to talk bussing, walking, biking, driving and parking with you! Visit rftaglenwoodspringsmove.com to learn about the project and participate. Again, go to rftaglenwoodsprings-M-O-V-E.com and tell us how to improve transportation in your community.

**MOVE is spelled out in the last mention of the website. Do no pronounce the dashes*





**Post 1 Text (boost):**

In the spirit of community and public engagement; the City of Glenwood Springs and RFTA are continuing to reimagine the future of a multimodal transportation system. RFTA and the City need to hear from **you** about how you move through your community: from driving to bussing to walking to parking to biking. Yes—these are strange times, but if you are looking for a productive way to participate in the future of your city please go to rftaglenwoodsprinsgmove.com and interact and engage – ONLINE!

En el espíritu de la comunidad y el compromiso público; La Ciudad de Glenwood Springs y RFTA continúan reinventando el futuro de un sistema de transporte multimodal. RFTA y la Ciudad necesitan saber de usted acerca de cómo se mueve en su comunidad: desde conducir hasta tomar un autobús, caminar, estacionar o andar en bicicleta. Sí, estos son tiempos extraños, pero si está buscando una forma productiva de participar en el futuro de su ciudad, visite rftaglenwoodspringsmove.com/hogar/ e interactúe y participe - ¡EN LÍNEA!

**Roaring Fork Swap Post 1:**

In the spirit of community and health, public outreach for the Glenwood Springs MOVE project will now be a web-based experience. RFTA and the City of Glenwood Springs have partnered to improve how you move through your community—and we need to hear from you! From the comfort of your own living room, you can interact and stay engaged with your community. Go to rftaglenwoodspringsmove.com and let's talk bussing, walking, biking and parking.

En el espíritu de la comunidad y la salud, el alcance público para el proyecto MOVE de Glenwood Springs ahora será una experiencia basada en la web. RFTA y la ciudad de Glenwood Springs se han asociado para mejorar la forma en que se mueve por su comunidad, ¡y necesitamos saber de usted! Desde la comodidad de su propia sala de estar, puede interactuar y mantenerse comprometido con su comunidad. Vaya a rftaglenwoodspringsmove.com/hogar/ y hablemos de autobús, caminar, andar en bicicleta y estacionar.

**Post 2 Text:**

How can we reimagine transportation in Glenwood Springs to improve quality of life and vitality? Go to rftaglenwoodspringsmove.com and it's as easy as two steps—learn about the project and tell us how to improve transportation in your community. Stay home. Stay engaged.

¿Cómo podemos reimaginar el transporte en Glenwood Springs para mejorar la calidad de vida y vitalidad? Vaya a rftaglenwoodspringsmove.com/hogar/ y es tan fácil como dos pasos: conozca el proyecto y díganos cómo mejorar el transporte en su comunidad. Quedarse en casa. Mantente informado.

**Post 3 Text:**

What's your vision for the future of transportation here? Let's talk multimodal transportation for Glenwood Springs. Go to rftaglenwoodspringsmove.com and participate in our first phase of outreach—ONLINE!
¿Cuál es su visión para el futuro del transporte aquí? Hablemos de transporte multimodal para Glenwood Springs. Vaya a rftaglenwoodspringsmove.com/hogar/ y participe en nuestra primera fase de alcance público: ¡EN LÍNEA!

**Post 4 Text:**

Let's improve safety and transportation in Glenwood Springs! We need to hear from you first though—so we built an online outreach platform. Visit rftaglenwoodspringsmove.com and let us know how you move through your community—and how we can improve it.

Vamos a mejorar la seguridad y el transporte en Glenwood Springs! Sin embargo, primero necesitamos saber de usted, por lo que creamos una plataforma de alcance público. Visita rftaglenwoodspringsmove.com/hogar/ y háganos saber cómo se mueve a través de su comunidad y cómo podemos mejorar.

**Post 5 Text:**

The time is almost up to tell the City of Glenwood Springs and RFTA how to improve transportation in Glenwood Springs. The first phase of outreach for Glenwood Springs MOVE ends this Sunday. We want to talk bussing, walking, biking, driving and parking with you! Visit rftaglenwoodspringsmove.com to learn about the project and participate.

Ya casi es hora de decirle a la ciudad de Glenwood Springs y a RFTA cómo mejorar el transporte en Glenwood Springs. La primera de alcance publico para Glenwood Springs MOVE termina este domingo. ¡Queremos hablar contigo sobre autobuses, caminatas, ciclismo, conducción y estacionamiento! Visite rftaglenwoodspringsmove.com/hogar/ para conocer el proyecto y participar.

**Roaring Fork Swap Post 2:**

The time is almost up to tell the City of Glenwood Springs and RFTA how to improve transportation in Glenwood Springs. The first phase of outreach for Glenwood Springs MOVE ends this Sunday, May 10th. We want to talk bussing, walking, biking, driving and parking with you! Visit rftaglenwoodspringsmove.com to learn about the project and participate.

Ya casi es hora de decirle a la ciudad de Glenwood Springs y a RFTA cómo mejorar el transporte en Glenwood Springs. La primera de alcance publico para Glenwood Springs MOVE termina este domingo. ¡Queremos hablar contigo sobre autobuses, caminatas, ciclismo, conducción y estacionamiento! Visite rftaglenwoodspringsmove.com/hogar/ para conocer el proyecto y participar.



**Post 6 Text:**

Two more days to participate and tell us your image for the future of transportation in Glenwood Springs! Go to rftaglenwoodspringmove.com and learn about the project and interact and engage. This phase of outreach ends Sunday, May 10th.

¡Dos días más para participar y contarnos su imagen para el futuro del transporte en Glenwood Springs! Vaya a rftaglenwoodspringmove.com/hogar/ y aprenda sobre el proyecto e interactúe y participe. Esta fase de alcanse publico termina el domingo 10 de mayo.









Outreach 1 - Newspaper Web Banners






## Outreach 1 - Website Links

RFTA and City of Glenwood Springs to include a link to the MOVE website on their individual homepages.

**For City of Glenwood Springs**, DHM recommends putting the MOVE logo and the blurb (below) under the “In the Spotlight” section. If you click the blurb or the logo it should take you directly to the MOVE website. This is just a recommendation.

**For RFTA,** DHM recommends putting the MOVE logo and the blurb (below) under the “RFTA NEWS” section. Ideally this would remain in the news section for the duration of the outreach. If you click the blurb or the logo it should take you directly to the MOVE website. This is just a recommendation.

**BLURB:**

NEW PROJECT ALERT: We have partnered with (City of Glenwood Springs or RFTA) to improve transportation in your community. But first we need to hear from you! Go to rftaglenwoodspringsmove.com and it’s as easy as two steps—learn about the project and let us know how you move through your community and how we can improve it. Stay home. Stay engaged.



## Outreach 2 - Email Blasts


The second phase of the Glenwood Springs MOVE public outreach has begun, and the City of Glenwood Springs and RFTA need to hear from you! Go to rftaglenwoodspringsmove.com to weigh in on alternatives for transit center locations and extending the BRT to downtown. Also, help us prioritize parking, pedestrian, bike, and car improvements.

(Para una versión en español, desplácese hacia abajo)

CLICK HERE TO VISIT THE GLENWOOD SPRINGS MOVE WEBSITE AND PARTICIPATE

It’s as easy as two steps.

1. Go to the MOVE website and take the survey
2. Then register for and attend the live webinar on Thursday, August 27th at 6 pm

Know of some friends who you think would also like to participate? Forward this email and invite them along.

*Best,*

**The Glenwood Springs MOVE Team**

---

La segunda fase del alcance público MOVE de Glenwood Springs ha comenzado, ¡y la Ciudad de Glenwood Springs y RFTA necesitan escuchar de usted! Vaya a rftaglenwoodspringsmove.com para

## HAGA CLIC AQUÍ PARA VISITAR EL SITIO WEB Y PARTICIPAR

Es tan fácil como dos pasos.

1. Vaya al sitio web de MOVE y realice la encuesta.
2. Luego regístrese y asista al seminario web en vivo el jueves 27 de agosto a las 6 pm

¿Conoces a algunos amigos que crees que también les gustaría participar? Reenvíe este correo electrónico e invítelos.

*Saludos,*

**El Equipo MOVE de Glenwood Springs**

View this email in your browser






**Join us tomorrow Thursday, August 27th from 6-7 pm for a live webinar event!** The MOVE team will be presenting various alternatives for extending the BRT downtown, transit center locations, and additional transportation and parking improvements. We want to hear your thoughts on all the proposed options as well as answer any questions you may have.

(Para una versión en español, desplácese hacia abajo)

## CLICK HERE TO REGISTER NOW!

Can't attend the webinar? Take the short 10 minute survey to learn about the alternatives and give your feedback.

CLICK HERE TO TAKE THE SURVEY

This event is open to all. Feel free to forward this invitation to anyone that might be interested in participating.

*Sincerely,*

**The Glenwood Springs MOVE Team**

de los centros de tránsito y mejoras adicionales en el transporte y el estacionamiento. Queremos escuchar su opinión sobre todas las opciones propuestas, así como responder cualquier pregunta que pueda tener.

**¡HAGA CLIC AQUÍ PARA REGISTRARSE AHORA!**

¿No puede asistir al seminario web? Realice la breve encuesta de 10 minutos para conocer las alternativas y dar su opinión.

**HAGA CLIC AQUÍ PARA REALIZAR LA ENCUESTA**

Este evento está abierto para todos. No dude en enviar esta invitación a cualquier persona que pueda estar interesada en participar.

*Sinceramente,,*

**El Equipo MOVE de Glenwood Springs**

---

View this email in your browser

---






Last chance to participate! The time is almost up to tell the City of Glenwood Springs and RFTA how to improve transportation in Glenwood Springs. The second phase of outreach for Glenwood Springs MOVE ends this Friday, September 11th. Let's talk extending the BRT downtown, transit center locations, and more!

(Para una versión en español, desplácese hacia abajo)

**CLICK HERE TO VISIT THE GLENWOOD SPRINGS MOVE WEBSITE AND PARTICIPATE**

It’s incredibly easy to participate. Just go to the MOVE website and take the survey.

Know of some friends who you think would also like to participate? Forward this email and invite them along.

*Sincerely,*

**The Glenwood Springs MOVE Team**

---

¡Última oportunidad de participar! Ya casi es hora de decirle a la Ciudad de Glenwood Springs y a RFTA cómo mejorar el transporte en Glenwood Springs. La segunda fase del alcance público para Glenwood Springs MOVE finaliza este viernes 11 de septiembre. ¡Hablemos de extender BRT al centro, las ubicaciones de los centros de tránsito y más!

Subscribe | Past Issues | Translate

Y PARTICIPAR

Es increíblemente fácil participar. Simplemente vaya al sitio web de MOVE y realice la encuesta.

¿Conoces a algunos amigos que crees que también les gustaría participar? Reenvíe este correo electrónico e invítelos.

*Sinceramente,*

**El Equipo MOVE de Glenwood Springs**

View this email in your browser

# Glenwood Springs

move

OPCIONES MULTIMODALES PARA UNA ECONOMÍA VIBRANTE


## NECESITAMOS ESCUCHAR ¡DE TI!

Analice las alternativas para las ubicaciones de los centros de tránsito y la extension del BRT al centro de la ciudad. También, ayúdanos a priorizar el estacionamiento, peatones, mejoras para bicicletas, y automóviles.

IR A

**RFTAGLENWOODSPRINGSMOVE.COM**

PARA REALIZAR LA ENCUESTA Y ASISTE AL WEBINAR EL JUEVES, 27 DE AGOSTO A LAS 6-7PM

**(LA ENCUESTA COMIENZA EL 8/20 Y TERMINA EL 9/11)**

## AT HOME COMMUNITY PARTICIPATION!

The second phase of outreach has begun! Weigh in on alternatives for **transit center locations** and **extending the BRT to downtown**. Also, help us prioritize parking, pedestrian, bike, and car improvements.

**TAKE THE SHORT SURVEY AND ATTEND THE WEBINAR ON THURSDAY, AUGUST 27TH @ 6-7PM**

**RFTAGLENWOODSPRINGSMOVE.COM**

***LET'S TALK EXTENDING THE BRT DOWNTOWN, TRANSIT CENTER LOCATIONS, AND MORE!***

# Glenwood Springs move

**MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY**

City of Glenwood Springs | Roaring Fork Transportation Authority

# AT HOME COMMUNITY PARTICIPATION!

The second phase of outreach has begun! Weigh in on alternatives for **transit center locations** and **extending the BRT to downtown**. Also, help us prioritize parking, pedestrian, bike, and car improvements.

PARTICIPATE AND TAKE THE SHORT SURVEY

RFTAGLENWOODSPRINGSMOVE.COM

*LET'S TALK EXTENDING THE BRT DOWNTOWN, TRANSIT CENTER LOCATIONS, AND MORE!*

**Glenwood Springs move**

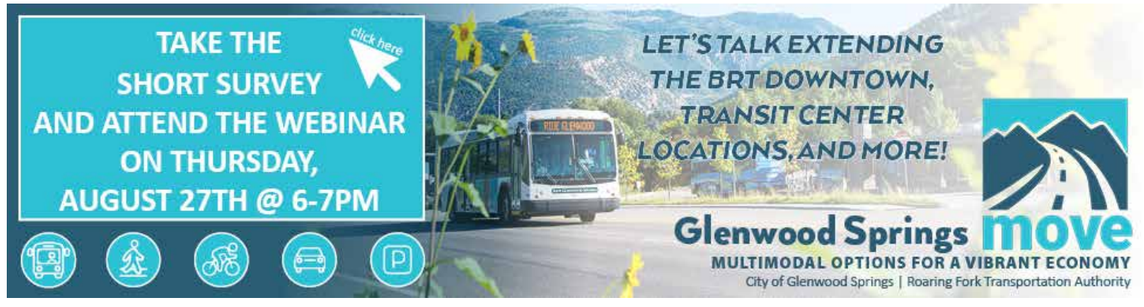
**MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY**

City of Glenwood Springs | Roaring Fork Transportation Authority



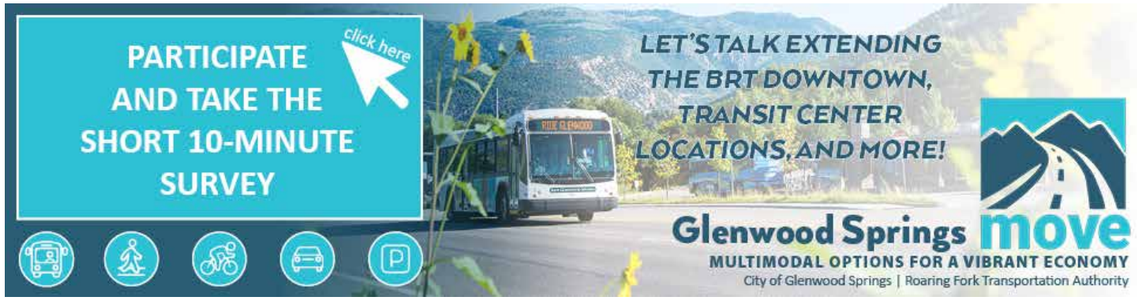
Outreach 2 - Newspaper Web Banners











**Post 1 Text (boost):**

The second phase of the Glenwood Springs MOVE public outreach has begun, and we need to hear from you! Weigh in on alternatives for transit center locations and extending the BRT to downtown. Also, help us prioritize parking, pedestrian, bike, and car improvements. You can take our short survey at rftaglenwoodspringsmove.com and join us for a live webinar on Thursday, August 27th at 6 pm.

**Roaring Fork Swap Post 1:**

The second phase of the Glenwood Springs MOVE public outreach has begun, and the City of Glenwood Springs and RFTA need to hear from you! Weigh in on alternatives for transit center locations and extending the BRT to downtown. Also, help us prioritize parking, pedestrian, bike, and car improvements. You can take our online survey at rftaglenwoodspringsmove.com and join us for a live webinar on Thursday, August 27th at 6 pm.

**Post 2 Text (boost):**

Come to the live webinar event tonight at 6 pm to help us figure out how to improve our community! Go to rftaglenwoodspringsmove.com to register and attend. Can't make the event? Take the quick ten-minute survey to learn about the proposed alternatives and give feedback.

**Post 3 Text:**

We need to hear from you! Help us prioritize various transportation improvements as well as give feedback on proposed BRT downtown alignments and transit center locations. Go to rftaglenwoodspringsmove.com to participate, and take a quick ten-minute survey.

**Post 4 Text (boost):**

The time is almost up to tell the City of Glenwood Springs and RFTA how to improve transportation in Glenwood Springs. The second phase of outreach for Glenwood Springs MOVE ends this Friday. Visit rftaglenwoodspringsmove.com to learn about the project and take a short survey.










# PRESS RELEASE

## Glenwood Springs MOVE Outreach Phase 2 occurs August 20th, 2020 through September 11th, 2020

**Contact:** Terri Partch, City Engineer, City of Glenwood Springs, 970.384.6413 or terri.partch@cogs.us; David Johnson, Director of Planning, Roaring Fork Transportation Authority, 970.384.4979 or djohnson@rfta.com

**Glenwood Springs, Colorado –** In 2018--as part of the RFTA Destination 2040 planning project—several transit and trail improvements were identified in Glenwood Springs. The City of Glenwood Springs partnered with the Roaring Fork Transportation Authority to create the Glenwood Springs MOVE project and a corresponding team to study these improvements. The MOVE (Multimodal Options for a Vibrant Economy) team is tasked with gathering public input to narrow the range of possible alternatives for those improvements. The MOVE Study team will facilitate the community conversation, present the study process and mobility options.

The City of Glenwood Springs and the Roaring Fork Transit Authority is working with consultants Parsons Corporation and DMH Design to engage the public and stakeholders in this project and develop transit solution alternatives.

Per the original solicitation, the purpose of the project is: *To identify, evaluate and implement transportation strategies and opportunities that will optimize the efficiency and utility of the transportation system through Glenwood Springs and that will align with the City's goals for mobility, land use, economic vitality, economic sustainability and quality of life.* Ultimately, the goal of the study to guide the creation of a more vibrant and safer community by improving transportation within the Grand Avenue and I70 corridor.

As transportation within the City and parking in the downtown core are topics of keen public interest; outreach is an integral piece of the MOVE project. Developing awareness of the project, creating a broad variety of opportunities to engage with the project, provide feedback, and see the responses to their input is a critical component of the success of the project.


The 12-month study started with gathering information and developing a project vision. The Public-at-Large will have three formal opportunities to connect with the project; as well as possible pop-up events, public meetings, and they will be able to provide input via the project website throughout the duration of the project.

In the spring, the MOVE team launched the first phase of public outreach. The team built an interactive website and process to engage the public with the project. Participants visited the MOVE website to learn about the project, take a survey, interact with a map of the project area, and leave comments. The MOVE team used the public's feedback to refine the purpose, needs and priorities of the project.

Through a series of stakeholder and technical advisor meetings in the summer, the MOVE team developed and refined transit, multimodal, parking, and circulation alternatives.

In this second phase of public outreach, the public will weigh in on alternatives for extending the BRT downtown and transit center locations, as well as help prioritize parking, pedestrian, bike, and car improvements. The MOVE team has built an interactive survey where participants can learn about each alternative and improvement while providing feedback. The second phase of outreach begins August 20th and ends September 11th, and includes a live interactive and informative webinar. The webinar will be August 27th from 6 to 7 pm. All participants are directed to visit the project website to partake.

The public feedback will be integral to refining the alternatives. In the final phase of outreach in October, the community will be able to review the results of the alternative analysis and provide feedback on the recommended Locally Preferred Alternative.

At the end of the study, a conceptual design will be developed including a cost estimate and implementation schedule.

More information can be found at rftaglenwoodspringsmove.com.





**Radio Script English 8/20-8/27:**

The second phase of the Glenwood Springs MOVE public outreach has begun, and the City of Glenwood Springs and RFTA need to hear from you! Weigh in on alternatives for transit center locations and extending the BRT to downtown, and help us prioritize parking, pedestrian, bike, and car improvements. You can take our short survey at rftaglenwoodspringsmove.com and join us for a live webinar on Thursday, August 27th at 6 pm. Visit r-f-t-a-glenwoodsprings-m-o-v-e.com to register and participate.

**Radio Script Spanish 8/20-8/27:**
La segunda fase del alcance público MOVE de Glenwood Springs ha comenzado, ¡y la Ciudad de Glenwood Springs y RFTA necesitan escuchar de usted! Evalúe las alternativas para las ubicaciones de los centros de tránsito, la extensión del BRT al centro, y ayúdenos a priorizar mejoras de estacionamiento, peatones, bicicletas y automóviles. Puede completar nuestra breve encuesta en rftaglenwoodspringsmove.com y unirse a nosotros para un seminario web en vivo el jueves 27 de agosto a las 6 pm. Visite r-f-t-a-glenwoodsprings-m-o-v-e.com para registrarse y participar.

**Radio Script English 8/28-9/11:**

The second phase of the Glenwood Springs MOVE public outreach is ending soon, and the City of Glenwood Springs and RFTA need to hear from you! Weigh in on alternatives for transit center locations and extending the BRT to downtown, and help us prioritize parking, pedestrian, bike, and car improvements. You can take our quick and interactive survey at rftaglenwoodspringsmove.com. Visit r-f-t-a-glenwoodsprings-m-o-v-e.com to participate.

**Radio Script Spanish 8/28-9/11:**
La segunda fase del alcance público MOVE de Glenwood Springs terminará pronto, ¡y la Ciudad de Glenwood Springs y RFTA necesitan saber de usted! Evalúe las alternativas para las ubicaciones de los centros de tránsito, la extensión del BRT al centro, y ayúdenos a priorizar las mejoras de estacionamiento, peatones, bicicletas y automóviles. Puede realizar nuestra encuesta rápida e interactiva en rftaglenwoodspringsmove.com. Visite r-f-t-a-glenwoodsprings-m-o-v-e.com para participar.


**PSA 8/20-8/27:**

The second phase of the Glenwood Springs MOVE public outreach has begun! The City of Glenwood Springs and RFTA have been hard at work creating alternative options for extending the BRT downtown, transit center locations, and more. Join the team for a live webinar on Thursday, August 27th at 6 pm to lend your thoughts and ask any questions about the project. Go to rftaglenwoodspringsmove.com to register for the event, learn about the alternatives, and take a quick survey.

**PSA 8/28-9/11:**

The second phase of the Glenwood Springs MOVE public outreach is almost ending! The City of Glenwood Springs and RFTA want to hear your thoughts on extending the BRT downtown, transit center locations, and more. Go to rftaglenwoodspringsmove.com to learn about the project and take a short 10-minute survey.





move
MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY

RFTA and City of Glenwood Springs to include a link to the MOVE website on their individual homepages.

**For City of Glenwood Springs**, DHM recommends putting the MOVE logo and the blurb (below) under the “In the Spotlight” section. If you click the blurb or the logo it should take you directly to the MOVE website. This is just a recommendation.

**For RFTA,** DHM recommends putting the MOVE logo and the blurb (below) under the “RFTA NEWS” section. Ideally this would remain in the news section for the duration of the outreach. If you click the blurb or the logo it should take you directly to the MOVE website. This is just a recommendation.

**BLURB 8/20-8/27:**

PROJECT ALERT: The second phase of the Glenwood Springs MOVE public outreach has begun, and we need to hear from you! Weigh in on alternatives for transit center locations, extending the BRT to downtown, and more. Go to rftaglenwoodspringsmove.com to take a short ten-minute survey and attend the live webinar on Thursday, August 27th at 6 pm.

**BLURB 8/28-9/11:**

PROJECT ALERT: The second phase of the Glenwood Springs MOVE public outreach has begun, and we need to hear from you! Weigh in on alternatives for transit center locations, extending the BRT to downtown, and more. Go to rftaglenwoodspringsmove.com to take a short ten-minute survey.

# Appendix D - Presentations

Outreach 1 - Project Introduction Video
Presentation


- **The Roaring Fork Transportation Authority** (RFTA) and the **City of Glenwood Springs** (The City) have initiated a study to develop a long-term vision and program for transportation in and through the travel corridors of SH-82 (Grande Ave.), SH-6 (West Glenwood), I-70 and the RFTA Rio Grande Railroad Corridor. Focus will be placed on the transportation, land use, environmental, economic and social needs of the City and the region.
- The **Multimodal Options for a Vibrant Economy** (MOVE) study will investigate various aspects of mobility for the City, including but not limited to transit, parking, and internal circulation.

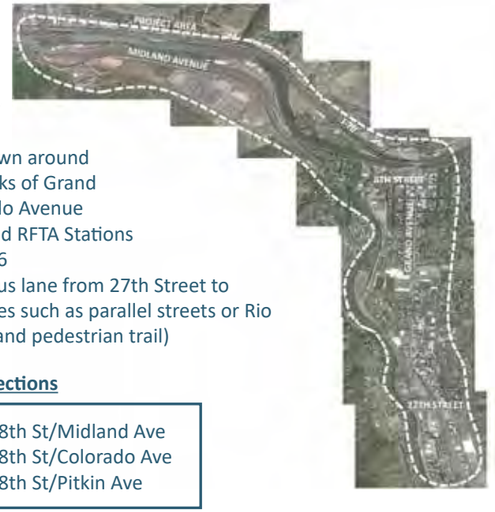
## BACKGROUND



- **Ensure mobility and accessibility** for residents, visitors and workers of all ages and abilities;
- **Improve safety** for all modes of travel;
- Create **a balanced, safe and affordable system** for transit, autos, bikes and pedestrians;
- Identify **SH82 optimization strategies** for local and regional transit;
- Identify vehicle **parking needs**, parking management optimization plans, and the optimal scope and location for future parking facilities;
- Identify the optimal location(s) for regional and local **transit stations**;
- **Evaluate the extension of BRT** or other mass transit solutions to downtown Glenwood Springs and transit connections to the I-70 corridor for future potential BRT;
- **Evaluate future changes** to the local transit system, based on projected land use, population, and economic development; and
- Maximize the operational **safety and efficiency of key intersections** in the City's downtown core.

## OVERALL PROJECT GOALS

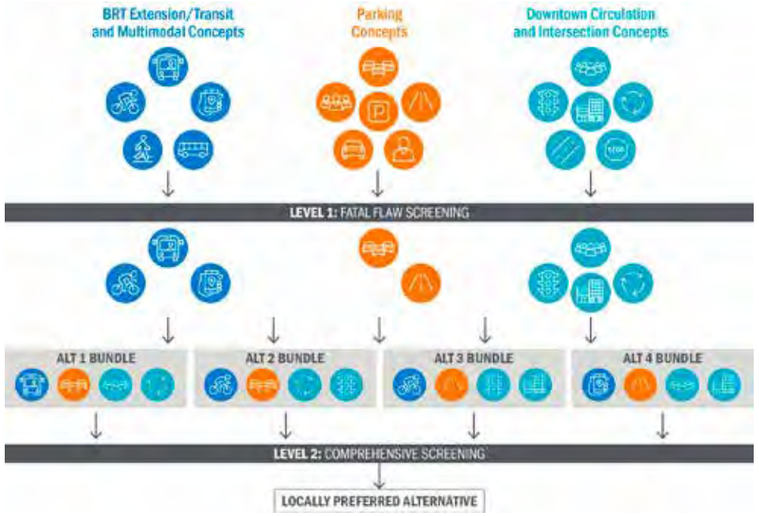
- From 27th Street through the downtown/ Confluence area in Glenwood Springs to the I-70 corridor
- 6 critical intersections identified by the City to study circulation
- Oversupply and undersupply parking issues downtown around 7th and 8th streets and the 800, 900, and 1000 blocks of Grand Avenue, Cooper Avenue, Pitkin Avenue, and Colorado Avenue
- Parking study for the 27th Street and West Glenwood RFTA Stations
- Transit center location in downtown core and/or SH6
- Alignment for possible exclusive or semi-exclusive bus lane from 27th Street to 8th Street including Grand Avenue or alternate routes such as parallel streets or Rio Grande Corridor (while maintaining current bicycle and pedestrian trail)



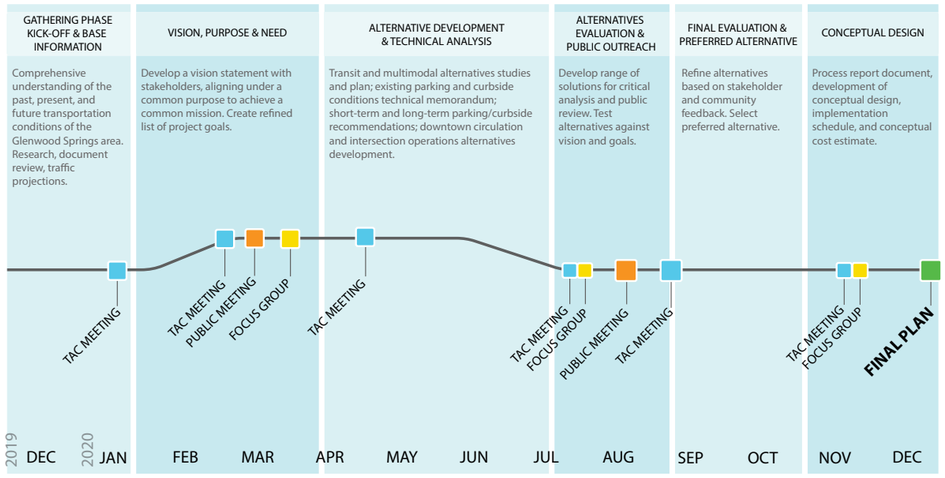

**Critical Intersections**

| | |
|---|---|
| 8th St/Grand Ave | 8th St/Midland Ave |
| 9th St/Grand Ave | 8th St/Colorado Ave |
| 14th St/ Grand Ave | 8th St/Pitkin Ave |

## STUDY AREA




## STUDY PROCESS




## SCOPE OF WORK + SCHEDULE



**Technical Advisory Committee (TAC)** is comprised of key technical staff of RFTA, Glenwood Springs, CDOT, Garfield County, FTA, and FHWA

- Meets six times over the course of the project to provide support and technical review of analysis and recommendations.

**Focus Group** is comprised of elected and policy officials of corridor and invited members from local agencies, organizations, businesses, and transportation advocates.

- Meets twice during the project to discuss the visioning process and the alternatives that are evaluated and bundled into recommendations.

**Public-at-Large**

- Opportunities to meet at three public meetings, pop-up events, and provide input via project website.

## STAKEHOLDERS AND COMMUNITY

- **April 2020–** Project introduction, development of Corridor Vision, goals and parameters of the project, seek feedback on specific issues and opportunities, initial alternatives for consideration
- **August 2020–** Review initial analysis of alternatives, test alternatives for alignment with community needs and desires
- **October 2020–** Review results of alternatives analysis and comment on recommended Locally Preferred Alternatives
- **Pop-Up Events-** with second and third open houses, utilize display materials developed for associated open houses and obtain public feedback

## PUBLIC MEETING SCHEDULE


**INITIAL ALIGNMENT OPTIONS FOR CONSIDERATION**

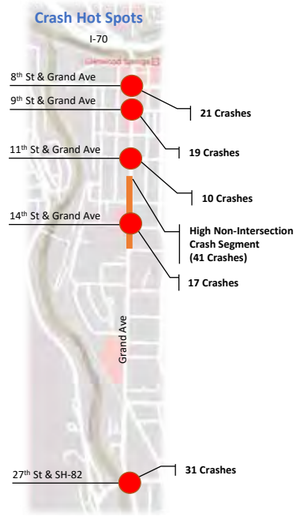
## WHAT ARE SOME OPTIONS TO EXTEND VelociRFTA INTO DOWNTOWN GLENWOOD?

## EXISTING CRASHES (SH-82)

- Crash Data (provided by CDOT) within a 3-year period was analyzed (June 2016-June 2019)
- A total of 545 crashes were reported*:
  - 3 (<1.0%) Fatal Crashes were reported
  - 96 (18%) Injury related crashes were reported
  - Rear-ends were the most common at 49%
  - Sideswipe account for 17%
  - Intersection Angle account for 17%
  - 19 crashes (4%) were Pedestrian/Bicycle related

**TOTAL CRASH SUMMARY**

| | |
|---|---|
| Intersection (Signalized): | 224 (41%) |
| Intersection (Unsignalized): | 46 (8%) |
| Non-Intersection: | 233 (43%) |
| Driveway Access: | 42 (8%) |
| **Total Crashes:** | **545** |




## EXISTING TRAFFIC + SAFETY



## Underpass vs. Overpass

## Tell us in the comments which you prefer

| < Underground Crossing | **Impacts** | Elevated > Crossing |
|---|---|---|
| Lower Impact | Visual Impacts and Aesthetics | Greater Impact |
| Lower Impact | Durability / Maintenance | Greater Impact |
| Greater Impact | Traffic Impacts During Construction | Lower Impact |
| Longer | Construction Duration | Shorter |
| About equal | Overall Costs | About equal |

## PROPOSED 27TH STREET PEDESTRIAN CROSSING

CITY OF GLENWOOD SPRINGS COLORADO

**NEXT MEETING:** SUMMER 2020

For more information visit rftaglenwoodspringsmove.com


move

RFTA
ROARING FORK TRANSPORTATION AUTHORITY

## PLEASE TAKE OUR SURVEY

**Introduction:**

Hi, my name is David Johnson and I work for the Roaring Fork Transportation Authority. In the spirit of community, the City of Glenwood Springs and RFTA are continuing to reimagine the future of a multimodal transportation system in our city. We need to hear from you. So, learn a little bit more about the project, take the survey, send us any questions or comments, and leave us a comment on the interactive map.

**1-Cover Slide:**

The Multimodal Options for a Vibrant Economy project, or MOVE, is a collaboration between the City of Glenwood Springs and RFTA

**2-Background Slide:**

RFTA and the City had a number of interrelated transportation initiatives they wanted to plan for, so they initiated this joint study to develop a long-term vision and program for transportation in and through the travel corridors of State Highway 82, or Grande Avenue in Glenwood Springs, State Highway 6, I-70, and the RFTA Rio Grande Railroad Corridor.

Focus will be placed on the transportation,
land use, environmental, economic and social needs
of the City and the region.

The study will investigate various aspects of
mobility for the City, including but not limited to
transit, parking, and internal circulation.

**3-OVERALL Project Goals Slide:**

The 9 project goals listed here are also below on the website and include a focus on mobility and accessibility; safety; improving parking; and optimizing transit, walking, bicycling, and driving in and through Glenwood Springs.

**4-Study Area Slide:**

The study area boundaries vary slightly for the different transportation options we are studying, but in general they are from 27th Street through the downtown/ Confluence area in Glenwood Springs to the I-70 corridor

Circulation will be studied at 6 critical intersections that were identified by the City

We will look at oversupply and undersupply parking issues downtown around



7th and 8th streets and the 800, 900, and 1000 blocks of Grand
Avenue, Cooper Avenue, Pitkin Avenue, and Colorado Avenue as well as at the 27th Street and West Glenwood RFTA stations.

The Study will look at alignment for possible exclusive or semi-exclusive bus lane from 27th Street to 8th Street including Grand Avenue or alternate routes such as parallel streets or Rio
Grande Corridor (while maintaining current bicycle and pedestrian trail) and a new transit center location in downtown core and/or around State Highway 6 will be proposed.

**5-Study Process Slide:**
Initially, all transportation options will be developed individually and will go through a Level 1 Fatal Flaw screening. The options that pass through the screening will be bundled into a number of inclusive alternatives. The alternatives will go through a second comprehensive screening to determine a final locally preferred alternative. We will be sharing the alternatives and will need your input throughout this study process.

**6-Scope and Schedule Slide:**

The 12-month study has started with gathering information and developing a project vision. We will use your feedback from this outreach to refine the purpose and need and priorities of the project. The development of the technical options has started, and the analysis of these options will continue for a few more months leading to selecting a preferred alternative. At the end of the study, a conceptual design will be developed including a cost estimate and implementation schedule. This scope and schedule can also be found on the project website.

**7-Stakeholder and Community Slide:**

We will be connecting with various groups throughout the study. The Technical Advisory Committee, or TAC, TAC is comprised of key technical staff from RFTA, Glenwood Springs, CDOT, Garfield County, the Federal Transit Administration, and the Federal Highway Administration.

The Focus Group is comprised of elected and policy officials of the project area and invited members from local agencies, organizations, businesses, and transportation advocates.

The Public-at-Large will have opportunities to connect formally three times with possible pop-up events, public meetings, and they will be able to provide input via project website throughout the duration of the project.

**8-Public Outreach Schedule Slide:**
Our current outreach is an introduction to the project. In August you will be able to review the initial analysis of alternatives and in October you will be able to review the results of the alternative analysis and provide your feedback on the recommended Locally Preferred Alternative.

9- **Options to Extend BRT Slide:**

The VelociRFTA runs in mixed traffic on State highway 82 in Glenwood Springs. Options to create a dedicated alignment are shown on this slide. We are developing information related to each of these alignments to be presented on this website.

**10-Existing traffic and safety slide:**
Safety for all users is an important consideration of this study. Crash data from the Colorado Department of Transportation shows rear end accidents to be the most common along state highway 82 in Glenwood Springs

**11-Proposed 27th Street Pedestrian Crossing Slide:**
RFTA/GWS/CDOT are considering an underground or elevated crossing for bikes and pedestrians at SH 82 at 27th Street and also at 27th and the Rio Grande trail. This will provide for safer crossings in this area. A side benefit of this improvement would be improved traffic flow at this critical intersection. Options being explored include an overpass, or a tunnel. What do you prefer? Let us know in the comments

**12-Closing:**
Now that you have heard from us, it's your turn. RFTA and the City need to hear from **you** about how you move through your community.
Yes—these are strange times, but if you are looking for a productive way to participate in the future of your city please go to the survey, interactive map, and comment section to give us your thoughts or ask any questions.



**Narrada por Emily Kushto, PE, Ph.D.**
**Parsons Gerente de Proyecto Adjunto**
**Residente de Glenwood Sprinsg**

# INTRODUCCION AL PROYECTO

## UN VIDEO DE LA PRESENTATCIÓN NARRADA

**Glenwood Springs move**

**OPCIONES MULTIMODALES PARA UNA ECONOMÍA VIBRANTE**

- **La Autoridad de Transporte de Roaring Fork** (RFTA) y la **ciudad de Glenwood Springs** (La Ciudad) inició un estudio para desarrollar una visión a largo plazo y programa de transporte a través de los corredores de viaje de SH-82 (Grande Ave.), SH-6 (West Glenwood), I-70 y la porción de RFTA del sendero del Rio Grande. Se enfocará en el transporte, uso del terreno, necesidades ambientales, económicas y sociales de la ciudad y la región.
- Las **opciones multimodales para una economía vibrante** (MOVE) investigará varios aspectos de movilidad para la ciudad, que incluye, pero no se limita a tránsito, estacionamiento y circulación interna.

## ANTECEDENTES

- **Garantizar la movilidad y accesibilidad** para residentes, visitantes y trabajadores de todas las edades y capacidades;
- **Mejorar la seguridad** para todos los modos de viaje;
- Crear **un sistema equilibrado, seguro y accesible** para tránsito, automóviles, bicicletas y peatones;
- Identificar **estrategias de optimización en la carretera SH82** para el tránsito local y regional;
- Identificar **las necesidades de estacionamiento de vehiculos**, los planes de optimización de gestión de estacionamiento, el alcance óptimo y ubicación para futuros estacionamientos;
- Identificar las ubicaciones óptimas para las **estaciones de tránsito** regionales y locales;
- **Evaluar la extensión de BRT** u otras soluciones de transporte público al centro de Glenwood Springs y conexiones de tránsito al corredor I-70 y analizar el potential de servico BRT a estas areas;
- **Evaluar cambios futuros** en el sistema de tránsito local, en función del uso proyectado del terreno, la población y desarrollo economico; y
- Maximice la **seguridad operacional y la eficiencia de las intersecciones clave** en el centro de la ciudad.

## OBJECTIVOS GENERALES DEL PROYECTO

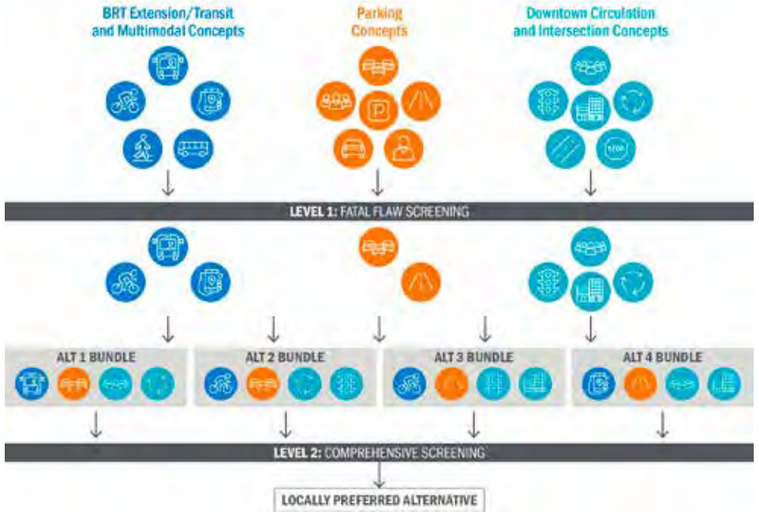
- Desde la calle 27 a través del centro /Área de confluencia en Glenwood Springs hacia la carretera I-70 corredor
- 6 intersecciones críticas identificadas por la ciudad para estudiar circulación
- Problemas de estacionamiento en exceso o en falta en el centro de la ciudad en las Calles 7 y 8 y las cuadras 800, 900 y 1000 de Grand Avenue, Cooper Avenue, Pitkin Avenue y Colorado Avenue
- Estudio de estacionamiento para las estaciones RFTA de la calle 27 y West Glenwood
- Ubicación del centro de tránsito en el centro de la ciudad y / o carretera SH6
- Alineación para una posible línea de autobús exclusiva o semi-exclusiva desde la calle 27 hasta


**Intersecciones Críticas**

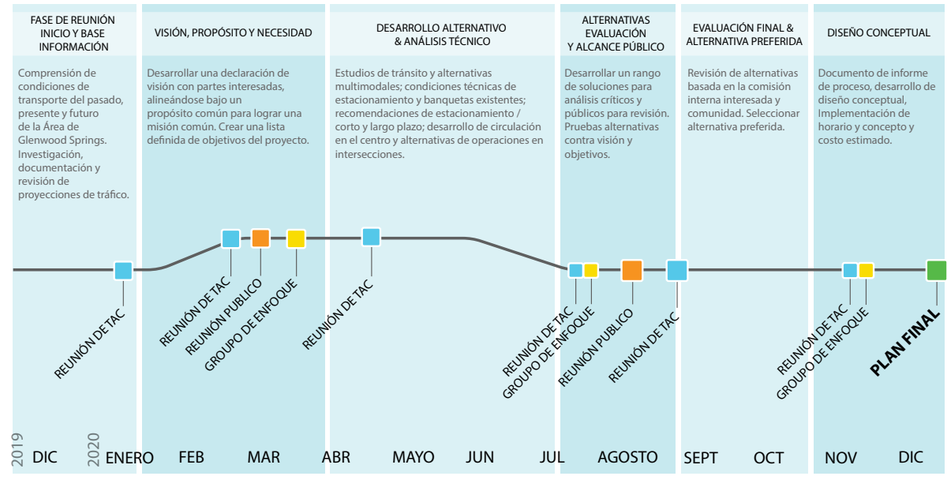
| | |
|---|---|
| 8th St/Grand Ave | 8th St/Midland Ave |
| 9th St/Grand Ave | 8th St/Colorado Ave |
| 14th St/ Grand Ave | 8th St/Pitkin Ave |

## AREA DE ESTUDIOS






## PROCESO DE ESTUDIO




## ALCANCE DEL TRABAJO + CALENDARIO

**El Comité Asesor Técnico (TAC)** está compuesto personal técnico de RFTA, Glenwood Springs, CDOT, Garfield Condado, TLC y FHWA

- Se reúne seis veces en el transcurso del proyecto para brindar apoyo y revisión técnica de análisis y recomendaciones.

**El Grupo de enfoque** está compuesto por funcionarios electos y políticos del corredor y miembros invitados de agencias locales, organizaciones, empresas y defensores del transporte.

- Se reúne dos veces durante el proyecto para discutir el proceso de visión y alternativas que se evalúan y se agrupan en recomendaciones.

**Público en general**

- Oportunidades para conectarse formalmente tres veces con posibles eventos emergentes, reuniones públicas, y proporcionar información a través del sitio web del proyecto.

## GRUPOS DE INTERÉS Y COMUNIDAD

- **Abril 2020–** Introducción del proyecto, desarrollo de Visión del Corredor, parametros y metas del proyecto, búsqueda de comentarios sobre cuestiones y oportunidades específicas, alternativas iniciales a considerar.
- **Agosto 2020–** Revisión del análisis inicial de alternativas, pruebas sobre alineación de alternativas con necesidades y deseos de la comunidad.
- **Octubre 2020–** Revisión de los resultados de análisis de alternativas y comentarios sobre la alternativa recomendada y preferida por la localidad.
- **Eventos Emergentes-** Con segundo y tercero alcance, utilizar materiales de exhibición desarrollados para eventos de puertas abiertas y obtener comentario público.

## PROGRAMA DE ALCANCE PÚBLICO




INITIAL ALIGNMENT OPTIONS FOR CONSIDERATION

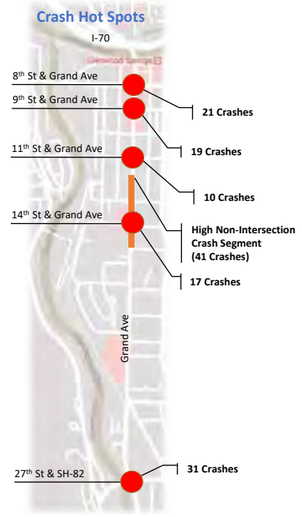
## ¿CUÁLES SON ALGUNAS OPCIONES PARA EXTENDER VelociRFTA EN EL CENTRO DE GLENWOOD?

### ACCIDENTES EXISTENTES (SH-82)

- Datos de bloqueo (proporcionados por CDOT) dentro de un período de 3 años, período analizado (junio 2016-junio 2019)
- Se reportaron un total de 545 accidentes *
  - 3 (<1.0%) Se informaron accidentes fatales
  - 96 (18%) se informaron accidentes relacionados con lesiones
  - Las partes traseras fueron las más comunes con 49%
  - Accidentes en la parte del costado representa el 17%
  - El ángulo de intersección representa el 17%

**RESUMEN TOTAL DE ACCIDENTES**

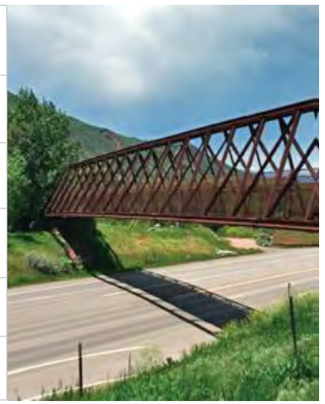
| | |
|---|---|
| Intersección (señalizada): | 224 (41%) |
| Intersección (sin señalizar): | 46 (8%) |
| No intersección: | 233 (43%) |
| Acceso a la cochera: | 42 (8%) |
| **Accidentes totales:** | **545** |




## TRÁFICO EXISTENTE + SEGURIDAD

## Paso Subterráneo vs Paso Elevado
## Cuéntanos en los comentarios cuál prefieres

| Paso < Subterráneo | Impactos | Paso Elevado > |
|---|---|---|
| Menos Impacto | Impactos visuales y estéticos | Gran Impacto |
| Menos Impacto | Durabilidad / Mantenimiento | Gran Impacto |
| Gran Impacto | Impactos de tráfico durante la construccion | Menos Impacto |
| Más | Duracion de la Construcción | Más Corta |
| Más o menos la misma | Costos Generales | Más o menos la misma |



## PROPUESTO CRUCE DE PEATONES EN LA CALLE 27


**Intro Script (David):**

Hola, me llamo Jennifer Balmes y trabajo para RFTA. En el espíritu de comunidad, la ciudad de Glenwood Springs y RFTA continúan reinventando el futuro de un sistema de transporte multimodal en nuestra ciudad. Necesitamos saber de usted. Entonces, aprenda un poco más sobre el proyecto, responda la encuesta, envíenos cualquier pregunta o comentario y déjenos un comentario en el mapa interactivo.

**1-Cover Slide:**

Las opciones multimodales para un proyecto de economía vibrante, o MOVE, es una colaboración entre la ciudad de Glenwood Springs y RFTA

**2-Background Slide:**

RFTA y la ciudad Glenwood Springs tenían una serie de iniciativas de transporte interrelacionadas que querían planificar, por lo que iniciaron este estudio conjunto para desarrollar una visión y un programa a largo plazo para el transporte dentro y a través de los corredores de viaje de la autopista estatal 82, la avenida principal Grand Ave en Glenwood Springs, Carretera 6, Carretera I-70 y el sendero RFTA del Rio Grande.

El proyecto se enfocará en el transporte,
uso del terreno, necesidades ambientales, económicas y sociales
de la ciudad y la región.

El estudio investigará varios aspectos de

movilidad para la ciudad, que incluye, pero no se limita a

tránsito, estacionamiento y circulación interna.

**3-OVERALL Project Goals Slide:**

Los 9 objetivos del proyecto enumerados aquí también se encuentran a continuación en el sitio web ,incluyen un enfoque en movilidad y accesibilidad; la seguridad; mejorar el estacionamiento; optimizar el tránsito, caminar, andar en bicicleta, conducir dentro y a través de Glenwood Springs.

**4-Study Area Slide:**

Los límites del área de estudio varían ligeramente para las diferentes opciones de transporte que estamos estudiando, pero en general son desde la calle 27 a través del centro / área de confluencia en Glenwood Springs hasta el corredor de la carretera I-70

La circulación se estudiará en 6 intersecciones críticas identificadas por la Ciudad.

Analizaremos los problemas de falta y sobre de lugares de estacionamiento en el centro y alrededor de las Calles 7 y 8, las cuadras 800, 900 y 1000 de la avenida principal de Grand Ave.
Asi como la avenida Cooper, Avenida Pitkin, Avenida Colorado y sin embargo las estaciones RFTA de la calle 27  y West Glenwood.

El estudio analizará la alineación para posibles carriles exclusivos o semi-exclusivos desde la calle 27 hasta la calle 8 incluyendo la avenida principal de grand avenue  o rutas alternas como calles paralelas o el uso del sendero del Rio Grande (mientras se mantiene el sendero actual para ciclistas y peatones) y un nuevo centro de tránsito en el centro de la ciudad y / o alrededor de la carretera Estatal 6.

**5-Study Process Slide:**
Inicialmente, todas las opciones de transporte se desarrollarán individualmente y pasarán por un examen de Nivel 1 de falla fatal. Las opciones que pasan por el examen se agruparán en una serie de alternativas inclusivas. Las alternativas pasarán por una segunda evaluación compresiva para determinar una alternativa final preferida localmente. Compartiremos las opciones y necesitaremos su opinión durante este proceso de estudio.

**6-Scope and Schedule Slide:**

El estudio de 12 meses comenzó con la recopilación de información y el desarrollo de una visión del proyecto. Utilizaremos sus comentarios de este alcance para refinar el propósito, la necesidad y las prioridades del proyecto. El desarrollo de las opciones técnicas ha comenzado, y el análisis de estas opciones continuará durante unos meses más, para la conclusión de seleccionar una alternativa preferida. Al final del estudio, se desarrollará un diseño conceptual que incluye una estimación de costos y un mapa de implementación. Este alcance y mapa también se pueden encontrar en el sitio web del proyecto.

**7-Stakeholder and Community Slide:**

Nos conectaremos con varios grupos a lo largo del estudio. El Comité Asesor Técnico, o TAC,  está compuesto por personal  clave de RFTA, Glenwood Springs, CDOT, el Condado de Garfield, la Administración Federal de Tránsito y la Administración Federal de Carreteras.

El Grupo de enfoque está compuesto por funcionarios electos y políticos del área del proyecto y miembros invitados de agencias locales, organizaciones, empresas y defensores del transporte.

El público en general tendrá oportunidades de conectarse formalmente tres veces con posibles eventos emergentes,reuniones públicas, y mediante el sitio web para proporcionar información del proyecto durante todo el proyecto.

**8-Public Outreach Schedule Slide:**



Nuestro alcance actual es una introducción al proyecto. En agosto podrá revisar el análisis inicial de alternativas y en octubre podrá revisar los resultados del análisis alternativo y proporcionar sus comentarios sobre recomendación de la alternativa preferida localmente

9- **Options to Extend BRT Slide:**
VelociRFTA funciona en tráfico mixto en la carretera estatal 82 en Glenwood Springs. Las opciones para crear una ruta dedicada se muestran en esta diapositiva. Estamos desarrollando información relacionada con cada una de estas rutas para presentarla en este sitio web.

**10-Existing traffic and safety slide:**

La seguridad para todos los usuarios es una consideración importante de este estudio. Los datos de accidentes del Departamento de Transporte de Colorado muestran que los accidentes ocurridos en la parte trasera de vehiculos son los más comunes a lo largo de la carretera estatal 82 en Glenwood Springs

**11-Proposed 27th Street Pedestrian Crossing Slide:**
RFTA and GWS are considering a safe, grade separated crossing for bikes and pedestrians at 27th Street to connect the Rio Grande trail to the RFTA station. Options include an overpass, or a tunnel. What do you prefer?  Let us know in the comments.

RFTA y ciudad de Glenwood Springs están considerando un cruce separado y seguro, para bicicletas y peatones en la calle 27 para conectar el sendero del Río Grande con la estación RFTA. Las opciones incluyen un paso elevado o un túnel subterraneo. ¿Qué prefieres? Háganos saber en los comentarios.

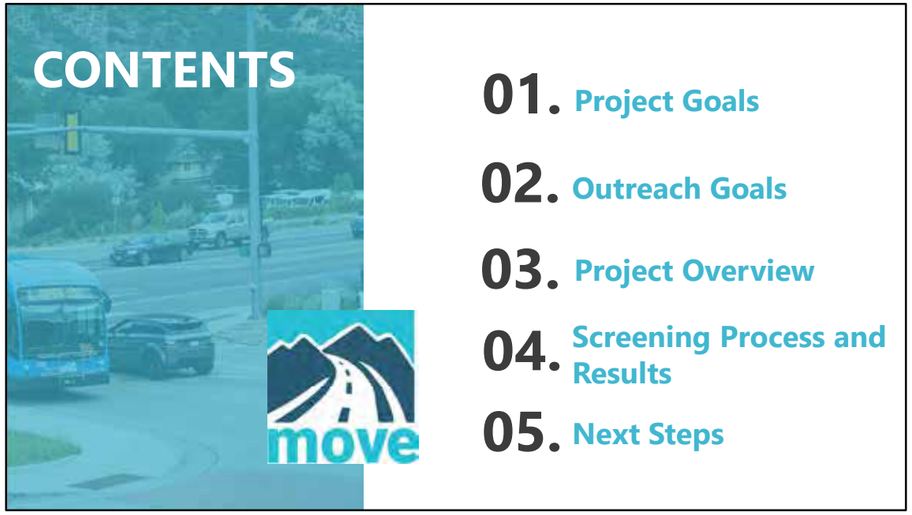
**12-Closing:**

Ahora que ha escuchado de nuestro proyecto, es su turno. RFTA y la Ciudad de Glenwood Springs necesitan saber de usted sobre cómo se mueve en su comunidad.
Sí, estos son tiempos extraños, pero si está buscando una forma productiva de participar en el futuro de su ciudad, vaya a la encuesta, el mapa interactivo y la sección de comentarios para darnos su opinión o hacer cualquier pregunta.


Thank you for joining the virtual public outreach for the RFTA and Glenwood Springs MOVE project. Your participation will help shape future improvements for Glenwood Springs and RFTA. We appreciate your involvement and look forward to your continued participation throughout the study.







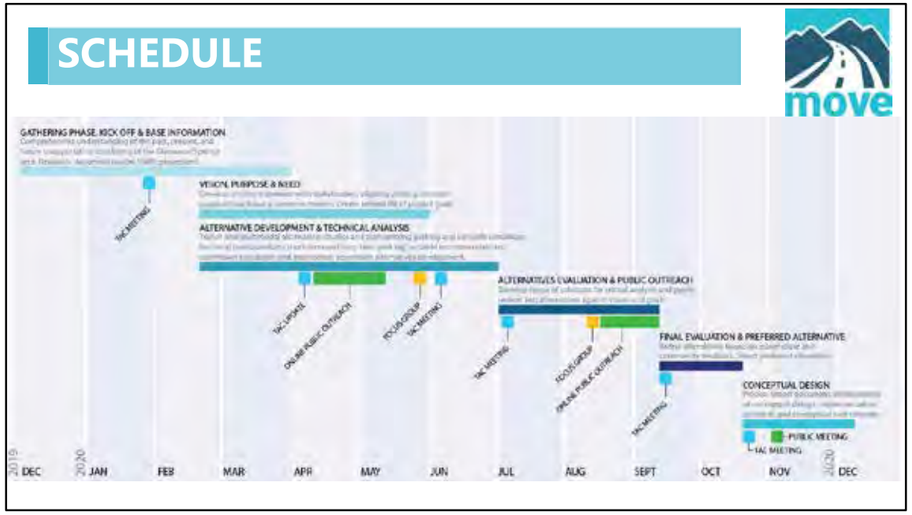

- Improve mobility, connectivity, safety, and accessibility
- Determine effective and affordable transportation solutions with strong community support
- Provide reliable BRT access to the downtown/Confluence area of Glenwood Springs
- Improve travel time for auto travel and local transit
- Reduce congestion in the corridor
- Improve service efficiency (e.g. higher transit ridership, riders per trip, rider per hour of service)
- Meet current and future person-trip demand
- Encourage a shift of auto trips to attractive and reliable alternative modes
- Support local livability, development, and sustainability plans and policies
- Improve transit connections and accessibility to affordable housing






The purpose of this virtual public outreach is to provide an overview of the project and update the public on the study's progress. We'll also present alternatives that have been evaluated and obtain your feedback and input on the remaining alternatives.


Now, let's go through the project overview




(note: schedule shown will be updated to include Public Outreach starting in August and lasting 3 weeks)
Over the course of the project so far, the study team has held one online public outreach session, 3 Technical Advisory Committee Meetings, 2 Focus Group Meetings, and presented at 2 RFTA Board Meetings and 1 Glenwood City Council Meeting.
During the meetings and with the results of the public outreach to date, the project team identified the issues and concerns, developed a vision statement, analyzed data to determine the Purpose and Need, and evaluated alternatives to carry forward for further study.

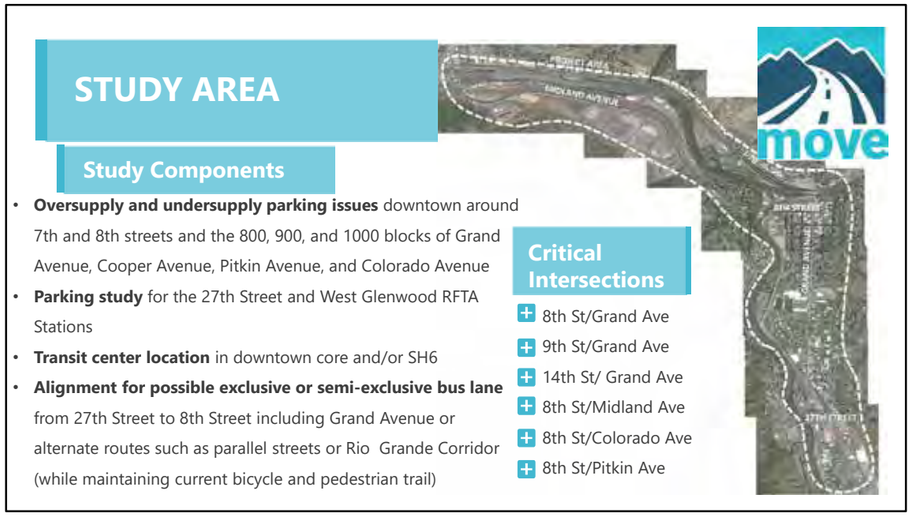

The Vision is a community with safe, multimodal, and efficient connection options that makes Glenwood Springs a city of great vitality and quality of life.
The purpose speaks more specifically about how we will achieve the vision.






The first round of virtual public outreach in May was used to determine the need for the improvements. The project team also evaluated the following existing conditions and other data to capture the project need:

- Public Transportation
- Downtown and RFTA Station Parking
- Traffic Analysis
- Multimodal Transportation links
- Vehicular Crashes
- Non-motorized modes




The study components will be developed and evaluated against criteria that is based on the previously mentioned project needs


Now, let's discuss the process for evaluating the alternatives


The study team developed various alternatives and improvements, which are categorized into the 4 different groupings shown on the screen.




Transit Center Alternatives

## DOWNTOWN TRANSIT STATION

1. 7th Street and Colorado Avenue
2. Rio Grande corridor alignment
3. SH 6 Area
4. 7th Street, adjacent to the City's lift station
5. Northwest corner of Defiance Street and 8th Street

The intent of the downtown transit center is to increase transit usage and to reduce traffic congestion to the extent possible. For this project, the downtown transit center is not specifically intended to include parking since there is a concern that such a facility would attract additional vehicle trips to the area and add to existing traffic congestion. Existing City plans show possibilities for a transit center at the locations listed on the screen. Based on discussions with City and RFTA staff, the first three potential transit center sites were selected as the best options for further evaluation.

BRT Extension Alternatives

## 27th STREET TO DOWNTOWN

**1.Grand Avenue alignment**

**2.Rio Grande corridor alignment**

3.Blake Avenue alignment

4.Cooper/Colorado Avenues one-way couplet alignment

5.Pitkin Avenue alignment

The BRT extension alternatives that are being considered provide service to downtown Glenwood Springs on a route alignment that can accommodate dedicated lanes to ensure short travel times. The BRT extension alignment options are:

1. Grand Avenue alignment
2. Rio Grande corridor alignment
3. Blake Avenue alignment
4. Cooper/Colorado Avenues one-way couplet alignment
5. Pitkin Avenue alignment

Out of the alternatives considered, the project team will focus on the Grand Avenue and Rio Grand corridor alignments. We'll now explain how the project team came to this decision and why the other alternatives were dismissed.

Using the No Build as the baseline for comparison, the BRT extension alternatives include:

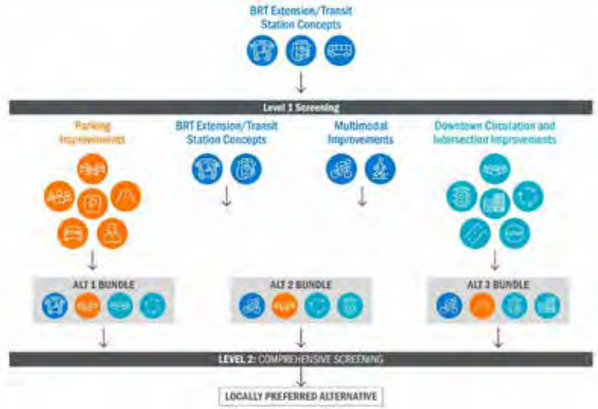


## SCREENING PROCESS

**Level 1**
- Meet Purpose and Need
- Evaluate alternatives against transit service criteria and parking impacts

**Level 2**

Evaluate alternatives against following criteria:
- Costs
- Multimodal ease and safety
- Traffic Impacts
- Transit Service
- Community amenities
- Community support




To evaluate the alternatives, the project team are conducting two different levels of screening.

• Level 1 screening was to determine if alternatives meet the Purpose and Need and evaluates them against transit service specific criteria and parking impacts.

• Level 2 screening was more comprehensive and evaluates the alternatives against criteria including costs, multimodal ease and safety, traffic impacts, transit service, impacts on community amenities, and will include community support.

## Level 1 Screening Results: BRT Extensions

| | Level 1 Evaluation Criteria: | No Build | Grand Avenue | Rio Grande Corridor | Blake Avenue | Cooper/Colorado One-way Couplet | Pitkin Avenue |
|---|---|---|---|---|---|---|---|
| 1 | **BRT Travel Time Reliability** (based on percentage of alignment in dedicated lanes) | Poor | Moderate | Good | Good | Moderate | Moderate |
| | **Score:** | 1 | 2 | 3 | 3 | 2 | 2 |
| 2 | **BRT Travel Time** (one-way transit travel time in minutes of the BRT with available dedicated lanes) | 8 minutes | 7.1 minutes | 4.6 minutes | 7.9 minutes | 7.2 minutes | 8.2 minutes |
| | **Score:** | 1 | 2 | 3 | 1 | 2 | 1 |
| 3 | **BRT Travel Time Savings** (one-way transit travel time savings of the BRT with proposed dedicated lanes, compared with existing Grand Avenue) | N/A | 0.9 minutes faster | 3.4 minutes faster | 0.1 minutes faster | 0.8 minutes faster | 0.2 minutes slower |
| | **Score:** | 1 | 2 | 3 | 1 | 1 | 1 |
| 4 | **Number of on-street parking spaces displaced** | 0 | 140 mostly business spaces | 0 | 278 mostly residential spaces | 140 mostly residential spaces7 | 161 mostly residential spaces |
| | **Score:** | 3 | 2 | 3 | 1 | 2 | 2 |
| | **TOTAL SCORE** | 6 | 8 | 12 | 6 | 7 | 6 |

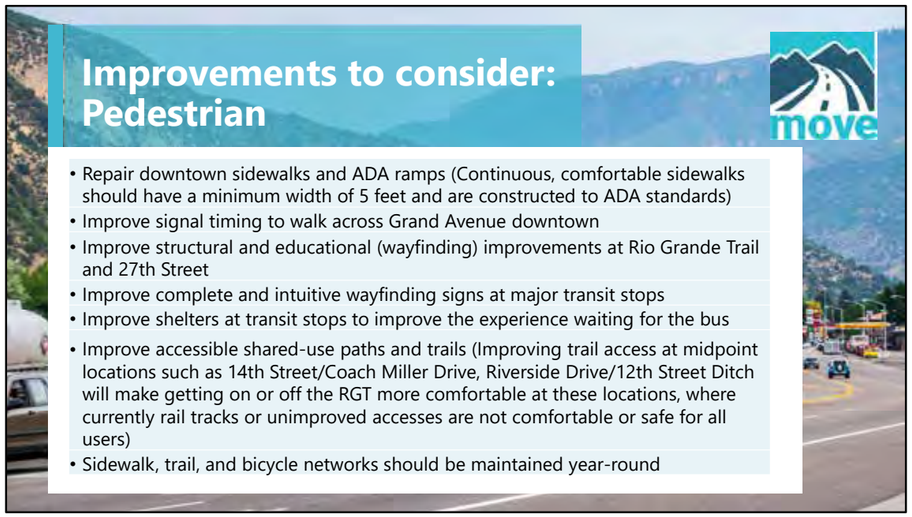
During Level 1 screening the project team determined that Blake Avenue, the Cooper/Colorado one-way couplet, and Pitkin avenue are eliminated from further study for the BRT extensions. The No Build was used as the baseline for comparison.



## Level 1 Screening Results: Transit Centers

| | Level 1 Evaluation Criteria: | RFTA property on Rio Grande south of 8th St. | 7th and Colorado in Confluence area | SH 6 Area |
|---|---|---|---|---|
| 1 | **Pedestrian and Bicycle Accessibility to Heart of Downtown GWS (Grand Ave/8th Street):** One-way distance | 1,00′ | 350′ | 2,800′ |
| | **Score:** | 2 | 3 | 1 |
| 2 | **Routing to West Glenwood PNR:** Travel time | 5 minutes | 6 minutes | 6 minutes |
| | **Score:** | 2 | 3 | 2 |
| 3 | **Transit Oriented Location:** Density of businesses and activity centers within ¼-mile walk | Lowest | Highest | Middle |
| | **Score:** | 1 | 3 | 2 |
| 4 | **Congestion relief for downtown Glenwood Springs south of I-70:** attracting fewest cars through downtown | Fair | Poor | Good |
| | **Score:** | 2 | 1 | 3 |
| | **TOTAL SCORE** | 8 | 9 | 8 |

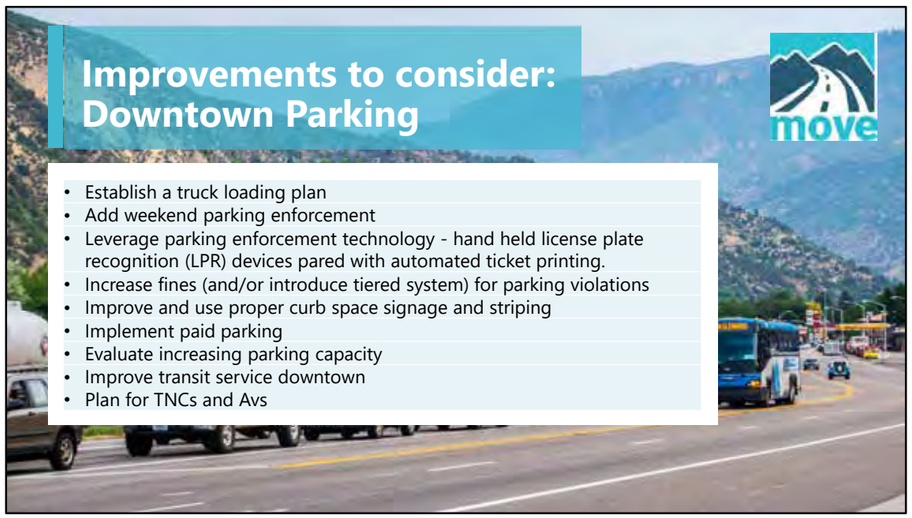
All of the transit center locations scored very close to each other during the Level 1 screening, so the project team decided to keep all three for further study.




Various improvements will be paired with the preferred BRT extension alignment and the preferred transit center location. These improvements will enhance the operation, attractiveness and accessibility of the facilities and include the categories of pedestrian/bicycle facilities, parking improvements, traffic operations and safety improvements, and Regional and Local Bus Integration Improvements
The pedestrian improvements are being shown on the screen now.




Here are the bicycle facility improvements




Here are the downtown parking improvements to consider

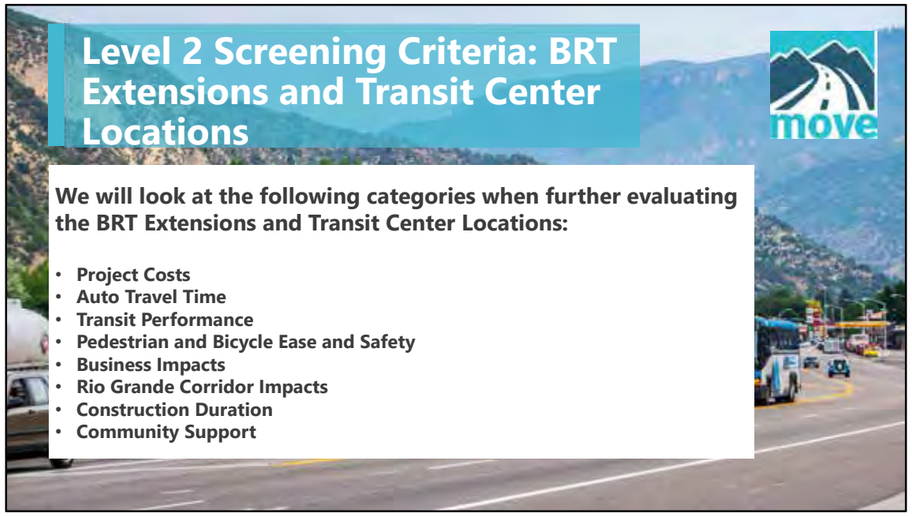





Here are the downtown parking improvements to consider


Here are the traffic operations and safety and regional and local bus service improvements to consider.






We will look at the following categories when further evaluating the BRT Extensions and Transit Center Locations:

- Project Costs
- Auto Travel Time
- Transit Performance
- Pedestrian and Bicycle Ease and Safety
- Business Impacts
- Rio Grande Corridor Impacts
- Construction Duration
- Community Support

# Grand Avenue BRT Alignment

Northbound dedicated BRT lane between 27th Street and 23rd Street. 23rd to 13th Street, BRT vehicles in existing mixed flow traffic lanes, with transit signal priority. From 13th Street to 8th Street, business access/transit (BAT) lanes would displace on-street parking and provide semi-dedicated BRT lanes in both directions but would also allow right-turn movements.


**PROS**

- Low construction impacts and duration
- Capital cost is roughly $4M-$5M
- Slight improved transit and automobile performance along Grand Ave

**CONS**

- Business parking removed along some sections of Grand
- Pedestrian "buffer" from busses is narrowed
- Numerous locations where cyclists and pedestrians cross BRT routes, potential safety issue
- Increased side street delays

We have already started looking at some of the evaluation categories and want to share our initial results so you have a complete picture to then provide us feedback in our survey about which options you like the best. The **Grand Avenue alignment option** (1.6 miles) would provide a northbound dedicated BRT lane between 27th Street and 23rd Street (one-third mile), similar to the existing condition south of 27th Street. From 23rd Street to 13th Street, the BRT vehicles would operate in the existing mixed flow traffic lanes, with transit signal priority (TSP) so when busses arrive at traffic signals the green will be extended for theme bus or a red light will change to green early for the bus. From 13th Street to 8th Street, business access/transit (BAT) lanes would displace on-street parking and provide semi-dedicated BRT lanes in both directions but would also allow right-turn movements.





# Rio Grande Corridor

Dedicated BRT lanes in the exclusive right-of-way owned by RFTA that currently includes the Rio Grande trail. The right-of-way is typically 50' in this area (27th Street to 8th Street) and can accommodate both the trail and the BRT alignment. 2 options for this alignment are presented in the survey. Below are the pros and cons for all options.


**PROS**

- Lower travel times and greater reliability than Grand Ave option
- Existing parking not affected
- Pedestrian "buffer" from buses is greater than the Grand Ave option
- Number of locations where cyclists and pedestrians cross BRT routes is low (good safety measure)
- Existing trail width will be increased where possible and parallel gravel running path to be added where space allows.

**CONS**

- Existing secluded nature of Rio Grande trail will be changed
- Pedestrian and bicycle accessibility to cross the alignment is limited
- Construction impacts and cost are greater than the Grand Ave option

The **Rio Grande Corridor alignment option** (1.7 miles) would provide dedicated BRT lanes in the exclusive right-of-way owned by RFTA that currently includes the Rio Grande trail. The right-of-way is typically 50' in this area (27th Street to 8th Street) and can accommodate both the trail and the BRT alignment, with the trail on the west side (river side). A BRT station would be located west of Glenwood Springs High School (approximately at 14th Street). There will be four at-grade trail connections along the length of the corridor.
A Minimum Disturbance Option, increased horizontal separation option, and vertical separation option is presented in the survey.

## Rio Grande Corridor - Minimal Construction Option


Here is a plan view showing the busway and trail alignment for the Minimal Construction Option





## Rio Grande Corridor - Minimal Construction Option

**Info and Features**

- Minimizes the width of disturbance and places the trail and transit alignment next to each other with a barrier separation
- Capital cost is roughly $15M-$20M
- Can accommodate widening the width of the existing trail from 10' to 12'



Here is some more information regarding the Rio Grande Corridor Minimal Construction Option.

## Rio Grande Corridor - Vertical Separation Option

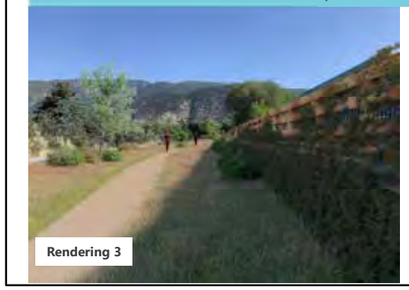

This shows an example of the what the plan view of the busway and trail alignment could look like for Vertical Construction Option.



## Rio Grande Corridor - Vertical Separation Option

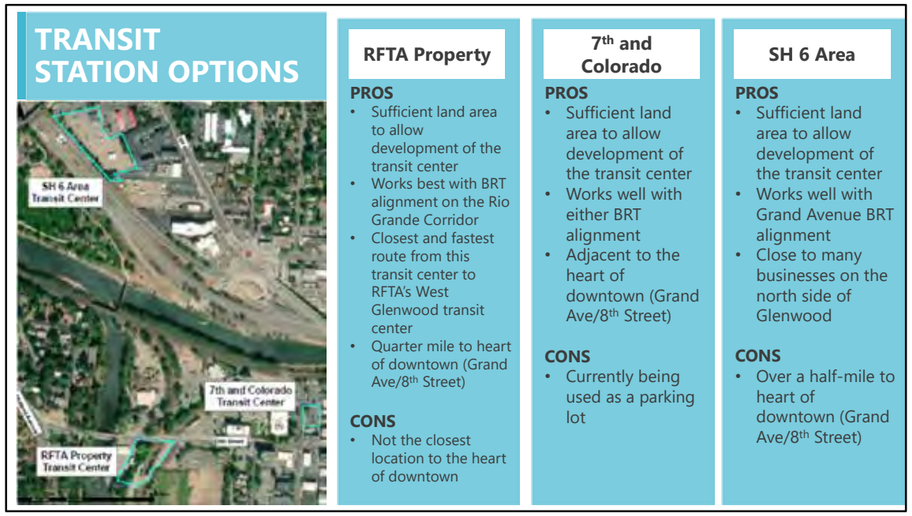
**Info and Features:**

- 70% of trail will move to at least 8' away from the busway (Rendering 3)
- 30% of trail will be next to busway but vertically separated (Rendering 4)
- Capital cost is roughly $20M-$25M
- Includes landscaping between trail, busway, and properties and parallel gravel running path where space allows
- Maximizes visual separation between bus lane and trail user



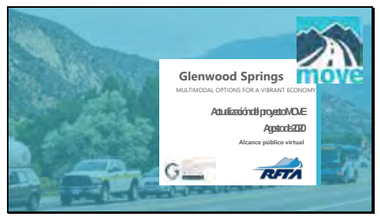


On this slide you can see more information and renderings of the Rio Grande Corridor Vertical Separation Option.



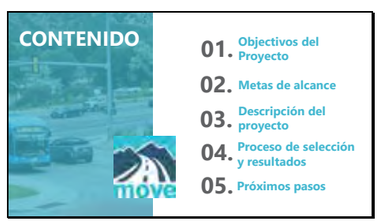

The Downtown Glenwood Springs Transit Center would be a hub for bus travel and improve bus route connections/transfers. Please review the various alternative and go to the survey to select which location you prefer.

Slide 1




Gracias por unirse al alcanze público virtual para el proyecto RFTA y Glenwood Springs MOVE. Su participación ayudará a dar forma a futuras mejoras para Glenwood Springs y RFTA. Agradecemos su participación y esperamos su participación continua durante todo el estudio.

Slide 2




Slide 3


Los objetivos de este proyecto son:

Mejorar la movilidad, la conectividad, la seguridad y la accesibilidad
Determinar soluciones de transporte efectivas y asequibles con un fuerte apoyo comunitario.
Proporcionar acceso BRT confiable al centro / área de Confluence de Glenwood Springs
Mejorar el tiempo de viaje para viajes en automóvil y tránsito local
Reducir la congestión en el corredor
Mejorar la eficiencia del servicio (por ejemplo, mayor número de pasajeros en tránsito, pasajeros por viaje, pasajeros por hora de servicio)
Satisfacer la demanda actual y futura de viajes de pasajeros
Fomentar un cambio de los viajes en automóvil a modos alternativos atractivos y confiables
Apoyar los planes y políticas locales de habitabilidad, desarrollo y sostenibilidad.
Mejorar la conexiones de tránsito y la accesibilidad a viviendas asequibles.

Slide 4


El propósito de este alcanze público virtual es proporcionar una descripción general del proyecto y actualizar al público sobre el progreso del estudio. También presentaremos alternativas que han sido evaluadas y obtendremos sus comentarios y aportes sobre las alternativas restantes.

Slide 5


Ahora, repasemos la descripción general del proyecto

Slide 6


(nota: el horario que se muestra se actualizará para incluir el alcance público a partir de agosto y durará 3 semanas)

En el transcurso del proyecto hasta ahora, el equipo de estudio ha realizado una sesión de alcance público en línea, 3 reuniones del Comité Asesor Técnico, 2 reuniones de grupos focales y ha presentado en 2 reuniones de la Junta de RFTA y 1 reunión del Consejo de la Ciudad de Glenwood.

Durante las reuniones y con los resultados del alcance público hasta la fecha, el equipo del proyecto identificó los problemas y preocupaciones, desarrolló una declaración de visión, analizó datos para determinar el Propósito y la Necesidad, y evaluó alternativas para llevarlas a cabo para un estudio adicional.

Slide 7


La vision es de una comunidad con opciones de conexión seguras, multimodales y eficientes que hacen de Glenwood Springs una ciudad de gran vitalidad y calidad de vida.

El propósito habla más específicamente sobre cómo lograremos la visión.



Slide 8


La primera ronda del alcance publico virtual en mayo se utilizó para determinar la necesidad de las mejoras. El equipo del proyecto también evaluó las siguientes condiciones existentes y otros datos para capturar la necesidad del proyecto:

Transporte publico
Estacionamiento en el centro y en la estación RFTA
Análisis de tráfico
Enlaces de transporte multimodal
Choques de vehículos
Modos no motorizados

Slide 9


Los componentes del estudio se desarrollarán y evaluarán según los criterios que se basan en las necesidades del proyecto mencionadas anteriormente.

Slide 10


Ahora, analicemos el proceso para evaluar las alternativas

Slide 11


El equipo de estudio desarrolló varias alternativas y mejoras, que se clasifican en los 4 grupos diferentes que se muestran en la pantalla.

Slide 12


La intención del centro de tránsito en el centro de la ciudad es de aumentar el uso del autobus y reducir la congestión del tránsito en la medida de lo posible. Para este proyecto, el centro de tránsito del centro de la ciudad no tiene la intención específica de incluir estacionamiento, ya que existe la preocupación de que tal instalación atraiga viajes de vehículos adicionales al área y aumente la congestión del tráfico existente. Los planos de la ciudad existentes muestran las posibilidades de un centro de tránsito en las ubicaciones que aparecen en la pantalla. En base a



las discusiones con el personal de la Ciudad y RFTA, se seleccionaron los primeros tres sitios potenciales de centros de tránsito como las mejores opciones para una evaluación adicional.

Slide 13

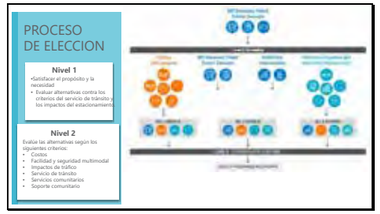

Las alternativas de extensión de BRT que se están considerando brindan servicio al centro de Glenwood Springs en una alineación de ruta que puede acomodar carriles dedicados para asegurar tiempos de viaje cortos. Las opciones de alineación de la extensión BRT son:

- 
- Alineación de Grand Avenue
- Alineación del corredor Río Grande
- Alineación de Blake Avenue
- Alineación unidireccional de Cooper / Colorado Avenues
- Alineación de Pitkin Avenue

De las alternativas consideradas, el equipo del proyecto se concentrará en las alineaciones de los corredores Grand Avenue y Rio Grand. Ahora explicaremos cómo el equipo del proyecto tomó esta decisión y por qué se descartaron las otras alternativas.

Utilizando No Build como referencia para la comparación, las alternativas de extensión de BRT incluyen:

Slide 14




Para evaluar las alternativas, el equipo del proyecto está llevando a cabo dos niveles diferentes de selección.

• El examen de Nivel 1 fue para determinar si las alternativas cumplen con el Propósito y la Necesidad y las evalúa contra los criterios específicos del servicio de tránsito y los impactos del estacionamiento.

• El examen de nivel 2 fue más completo y evalúa las alternativas contra criterios que incluyen costos, facilidad y seguridad multimodal, impactos en el tráfico, servicio de tránsito, impactos en las comodidades de la comunidad e incluirá apoyo comunitario.

Slide 15

**Resultados del examen de nivel 1: extensiones de BRT**

| Criterios de evaluación de nivel 1 | No construir | Grand Avenue | Rio Grande Corridor | Blake Avenue | Cooper/Colorado One-way Couplet | Pitkin Avenue |
|---|---|---|---|---|---|---|
| A. Fiabilidad del tiempo de viaje de BRT (basado en el porcentaje de alineación en carriles dedicados) | Poor | Moderado | Good | Good | Moderado | Moderado |
| Puntuación: | 1 | 2 | 3 | 3 | 2 | 2 |
| B. Tiempo de viaje de BRT (tiempo de viaje en minutos para el corredor de BRT non-corridor, dedicación dependiente) | 8 minutos | 7.1 minutos | 6.9 minutos | 7.0 minutos | 7.2 minutos | 8.2 minutos |
| Puntuación: | 1 | 2 | 3 | 1 | 2 | 1 |
| C. Ahorro de tiempo de viaje de BRT (ahorro de tiempo de viaje de tránsito de vía del BRT con carriles dedicados y separados, en comparación con Grand Avenue existente) | N/A | 0.9 minutos más rápido | 1.4 minutos más rápido | 0.1 minutos más rápido | 0.8 minutos más rápido | 0.2 minutos más rápido |
| Puntuación: | 1 | 2 | 3 | 1 | 1 | 1 |
| D. Número de plazas de estacionamiento en vía desplazadas | 0 | 148 principalmente espacios comerciales | 0 | 278 principalmente espacios residenciales | 160 principalmente espacios residenciales | 163 principalmente espacios residenciales |
| Puntuación: | 3 | 2 | 3 | 1 | 2 | 2 |
| PUNTOS TOTALES | 6 | 8 | 12 | 3 | 7 | 6 |

Durante la evaluación de Nivel 1, el equipo del proyecto determinó que Blake Avenue, unidireccional Cooper / Colorado y la avenida Pitkin se eliminaron del estudio adicional para las extensiones de BRT. No Build se utilizó como referencia para la comparación.



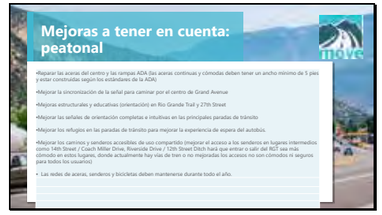
Slide 16

**Resultados del examen de nivel 1: centros de tránsito**

| Criterios de evaluación de nivel 1 | Propiedad RTA en Rio Grande al sur de 8th St | 7th y Colorado en el área de Confluence | Área SH 6 |
|---|---|---|---|
| A. Accesibilidad para peatones y bicicletas al corazón del centro: distancia de Rio Grande Trail / 8th Street | 1,00' | 1,000' | 2,000' |
| Puntuación: | 2 | 2 | 1 |
| B. Ruta al PNR de West Glenwood: tiempo de viaje | 6 minutos | 6 minutos | 6 minutos |
| Puntuación: | 2 | 3 | 2 |
| C. Ubicación orientada al tránsito: Densidad de negocios y centros de actividades dentro de 1/2 de milla a pie | Bajo | Bajo | En medio |
| Puntuación: | 1 | 1 | 2 |
| D. Ahorro de la congestión para el centro de Glenwood Springs al sur de I-70, ahuyentando la menor cantidad de automóviles a través del centro | Justo | Bueno | Bueno |
| Puntuación: | 2 | 3 | 3 |
| PUNTOS TOTALES | 6 | 9 | 8 |

Todas las ubicaciones de los centros de tránsito puntuaron muy cerca unas de otras durante la selección de Nivel 1, por lo que el equipo del proyecto decidió conservar las tres para un estudio más detallado.

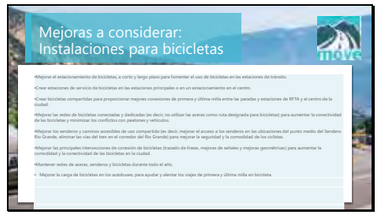
Slide 17




Varias mejoras se combinarán con la alineación de extensión BRT preferida y la ubicación preferida del centro de tránsito. Estas opciones mejorarán la operación, el atractivo y la accesibilidad de las instalaciones e incluirán las categorías de instalaciones para peatones / bicicletas, mejoras de estacionamiento, operaciones de tráfico y mejoras de seguridad, y mejoras de integración de autobuses regionales y locales.

Las mejoras para peatones se muestran ahora en la pantalla.

Slide 18




Aquí están las mejoras a las instalaciones para bicicletas

Slide 19


Estas son las mejoras de estacionamiento en el centro a considerar

Slide 20

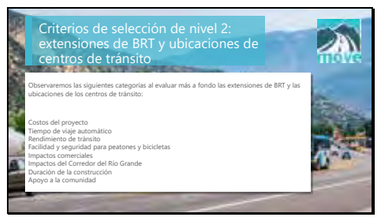

Estas son las mejoras de estacionamiento en el centro a considerar



Slide 21


Aquí están las operaciones de tráfico y las mejoras de los servicios de autobuses regionales y locales y de seguridad a considerar.

Slide 22




Observaremos las siguientes categorías al evaluar más a fondo las extensiones de BRT y las ubicaciones de los centros de tránsito:

- Costos del proyecto
- Tiempo de viaje automático
- Rendimiento de tránsito
- Facilidad y seguridad para peatones y bicicletas
- Impactos comerciales
- Impactos del Corredor del Río Grande
- Duración de la construcción
- Apoyo a la comunidad

Slide 23


Ya hemos comenzado a mirar algunas de las categorías de evaluación y queremos compartir nuestros resultados iniciales para que tenga una imagen completa y luego nos brinde comentarios en nuestra encuesta sobre qué opciones le gustan más. La opción de alineación de Grand Avenue (1.6 millas) proporcionaría un carril BRT dedicado hacia el norte entre la calle 27 y la calle 23 (un tercio de milla), similar a la condición existente al sur de la calle 27. Desde la calle 23 hasta la calle 13, los vehículos BRT operarían en los carriles de tráfico de flujo mixto existentes, con prioridad de señal de tránsito (TSP), por lo que cuando los autobuses lleguen a las señales de tráfico, el verde se extenderá para el autobús temático o una luz roja cambiará a verde. De manera acelerada para el autobús. Desde la calle 13 hasta la calle 8, los carriles de tránsito / acceso comercial (BAT) desplazarían el estacionamiento en la calle y proporcionarían carriles BRT semidedicados en ambas direcciones, pero también permitirían girar a la derecha.



Slide 24


La opción de alineación del Corredor del Río Grande (1.7 millas) proporcionaría carriles BRT dedicados en el derecho de paso exclusivo propiedad de RFTA que actualmente incluye el sendero del Río Grande. El derecho de paso suele ser de 50 pies en esta área (calle 27 a calle 8) y puede acomodar tanto el sendero como la alineación del BRT, con el sendero en el lado oeste (lado del río). Una estación de BRT estaría ubicada al oeste de Glenwood Springs High School (aproximadamente en 14th Street). Habrá cuatro conexiones de senderos a nivel a lo largo del corredor.

En la encuesta se presenta una opción de perturbación mínima, una opción de separación horizontal aumentada y una opción de separación vertical.

Slide 25


Aquí hay una vista en planta que muestra la alineación de la vía de buses y el sendero para la opción de construcción mínima

Slide 26


Aquí hay más información sobre la opción de construcción mínima del Corredor del Río Grande.

Slide 27


Esto muestra un ejemplo de cómo podría verse la vista en planta de la vía de buses y la alineación del sendero para la opción de construcción vertical.

Slide 28


En esta diapositiva, puede ver más información y representaciones de la opción de separación vertical del corredor del Río Grande.

Slide 29


El Centro de Tránsito del Centro de Glenwood Springs sería un centro para los viajes en autobús y mejoraría las conexiones / transferencias de rutas de autobús. Revise las distintas alternativas y vaya a la encuesta para seleccionar la ubicación que prefiera.

Slide 30


# Appendix C – Integrated Bus Service Report

move

# GLENWOOD SPRINGS MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY (MOVE)

## Transit Service Analysis and Integrated Bus Services Report

CTG PARSONS GLENWOOD SPRINGS COLORADO RFTA

# TRANSIT SERVICE ANALYSIS AND INTEGRATED BUS SERVICES REPORT

## TABLE OF CONTENTS

# Introduction

Glenwood Springs Multimodal Options for a Vibrant Economy (MOVE), an initiative involving Roaring Fork Transportation Authority (RFTA) in collaboration with the City of Glenwood Springs, evaluates transportation strategies to optimize local and regional transit through the City of Glenwood Springs. This study aims to enhance local and regional mobility in the City by providing recommendations for integrated service improvements that result in faster and more reliable travel.

The purpose of the MOVE analysis is to provide an unbiased evaluation of the critical components of this multimodal transportation system and offer technical recommendations for potential implementation, including:

- BRT extension alignment
- Locations for additional in-line BRT stations in downtown Glenwood Springs.
- Transit center scope and location west of downtown, as a terminus for BRT layover and a connecting point for routes to western I-70 communities.
- Complementary improvements in pedestrian/bicycle infrastructure, parking facilities, Transportation Demand Management (TDM) measures, and traffic operations/safety/signal optimization to enhance the transit operations and overall mobility in the City.

The recommended multimodal improvements that emerge from this study are intended to benefit the mobility, economic vitality, economic sustainability and quality of life of the City and the entire region.

The alternatives analysis consisted of a Level 1 Fatal Flaw screening, leading to a Level 2 set of narrowed alternatives for more detailed analysis. This memo documents service statistics and operations and maintenance (O&M) cost estimates that have been prepared to support the Level 2 analysis.

This memo begins with a brief description of existing services in Glenwood Springs. It then presents travel time estimates, and operating statistics and costs that have been developed for assessment of Level 2 alternatives, then describes potential integrated bus service concepts under each alternative. A final section describes potential optimization of existing bus services that can be pursued independently of whether BRT extension is pursued through the City of Glenwood Springs.

# Existing Corridor Transit Services

This section provides brief descriptions of existing bus service in the City of Glenwood Springs. Route alignments are depicted in Figure 1.

## Service Overview

The City of Glenwood is served by four main routes. Three of these routes -- VelociRFTA Bus Rapid Transit (BRT), Valley Local, and Grand Hogback -- link Glenwood Springs to other communities in the Roaring Fork region. The fourth route, Ride Glenwood Springs, focuses on service within Glenwood Springs. Descriptions reflect 2019 service levels.

**VelociRFTA BRT ("BRT")** serves Glenwood Springs to/from Aspen and travels mostly along SH-82, offering frequent service. Table 1 summarizes BRT service frequencies, trips per day, and length of span of service.

| BRT Service Characteristics | Summer and Winter | Spring and Fall |
|---|---|---|
| Weekday peak service frequencies | 10 minutes or better | 10-12 minutes |
| Weekday offpeak service frequencies | 15 minutes | 15-30 minutes |
| Average trips per direction per weekday | 75 | 53 |
| Weekday span of service | 20 hours | 15 hours |
| Weekend peak service frequencies | 15 minutes | 10-12 minutes |
| Weekend offpeak service frequencies | 15 minutes | 15-30 minutes |
| Average trips per direction per weekend day | 63 | 53 |
| Weekend span of service | 19 hours | 15 hours |

**Table 1 – BRT Service Characteristics between 27th Street GWS and Aspen**

All BRT trips serve the 27th Street South Glenwood station and park-n-ride, while 40 to 55 percent (depending on season) continue as local service to West Glenwood park-n-ride via Grand Avenue, 8th Street, Midland Avenue, and Wulfsohn Road. For the BRT trips terminating at 27th Street, transit users that want to access downtown Glenwood Springs have to transfer to a local RFTA or Ride Glenwood Springs to complete their journey.

**Valley Local ("Local")** provides local service on the SH-82 corridor generally following the BRT route but making additional local stops in Glenwood Springs as well as Aspen, Snowmass village and other cities on the alignment. Within the City of Glenwood Springs, this route stops at 27th Street P&R, 20th Street, 14th Street, 9th Street, Court House, Community Center, and Glenwood Meadows before terminating at West Glenwood P&R. It offers 30-minute weekday service all year, and some limited and reduced weekend service in spring and fall. Local SH82 has the longest span of all RFTA services in Glenwood Springs, approximately 20 hours a day year-round.

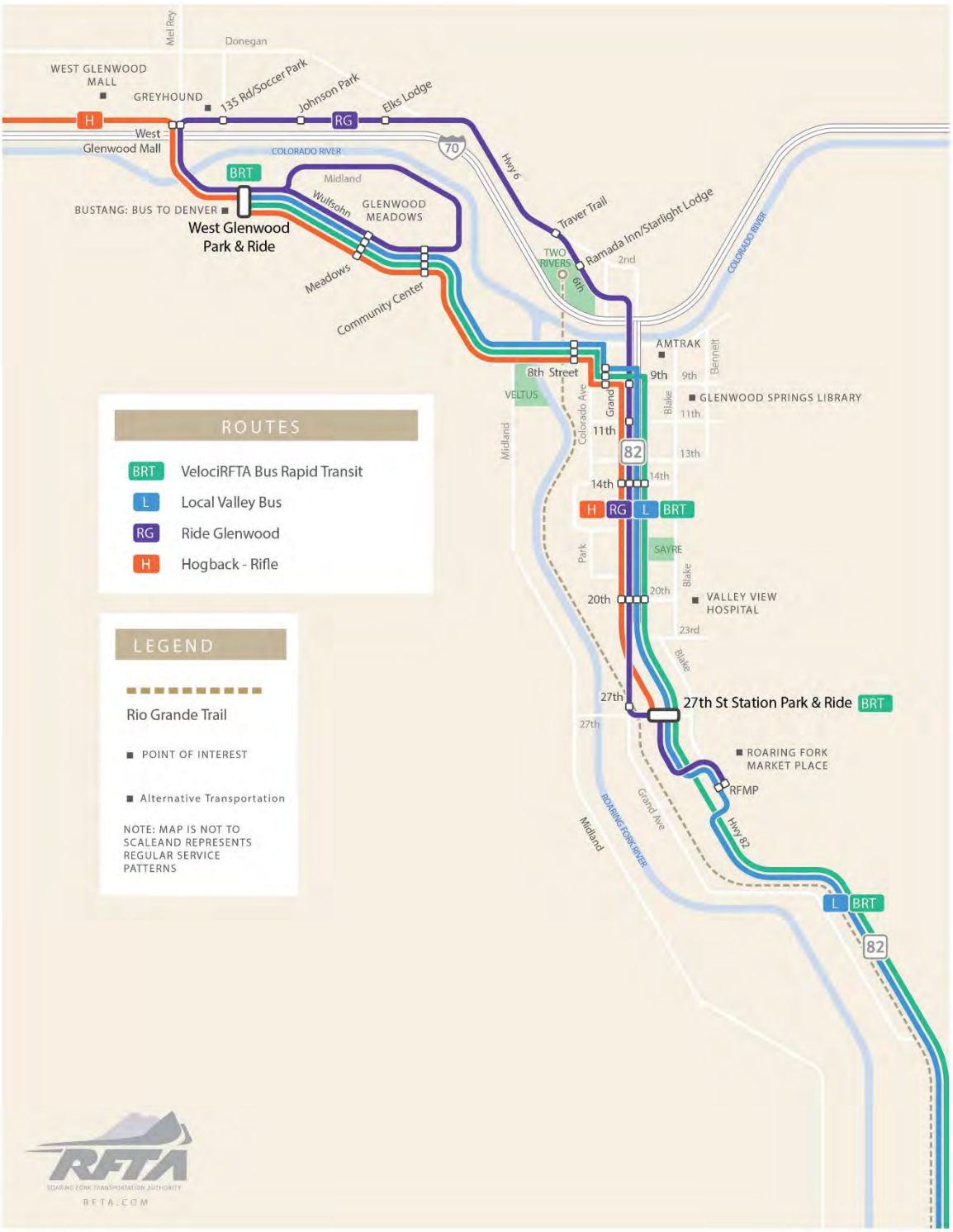



Figure 1 – Existing Transit Routes Serving Glenwood Springs

**Grand Hogback ("Hogback")** connects Rifle to Glenwood Springs via Silt and New Castle, with most trips beginning/ending in New Castle, which is a member of RFTA. It provides 10 eastbound and 8 westbound trips daily with service focused on peak periods, and a significant increased service in winter. The route has several AM trips skewed towards the up-valley region. Hourly PM trips are balanced in both directions. In the winter schedule, AM service is tripled and PM service is doubled, totaling 9 trips in each direction between Glenwood Springs and Rifle and an additional 15-16 trips in each direction between New Castle and Glenwood Springs.

**Ride Glenwood Springs ("RGS")** is funded by the City of Glenwood Springs and is contracted to be operated and maintained by RFTA. It connects West Glenwood P&R to the Roaring Fork Market Place (RFMP) via six stops along SH6, several stops along Grand Avenue, and 27th Street P&R. RGS operates on a consistent span from about 7am to 8pm, with a 30-minute schedule year-round.

It is worth noting that all four routes operate on Grand Avenue through Glenwood Springs.

## Existing Ridership

A key element of system performance is the distribution of ridership across the network by location of the route, day of the week, and service type. The current ridership data assessed for this memo is based off a composite for June to September 2019 data provided by RFTA. The tables in the sections below reflect an average for all trip samples in that season.

For the purposes of this memo, the existing ridership analysis for the four routes operating in Glenwood has been limited to the stops located in Glenwood Springs. Figure 2 shows average weekday passenger activity by stop, color coded by route serving that stop. The activity combines boardings and alightings per day, and the size of the bubble is proportional to the average activity on that stop. Supplemental Local Activity in the figure below symbolizes local stops made by the BRT for the proportion of BRT trips that continue as Locals to West Glenwood P&R.

Table 2 summarizes the average weekday stop level activity by Route in Glenwood Springs, followed by Table 3 showing the percentage share of each route's contribution to average weekday stop level activity, and Table 4 showing the percentage contribution of each stop's ridership to each individual route.

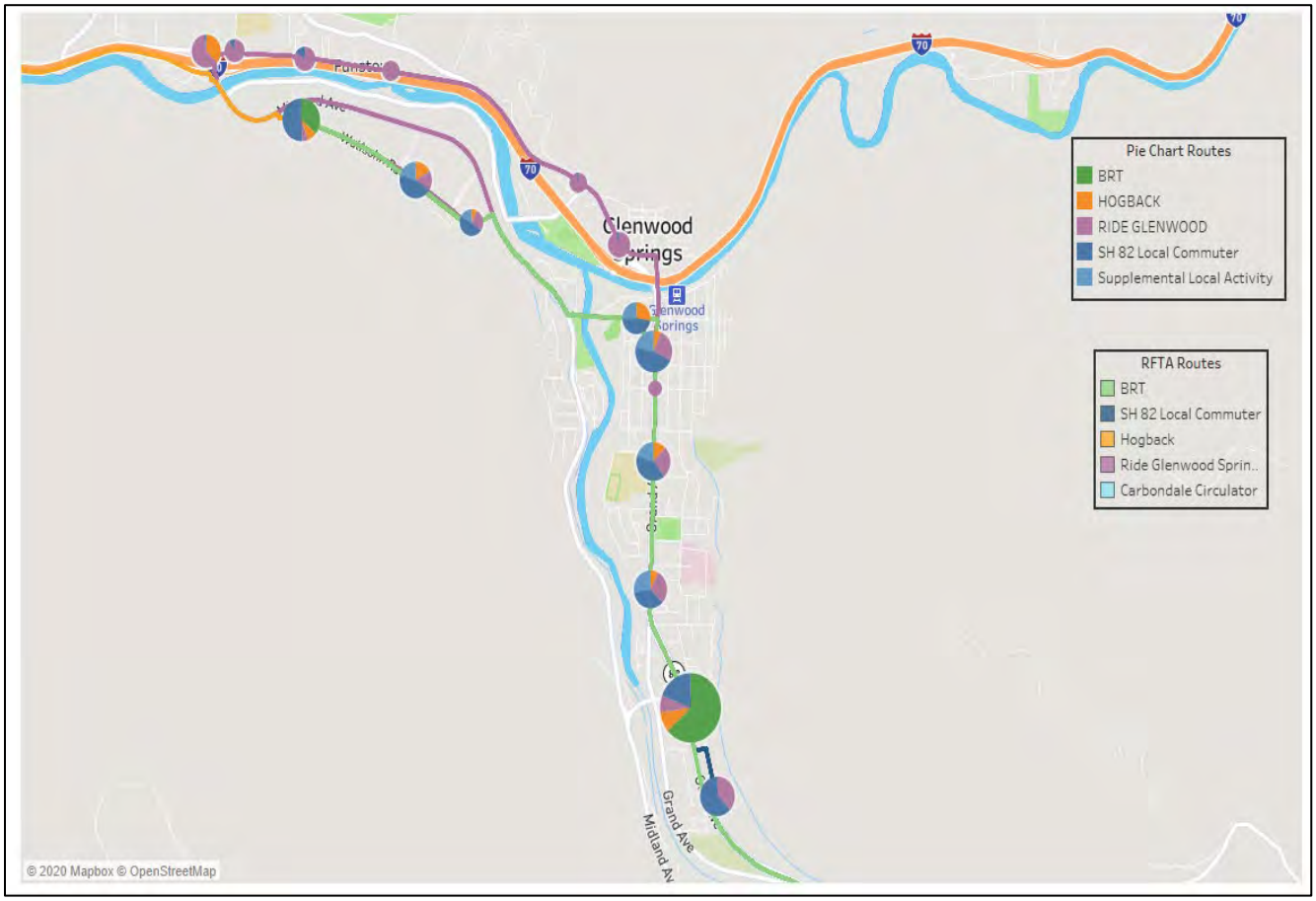



Figure 2 – Transit Average Boardings and Alightings by Route

| Stop Location | Route | | | | |
|---|---|---|---|---|---|
| | BRT | Local | Hogback | Ride Glenwood Springs | Total |
| **RFMP** | | 118 | | 69 | **187** |
| **Glenwood 27th St** | 578 | 174 | 84 | 73 | **909** |
| **Grand Ave 20th St** | *44* | 59 | 13 | 47 | **164** |
| **Grand Ave 14th St** | *35* | 73 | 22 | 47 | **176** |
| **Grand Ave 11th St** | - | - | - | 10 | **10** |
| **Grand Ave 9th Street** | *48* | 106 | 15 | 57 | **225** |
| **Court House** | *23* | 44 | 25 | - | **93** |
| **Glenwood Community Center** | *8* | 24 | 4 | 13 | **49** |
| **Meadows** | *29* | 68 | 25 | 26 | **148** |
| **West Glenwood Park And Ride** | *87* | 122 | 20 | 13 | **241** |
| **West Glenwood Mall** | - | - | 39 | 63 | **102** |
| **Highway 6 Soccer Field Rd** | - | - | - | 24 | **24** |
| **Hwy 6 Johnson Park** | - | - | - | 26 | **26** |
| **Hwy 6 Elks Lodge** | - | - | - | 16 | **16** |
| **Hwy 6 Traver Trail** | - | - | - | 15 | **15** |
| **6th St Ramada Inn** | - | - | - | 39 | **39** |
| **Total** | **851** | **788** | **247** | **538** | **2,423** |

*Note: BRT italicized entries represent activity of BRT routes extended as local service through Glenwood Springs.*
*Source: Summer 2019 Automated Passenger Count (APC) data, RFTA.*

Table 2 – Average Boardings and Alightings by Route

| Stop Location | Route | | | | |
|---|---|---|---|---|---|
| | BRT | Local | Hogback | Ride Glenwood Springs | Total |
| **RFMP** | - | 63% | - | 37% | **100%** |
| **Glenwood 27th St** | 64% | 19% | 9% | 8% | **100%** |
| **Grand Ave 20th St** | *27%* | 36% | 8% | 29% | **100%** |
| **Grand Ave 14th St** | *20%* | 41% | 12% | 27% | **100%** |
| **Grand Ave 11th St** | - | - | - | 100% | **100%** |
| **Grand Ave 9th Street** | *21%* | 47% | 7% | 25% | **100%** |
| **Court House** | *25%* | 47% | 28% | - | **100%** |
| **Glenwood Community Center** | *16%* | 49% | 8% | 27% | **100%** |
| **Meadows** | *20%* | 46% | 17% | 17% | **100%** |
| **West Glenwood Park And Ride** | *36%* | 50% | 8% | 5% | **100%** |
| **West Glenwood Mall** | - | | 38% | 62% | **100%** |
| **Highway 6 Soccer Field Rd** | - | - | - | 100% | **100%** |
| **Hwy 6 Johnson Park** | - | - | - | 100% | **100%** |
| **Hwy 6 Elks Lodge** | - | - | - | 100% | **100%** |
| **Hwy 6 Traver Trail** | - | - | - | 100% | **100%** |
| **6th St Ramada Inn** | - | - | - | 100% | **100%** |

*Note: BRT italicized entries represent activity of BRT routes extended as local service through Glenwood Springs.*

Table 3 – Percentage Route Contribution by Stop

| Stop Location | Route | | | |
|---|---|---|---|---|
| | BRT | Local | Hogback | Ride Glenwood Springs |
| RFMP | - | 15% | - | 13% |
| Glenwood 27th St | 68% | 22% | 34% | 14% |
| Grand Ave 20th St | 5% | 8% | 5% | 9% |
| Grand Ave 14th St | 4% | 9% | 9% | 9% |
| Grand Ave 11th St | - | - | - | 2% |
| Grand Ave 9th Street | 6% | 13% | 6% | 11% |
| Court House | 3% | 6% | 10% | - |
| Glenwood Community Center | 1% | 3% | 2% | 2% |
| Meadows | 3% | 9% | 10% | 5% |
| West Glenwood Park And Ride | 10% | 15% | 8% | 2% |
| West Glenwood Mall | - | | 16% | 12% |
| Highway 6 Soccer Field Rd | - | - | - | 4% |
| Hwy 6 Johnson Park | - | - | - | 5% |
| Hwy 6 Elks Lodge | - | - | - | 3% |
| Hwy 6 Traver Trail | - | - | - | 3% |
| 6th St Ramada Inn | - | - | - | 7% |
| Total | 100% | 100% | 100% | 100% |

*Note: BRT italicized entries represent activity of BRT routes extended as local service through Glenwood Springs.*

Table 4 – Percentage Boardings and Alightings Contribution by Route

The following observations can be gleaned from these tables:

- The majority of BRT riders get on or off at 27th Street, and unsurprisingly contributes the lion's share of passenger activity at 27th Street. The BRT routes that continue through Glenwood Springs as local service contribute around 20 to 25% of overall stop activity.
- The Local has significant activity at 27th Street, Glenwood Park and Ride, Roaring Fork Market Place, and 9th Street. Apart from 27th Street, this route is responsible for about half the passenger activity for stops through Glenwood Springs.
- The majority of Hogback riders go through to 27th Street, though there is notable activity at West Glenwood Mall, Meadows and selected downtown stops. Hogback is responsible for about 10% of passenger activity for stops along Grand Avenue.
- Ride Glenwood Springs contributes around 25 to 30% of overall activity for stops along Grand Avenue. It serves a number of unique stops along Hwy 6 which attract modest ridership but provides important access.

# Transit Service Analysis for Level 2 Screening

This section begins with a description of the Level 2 screening alternatives, and the development of estimates for the following Level 2 transit service-related evaluation criteria:

- BRT travel times
- BRT operating statistics (needed to address annual service hour criteria)
- Incremental annual operations and maintenance (O&M) costs

## Level 2 Screening Alternatives for Evaluation

Alternatives evaluated under Level 2 screening included the following:

- No Build (No BRT extension)
- Grand Avenue BRT extension
- Rio Grande Corridor BRT extension
- Hybrid-Grand Ave to Rio Grande Corridor via 14th Street

In addition, three potential transit center locations were included in Level 1 analysis, and evaluated under each alternative:

- 7th/Colorado
- SH6
- RFTA property

In discussions with the City, RFTA, City Transportation Commission and the Focus Group about the Level 1 screening, there was considerable concern with advancing any of the downtown transit center location options that involve more than a simple in-line station for efficient boarding and alighting only, due to the anticipated traffic volume and congestion increases caused by layover buses, parking and other amenities. Instead, it was decided that in addition to an in-line downtown station, a transit center at the West Glenwood station/park-n-ride facility would better serve the City by intercepting trips from the west and providing a good end-of-line station for the BRT operations. However, the analysis that was completed for the three initial transit center locations is included in this report.

### NO BUILD (NO BRT EXTENSION)

The No Build (also referred to as No BRT Extension and Grand Avenue BRT – mixed flow) reflects no changes to the existing street environment, where BRT buses would operate in mixed flow lanes. Figure 3 illustrates how bus service would link to each of the potential transit center locations and notes assumed stops at 14th/Grand, 9th/Grand and transit center, with an optional extension to West Glenwood P&R. For the SH6 transit center, downvalley trips making the final connection to West Glenwood P&R would backtrack on SH6 and Grand Avenue, turn west on 8th Street and continue on Midland and Wulfsohn. Upvalley trips would use a different path: from West Glenwood P&R, buses would use Midland and SH6 to get to the SH6 transit center.

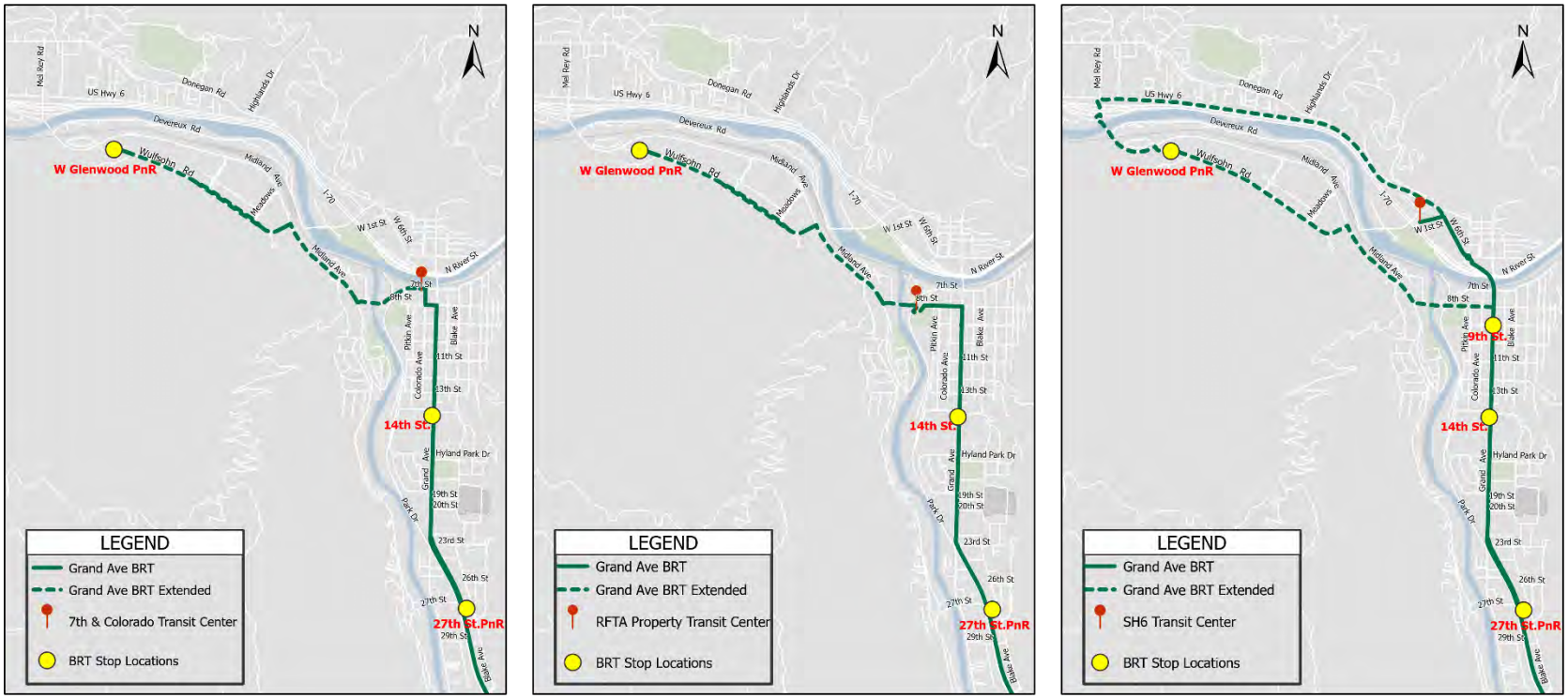



**Figure 3 - No Build (No BRT Extension)**

### RIO GRANDE ALTERNATIVE

The Rio Grande Corridor alignment option would provide dedicated BRT lanes in the Rio Grande Trail between 27th Street and 8th Street. Figure 4 illustrates how bus service would link to each of the potential transit center locations and notes assumed stops at Coach Miller Station and the new transit center, with an optional extension to West Glenwood P&R.

In the case of the SH6 transit center location, an additional stop at 8th/Pitkin is provided. For downvalley trips, the final connection to West Glenwood P&R from the SH6 transit center assumes backtracking on SH6 and Grand Avenue, turning west on 8th Street and continuing on Midland and Wulfsohn. Upvalley trips would use a different path: from West Glenwood P&R, buses would use Midland and SH6 to get to the SH6 transit center.

### GRAND AVENUE ALTERNATIVE

The Grand Avenue alignment option would provide dedicated curbside BRT lanes on Grand Avenue between 14th Street and 9th Street. Figure 5 illustrates how bus service would link to each of the potential transit center locations and notes assumed stops at 14th/Grand, 9th/Grand and transit center, with an optional extension to West Glenwood P&R. For the SH6 transit center, downvalley trips making the final connection to West Glenwood P&R would backtrack on SH6 and Grand Avenue, turn west on 8th Street and continue on Midland and Wulfsohn. Upvalley trips would use a different path: from West Glenwood P&R, buses would use Midland and SH6 to get to the SH6 transit center.

### HYBRID ALTERNATIVE

The Hybrid alignment option would operate on Grand Avenue in mixed flow traffic from 27th Street to 14th and Grand where it would turn to enter the Rio Grande right-of-way and proceed in dedicated BRT lanes until 8th Street. Figure 6 illustrates how bus service would link to each of the potential transit center locations and notes assumed stops at 14th Street and the new transit center, with an optional extension to West Glenwood P&R.

In the case of the SH6 transit center location, an additional stop at 8th/Pitkin is provided. For downvalley trips, the final connection to West Glenwood P&R from the SH6 transit center assumes backtracking on SH6 and Grand Avenue, turning west on 8th Street and continuing on Midland and Wulfsohn. Upvalley trips would use a different path: from West Glenwood P&R, buses would use Midland and SH6 to get to the SH6 transit center.

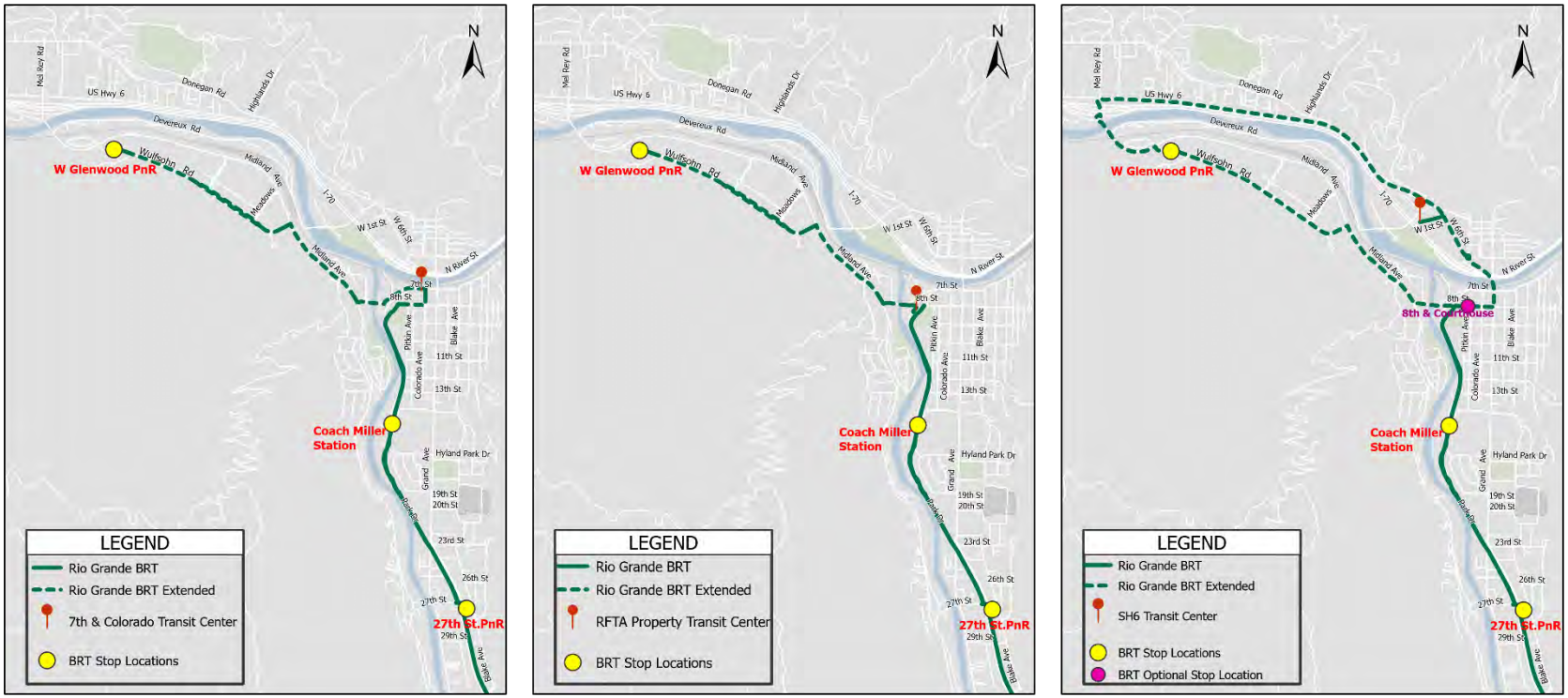



**Figure 4 - Rio Grande BRT Alternative with Transit Centers**

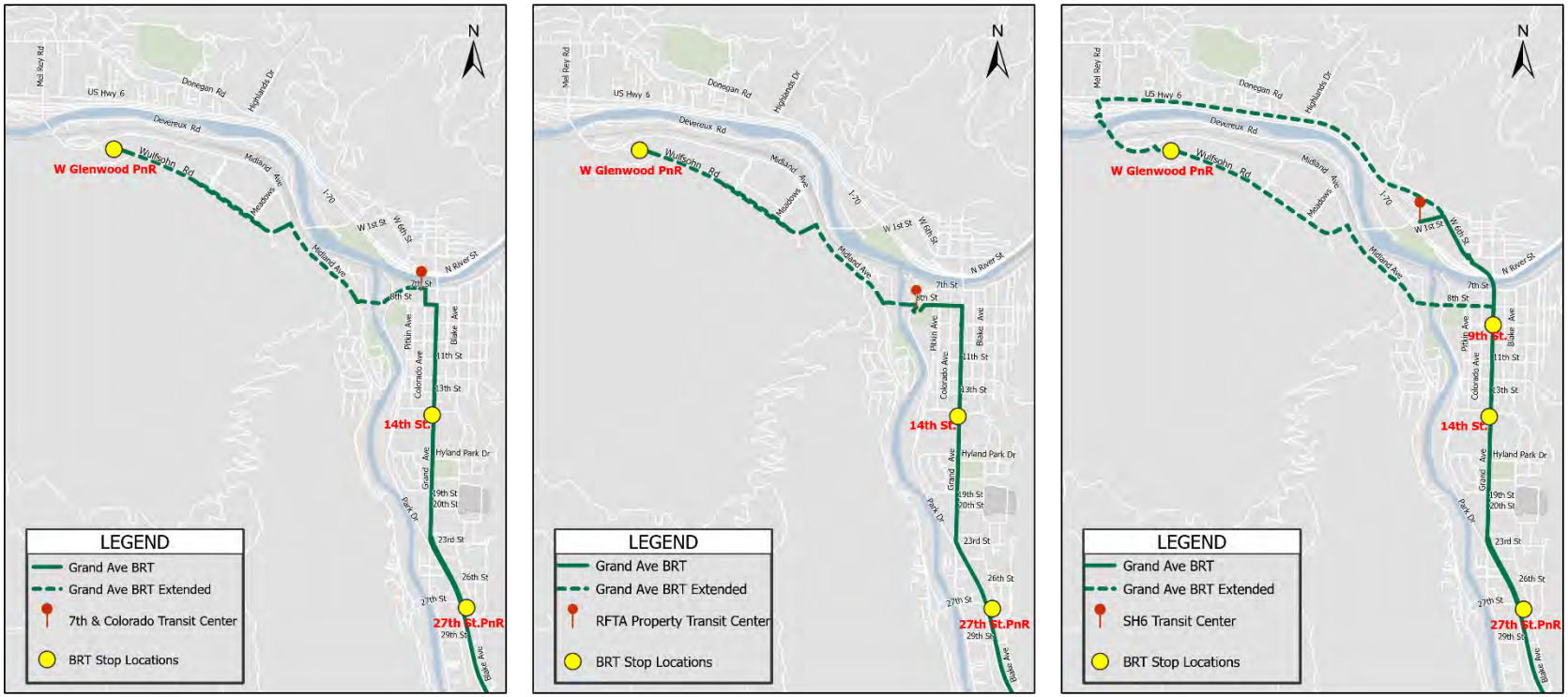



**Figure 5 - Grand Avenue BRT Alternative with Transit Centers**

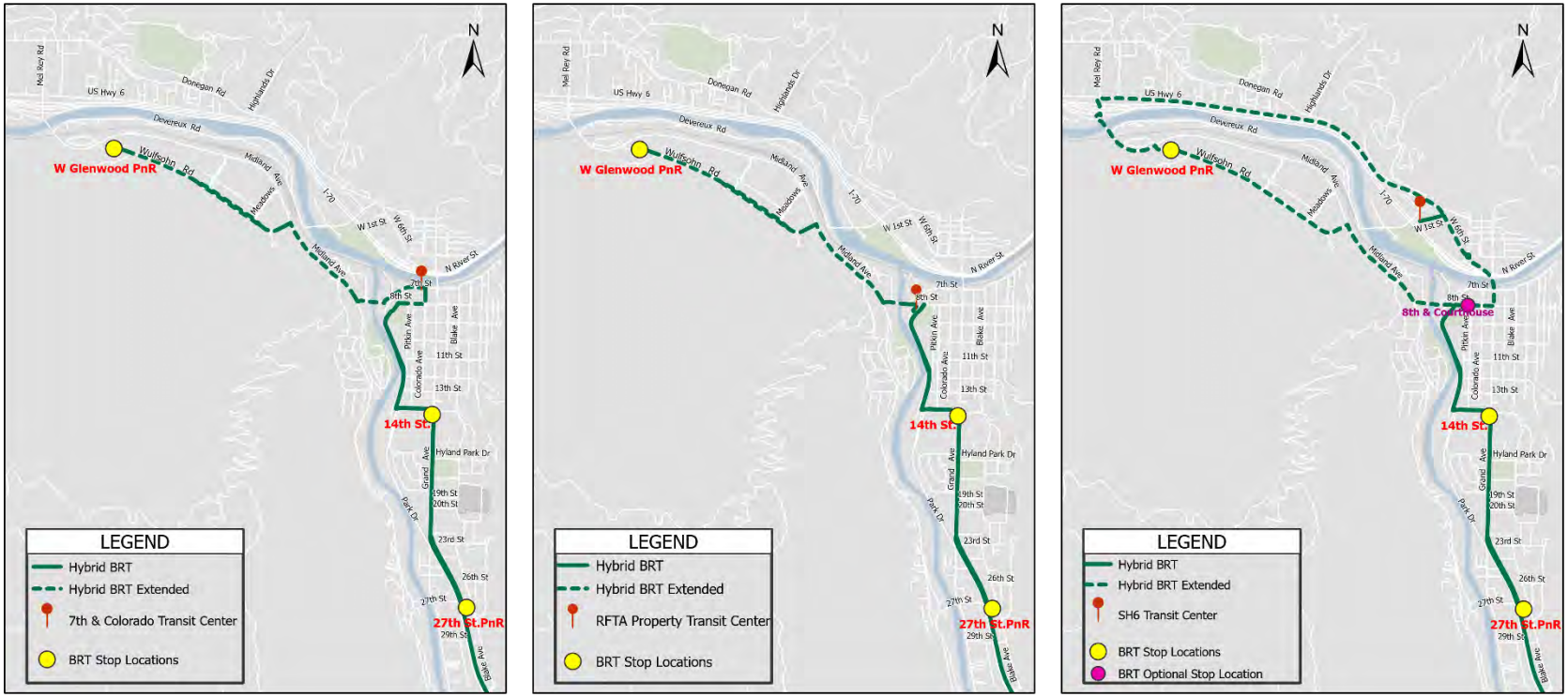



**Figure 6 - Hybrid BRT Alternative with Transit Centers**

## Development of BRT Travel Times

BRT travel time estimates were calculated for each alternative in both directions through use of a travel time model. Travel time calculations consist of three components: the time the vehicle is in motion, time spent at intersections, and time spent at stations.

- **The time in operation** includes the time it takes for the bus to accelerate, the time the bus spends once it reaches its allowable speed, and the time for the bus to decelerate. The allowable speed will not exceed the posted speed limit. For segments with dedicated lane, it is assumed that BRT is not competing with mixed traffic and therefore can reach the posted speed limit. Segments with mixed traffic may incorporate a slower maximum speed to represent congestion.
- **Intersection delay** is the amount of time the vehicle spends waiting at intersections. Signal delay is randomized, meaning that a vehicle may spend 30 or 45 seconds waiting at one intersection and then 0 seconds at the next by virtue of entering during a green phase. As a result, the methodology assumes intersection delay is the average delay that occurs at any intersection along the proposed alignment. Intersection delays are categorized according to signal cycle length.
- **Dwell time** is the time the vehicle spends waiting at stations for passengers to board or alight the vehicle. Dwell times can vary according to expected passenger activity so that dwell times at 9th Street are longer than dwell times at the Glenwood Community Center.

Table 5 summarizes the estimated peak period travel times for all the BRT alternatives as identified for the Level 2 analysis. These estimates are averaged one way travel times, based on posted speeds and number of stops, given in minutes. Travel time estimates are provided for alternatives terminating at a Downtown Transit Station, as well as alternatives extending to West Glenwood P&R. Station-to-station travel times are detailed in Appendix A.

Table 5 shows that travel times from 27th Street station to the Downtown transit center vary from 5.8 minutes in the Rio Grande scenario with the RFTA property transit center to 10.7 minutes in the Hybrid BRT scenario with the SH6 transit center. The two alignments also have the minimum and maximum one-way travel times for the extended version of the BRT, at 11.2 and 17.8 minutes, respectively.

The table also suggests that for each of the alignment alternatives, the longest travel time is associated with the SH6 Area as the chosen Downtown Transit Center. The shortest travel time is associated with the RFTA property Transit Center. This location is the optimal downtown transit center location for the Rio Grande and the Hybrid alternatives in particular since the other two locations would require some amount of backtracking.

BRT travel times pivot from existing traffic conditions for mixed flow segments. BRT travel times for mixed flow segments can be expected to track with expected traffic growth over time. The *Traffic Forecasting Assumptions Memo* (Parsons, May 2020) concluded that a 1.9 percent annual compounded growth rate is appropriate along the corridors. This translates to adding another several minutes to the BRT travel times by 2040.

| BRT Alternative/ Transit Center | From 27th Street P&R to Downtown Transit Station | From 27th Street P&R to West Glenwood P&R |
|---|---|---|
| No BRT Extension/RFTA Property Transit Center | 8.46 | 13.41 |
| No BRT Extension/7th Street & Colorado Avenue Transit Center | 8.23 | 13.63 |
| No BRT Extension /SH 6 Area Transit Center | 9.70 | 16.39 |
| Rio Grande Corridor BRT/RFTA Property Transit Center | 5.83 | 11.17 |
| Rio Grande Corridor BRT/7th Street & Colorado Avenue Transit Center | 7.35 | 13.22 |
| Rio Grande Corridor BRT /SH 6 Area Transit Center | 9.73 | 16.73 |
| Grand Avenue BRT/RFTA Property Transit Center | 7.99 | 12.92 |
| Grand Avenue BRT/7th Street & Colorado Avenue Transit Center | 7.73 | 13.14 |
| Grand Avenue BRT/SH 6 Area Transit Center | 9.19 | 15.89 |
| Hybrid BRT/RFTA Property Transit Center | 6.84 | 12.17 |
| Hybrid BRT/7th Street & Colorado Avenue Transit Center | 8.25 | 14.12 |
| Hybrid BRT /SH 6 Area Transit Center | 10.70 | 17.75 |

Table 5 – BRT One-Way Travel Times (in minutes)

## Development of BRT Operating Statistics

This section presents statistics for operating the BRT alternatives, allowing Level 2 evaluation comparing annual service hours.

The following operating statistics are calculated based on estimated travel times, assumed service frequencies, and span of service by day of week.

- Revenue hours – the annual in-service hours required to operate the BRT service and proposed background bus changes, based on a minimum of 15% layover/recovery time (no less than 6 minutes each end), but not including deadhead to/from the garage for each driver block.
- Revenue miles – the annual in-service miles required to operate the BRT service and proposed background bus changes, but not including deadhead to/from the garage for each driver block.
- Peak vehicles – the number of vehicles required for BRT service, based on the defined peak headway.

Annual service hours are incremental service hours over RFTA's "Baseline." For purposes of this evaluation, we defined RFTA's baseline as providing the BRT summer schedule year-round (based on 2019 pre-COVID levels), retaining the summer split of buses extended to West Glenwood P&R (40%). Our incremental numbers are based on either terminating all trips at the transit center or terminating all trips at West Glenwood P&R. Alternatives include about a 10% increase in weekday trips over the Baseline, due to the way time periods are defined.

The calculation of these service statistics requires estimation of BRT end-to-end travel times, as provided in Table 5. Table 6 summarizes the incremental service requirement for RFTA in each BRT and transit center alternative bundle. Each BRT alternative is assessed for both with and without extension to the West Glenwood Springs P&R extension.

| | RFTA Prop. Transit Ctr. | | | 7th & Colorado (Downtown) | | | SH 6 Area Transit Center | | |
|---|---|---|---|---|---|---|---|---|---|
| Alternative | Peak Veh. | Ann. Rev. Hrs. | Ann. Rev. Mi's. | Peak Veh. | Ann. Rev. Hrs. | Ann. Rev. Mi's. | Peak Veh. | Ann. Rev. Hrs. | Ann. Rev. Mi's. |
| | | | | | | | | | |
| **No BRT Extension - Mixed Traffic** | | | | | | | | | |
| No P&R Extension | -1 | 6,954 | 29,532 | -1 | 6,954 | 23,832 | 0 | 8,754 | 51,332 |
| With P&R Extension | 1 | 15,654 | 127,832 | 1 | 15,654 | 129,632 | 1 | 15,654 | 188,732 |
| | | | | | | | | | |
| **Rio Grande Corridor – Right of Way** | | | | | | | | | |
| No P&R Extension | -1 | 3,454 | 19,932 | -1 | 6,954 | 40,732 | 0 | 8,754 | 74,732 |
| With P&R Extension | 0 | 8,754 | 119,432 | 1 | 15,654 | 146,332 | 1 | 15,654 | 212,832 |
| | | | | | | | | | |
| **Grand Ave - Dedicated** | | | | | | | | | |
| No P&R Extension | -1 | 6,954 | 29,532 | -1 | 6,954 | 23,832 | 0 | 8,754 | 51,332 |
| With P&R Extension | 0 | 8,754 | 127,832 | 1 | 15,654 | 129,632 | 1 | 15,654 | 188,732 |
| | | | | | | | | | |
| **Hybrid** | | | | | | | | | |
| No P&R Extension | -1 | 6,954 | 27,232 | -1 | 6,954 | 47,932 | 0 | 8,754 | 82,032 |
| With P&R Extension | 0 | 8,754 | 126,732 | 1 | 15,654 | 153,532 | 2 | 17,454 | 220,132 |

Table 6 - Summary of Incremental Service Requirements

The incremental service requirements summary shows largely consistent results across scenarios and transit options. Terminating all BRT alignments at the chosen Downtown Transit Center, without extension, saves one peak vehicle. Adding the P&R extension remains resource neutral in all extension scenarios, but adds one vehicle in the No BRT Extension scenario. The Hybrid scenario

with the P&R extension serving the SH6 Area Transit Center adds two peak vehicles. Appendix B provides detailed service assumptions and statistics for the baseline and each of the alternatives.

## Development of Incremental O&M Costs

For the purpose of this analysis the annual costs discussed below are marginal or incremental costs for each of the BRT alternatives, using RFTA's 2020 Budgeted Cost/Revenue Allocation by Route. The inputs used for this calculation are as follows:

- Marginal cost/mile: $1.83
- Marginal cost/hour: $39.90

| BRT Alternative/ Transit Center | 27th Street to Downtown Transit Station | 27th Street to West Glenwood P&R |
|---|---|---|
| No BRT Extension/RFTA Property Transit Center | $332,000 | $859,000 |
| No BRT Extension/7th Street & Colorado Avenue Transit Center | $321,000 | $862,000 |
| No BRT Extension /SH 6 Area Transit Center | $443,000 | $971,000 |
| Rio Grande Corridor BRT/RFTA Property Transit Center | $174,000 | $568,000 |
| Rio Grande Corridor BRT/7th Street & Colorado Avenue Transit Center | $352,000 | $893,000 |
| Rio Grande Corridor BRT /SH 6 Area Transit Center | $486,000 | $1,015,000 |
| Grand Avenue BRT/RFTA Property Transit Center | $332,000 | $584,000 |
| Grand Avenue BRT/7th Street & Colorado Avenue Transit Center | $321,000 | $862,000 |
| Grand Avenue BRT/SH 6 Area Transit Center | $443,000 | $971,000 |
| Hybrid BRT/RFTA Property Transit Center | $327,000 | $582,000 |
| Hybrid BRT/7th Street & Colorado Avenue Transit Center | $365,000 | $906,000 |
| Hybrid BRT /SH 6 Area Transit Center | $500,000 | $1,100,000 |

Table 7 - BRT Summary of Incremental O&M Costs

These marginal costs are applied to the calculated incremental annual revenue mile and hour inputs compared to Baseline service, as defined and described in the previous section. The cost allocation spreadsheet detailing incremental mile and hour inputs by alternative is provided in Appendix C.

The O&M Cost results suggest the Rio Grande Corridor alignment terminating at the RFTA Transit Center will be the least expensive option for RFTA, while the Hybrid BRT alignment in combination with the SH6 Area Transit Center and extension to West Glenwood Springs P&R is the most expensive option.

O&M costs are expressed as incremental annual O&M costs over the BRT "Baseline," parallel with our method for determining incremental annual service hours. We used RFTA's cost allocation

model provided as the basis for estimating costs, since RFTA costs out their regular BRT service using this model. It is worth pointing out BRT alternatives could include some marginal additional costs for station maintenance and for the Rio Grande corridor alignment maintenance since it is not a city street; these costs are not included in the O&M cost estimate.

# Concepts for Integrated Bus Service

Background bus service for each scenario was developed to best meet the community's needs while efficiently utilizing RFTA and City resources. This section discusses earlier studies, summarizes input from Glenwood Springs residents and transit riders as part of the MOVE effort, and describes a design framework in developing integrated bus service. These feed into the development of integrated bus concepts once BRT is extended. Finally, pre-BRT optimization concepts are discussed.

## Previous Studies

### *Transit Operations Plan, 2018*

The Transit Operations Plan developed an action plan to guide the implementation of transit service improvements in the City of Glenwood over a five-year period. The goal of the study was to determine how public transit can better meet the short term as well as long term needs of the community. Key considerations of the study included identifying issues with the existing network, understanding City's unmet local and regional mobility needs, critical markets, origins, and destinations in the area as well as sustainable alternatives to accommodate current travel patterns.

The study addressed issues of declining ridership, increasing costs, and lack of first and last mile opportunities, by providing a detailed list of service alternatives. These alternatives were also designed to meet demand in the North Glenwood region, and reduce duplication on Grand Avenue. Some service options that emerged included either reducing RGS to one bus serving North Glenwood or eliminating the service entirely, rerouting the Local via North Glenwood, and providing Flex or Microtransit service in North Glenwood.

### *On-Demand Transit Study, 2019*

This on-demand transit feasibility study was carried out by the City of Glenwood Springs to understand the impacts of replacing or complementing RGS by on-demand transit or microtransit. This study followed the Transit Operations Plan in 2018, which noted redundancies on Grand Avenue between RGS, Local and the BRT, as well as the need for serving underserved areas such as areas surrounding Donegan Road in North Glenwood, parts of South Glenwood Springs, and the Red Mountain neighborhood.

Since one of the tools recommended to address these issues in the Operations Plan was microtransit, this Study explored three alternative approaches to microtransit, including full replacement of RGS with a premium on-demand service, downsizing RGS to operate one vehicle and retain only the high performing segments of the route, and to retain RGS as is, with an addition of an on-demand service.

The Study discussed these tradeoffs and alternatives, concluding that if executed successfully, on demand transit will result in increased service coverage and reverse declining ridership while providing a viable alternative to driving; however, existing passengers of the RGS may be affected negatively. In the survey conducted as a part of this study, the majority of the comments were supportive of on-demand transit.

## MOVE Public Feedback

Public feedback was analyzed on the basis of the Glenwood Springs MOVE participant survey and outreach conducted online for a month-long duration in April-May 2020. The survey results and comments can be summarized in three broad categories which include service issues, lack of service, and proposed service improvements.

Many survey participants highlighted dissatisfaction with the existing transit service in Glenwood Springs. The main concerns were low frequency of routes, limited connections to key locations, inconvenient stops and/or schedules. Many participants also expressed confusion and unpredictability with services available Downtown, and the unreliability of public transit for shorter trips since the trips take much longer than they would in a car.

Concerns on service supply in certain areas were also expressed in the survey. West Glenwood reported shortage of stops, as well as connections to Downtown. There were also comments regarding unavailability of direct service from West Glenwood P&R to 27th Street. South Glenwood is another area where service and connections are limited or absent.

When asked for suggestions for service improvements, participants responded with need for faster transit, restoring and increasing public transit to South Glenwood, increasing accessibility to RGS on Donegan Road, and improving transit facilities and stops to facilitate and encourage commuter access.

In addition, limited first and last mile connections, and lack of parking at the 27th Street Station were concerns highlighted in the public feedback and engagement process.

## Design Philosophy for Integrated Bus Service

The design philosophy for integrating the existing bus system defines a service type and purpose for each of the four routes. Together, the services create a cohesive integrated bus system:

- **BRT (VelociRFTA)**: High-quality fast, frequent service providing regional connectivity for Roaring Fork Valley Communities.
- **Valley Local**: Dependable regional service providing enhanced access among Roaring Fork Valley communities.
- **Ride Glenwood Springs**: Community-focused service in Glenwood Springs; Connections at transit centers allow access to regional routes.
- **Grand Hogback**: Regional connectivity between Grand Hogback communities and Roaring Fork Valley communities via connection in Glenwood Springs

## Integrated Bus Service Concepts with BRT

Based on the input from the public feedback, studies done earlier in the project area, and design philosophy, example integrated bus concepts are provided for each of the main alternatives. For each of the BRT Alignments, one representative transit center has been featured. These concepts would be a starting point for refinement once a preferred BRT option is selected and it is determined whether there will be an added transit center. If not, routings would be modified to ensure connection with the West Glenwood P&R.

### RIO GRANDE BRT ALTERNATIVE

The following integrated service plan is suggested for the Rio Grande Alternative, as illustrated in Figure 7:

- **BRT**: BRT no longer uses Grand Avenue, instead uses Rio Grande Corridor
- **Local**: Local remains on Grand Avenue
- **RGS:** Route is restructured to better penetrate West Glenwood Springs.
    - It will no longer serve West Glenwood P&R since it makes its connections at new transit center, however, can extend to West Glenwood P&R if configured for left turn access off Wulfsohn
    - New coverage can be provided on Blake Street (or can remain on Grand Avenue to offer 15-minute combined service on Grand Avenue).
    - No changes to the south end of the route.
- **Hogback**: Route is truncated at the new transit center, if BRT stops at new transit center. If BRT extends to West Glenwood P&R, Hogback would be truncated at West Glenwood P&R.
- All routes serve new transit center (or West Glenwood P&R if no new transit center built).
- All routes except Hogback serve 27th Street.

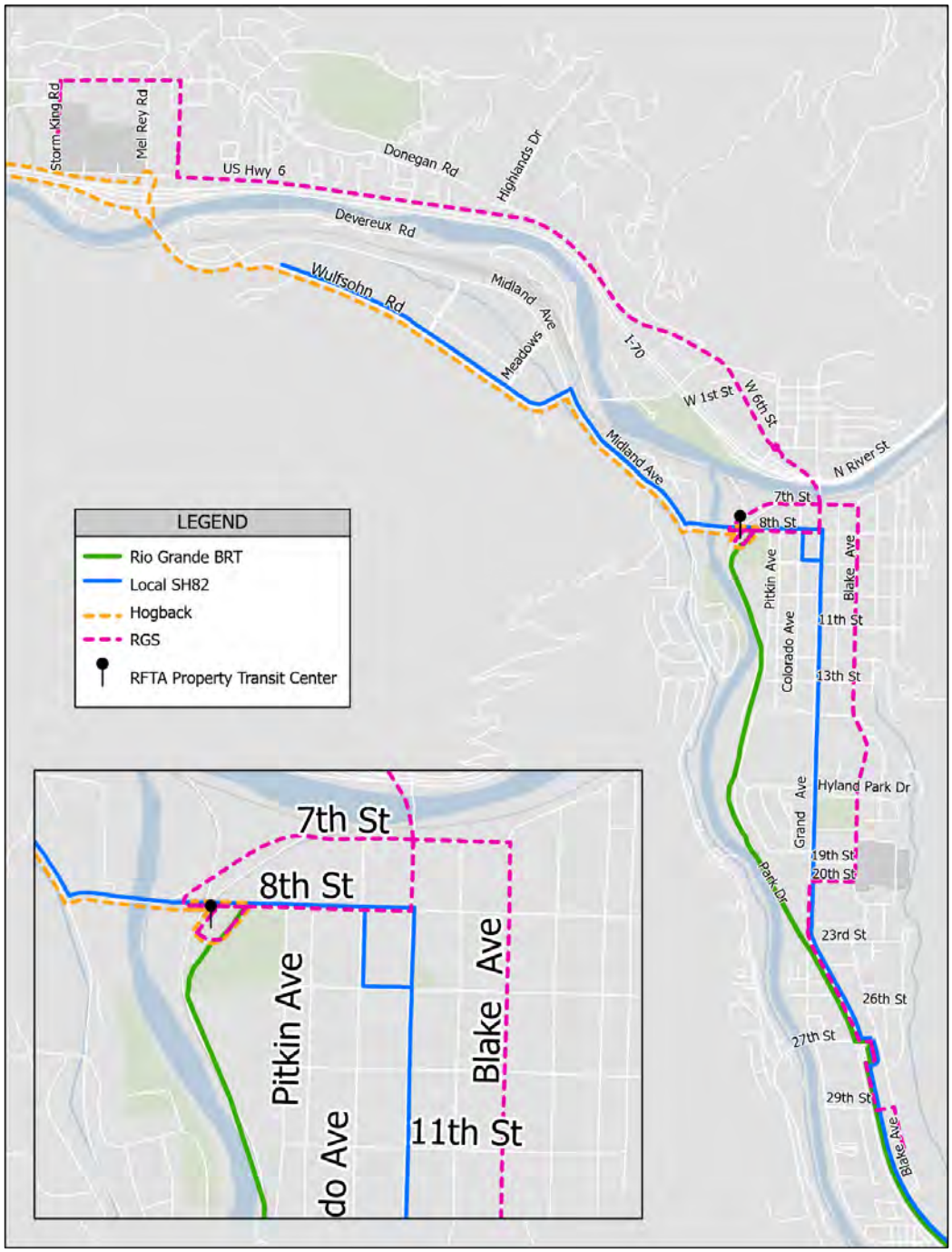



Figure 7 - Rio Grande Corridor Integrated Bus Concept

### GRAND AVENUE BRT ALTERNATIVE

Since Grand Avenue acts as a vital backbone for Glenwood Springs, the question is whether to focus transit service on this street or whether to provide coverage on other parallel streets. Frequency and options on Grand Avenue appear to be RFTA's preference for convenience, simplicity,

understandability, and ridership generation. Reducing the number of routes on Grand Avenue appears to be the City's preference to avoid duplication, reduce the number of buses on Grand Avenue, and expand service to other areas. Two concepts have been developed for the Grand Avenue BRT Extension, with both breaking some service off Grand Avenue to serve parallel Blake Street. The concept as shown in Figure 8 retains the current number of RGS vehicles (Concept A):

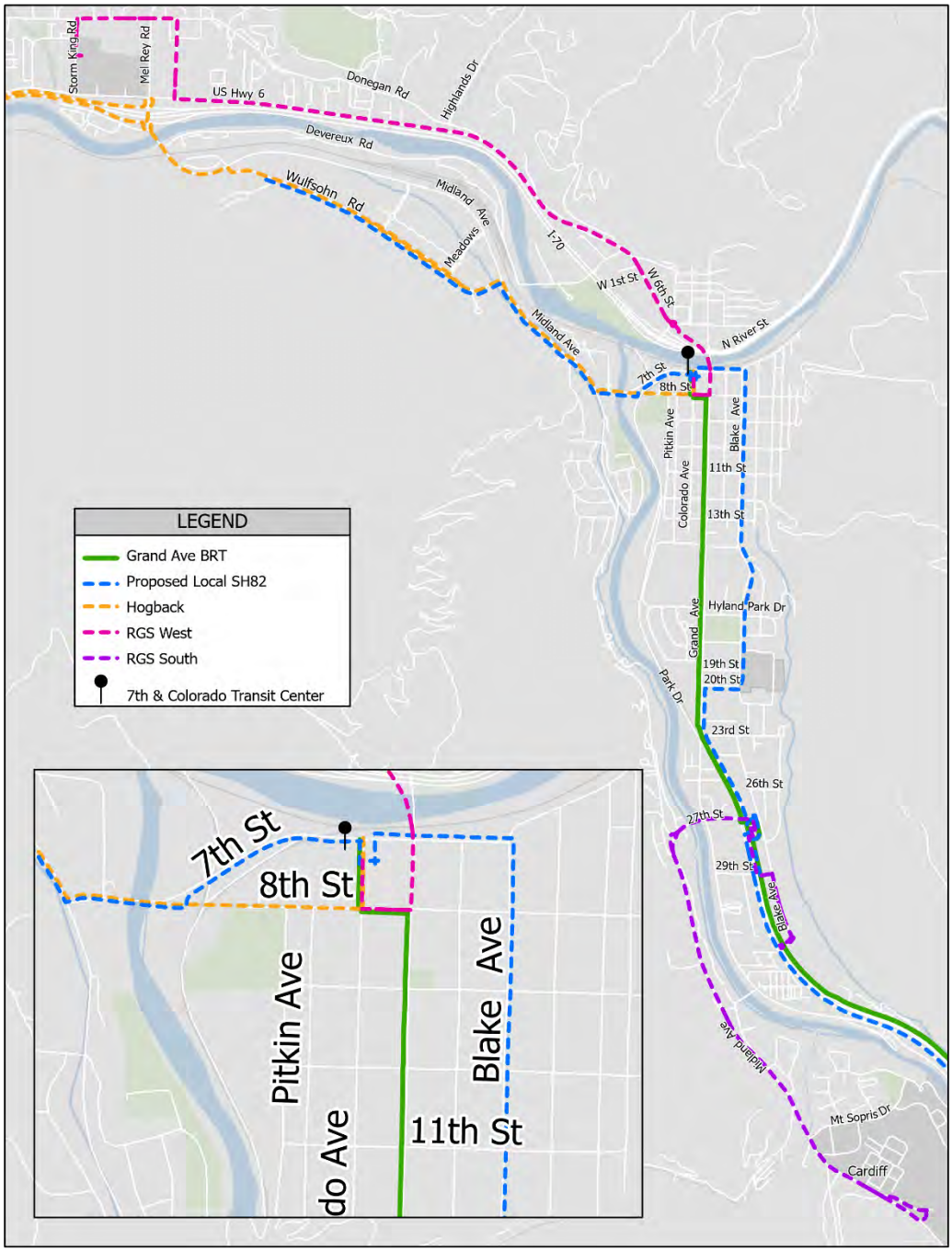



Figure 8 - Grand Ave Corridor Integrated Bus Concept A

- **BRT**: BRT remains on Grand Avenue, providing 10-minute peak and 15 minute off-peak service frequencies.
- **Local:** Realigned Local provides coverage on Blake Street (Note: RFTA does not recommend and is unlikely to endorse re-routing buses to Blake Avenue).
- **RGS:** Routes split into two to increase community coverage in lieu of service on the Grand Avenue corridor, while maintaining current vehicle requirement.
    - RGS West anchored at new transit center, provides increased penetration of West Glenwood Springs, can extend to West Glenwood P&R if configured for left turn access off Wulfsohn though may trigger additional vehicle.
    - RGS South serves Roaring Fork Market Place, 27th Street, and extends coverage to South Glenwood Springs along 27th and Midland Avenue to the municipal airport.
- **Hogback**: Route truncated at new transit center, if BRT stops at new transit center. Route can truncate at West Glenwood P&R, if BRT extends to West Glenwood P&R.
- All routes except RGS South serve new transit center. If BRT is extended to West Glenwood P&R with no new transit center, all routes except RGS South serve West Glenwood P&R,
- BRT, Local and RGS South serve 27th Street.

Figure 9 shows the second option for the Grand Avenue BRT alternative featuring the 7th & Colorado Transit Center (Concept B), with increased RGS vehicle requirements:

- **BRT**: BRT remains on Grand Avenue, providing 10 minute peak and 15 minute offpeak service frequencies.
- **Local:** Realigned Local provides coverage on Blake Street.
- **RGS:** Route modified to increase community coverage in lieu of service on the Grand Avenue corridor:
    - Increases existing vehicle requirement to preserve one-seat ride to downtown Glenwood Springs
    - Route uses Blake Street (with Local, combines to 15-minute all-day service along Blake)
    - Northern portion of RGS provides increased penetration of West Glenwood Springs, and can extend to West Glenwood P&R if configured for left turn access off Wulfsohn
    - Southern portion provides coverage to South Glenwood Springs along 27th and Midland Avenue to the municipal airport, in lieu of Roaring Fork Marketplace. Further refinement would involve developing concepts which can retain access to Roaring Fork Marketplace absent the South Bridge project.
    - Ultimate construction of South Bridge could allow rerouting to serve South Glenwood Springs while restoring access to Roaring Fork Marketplace

- **Hogback**: Route truncated at new transit center, if BRT stops at new transit center. Route can truncate at West Glenwood P&R, if BRT extends to West Glenwood P&R.
- All routes serve new transit center (or West Glenwood P&R if no new transit center built).
- All routes except Hogback serve 27th Street.

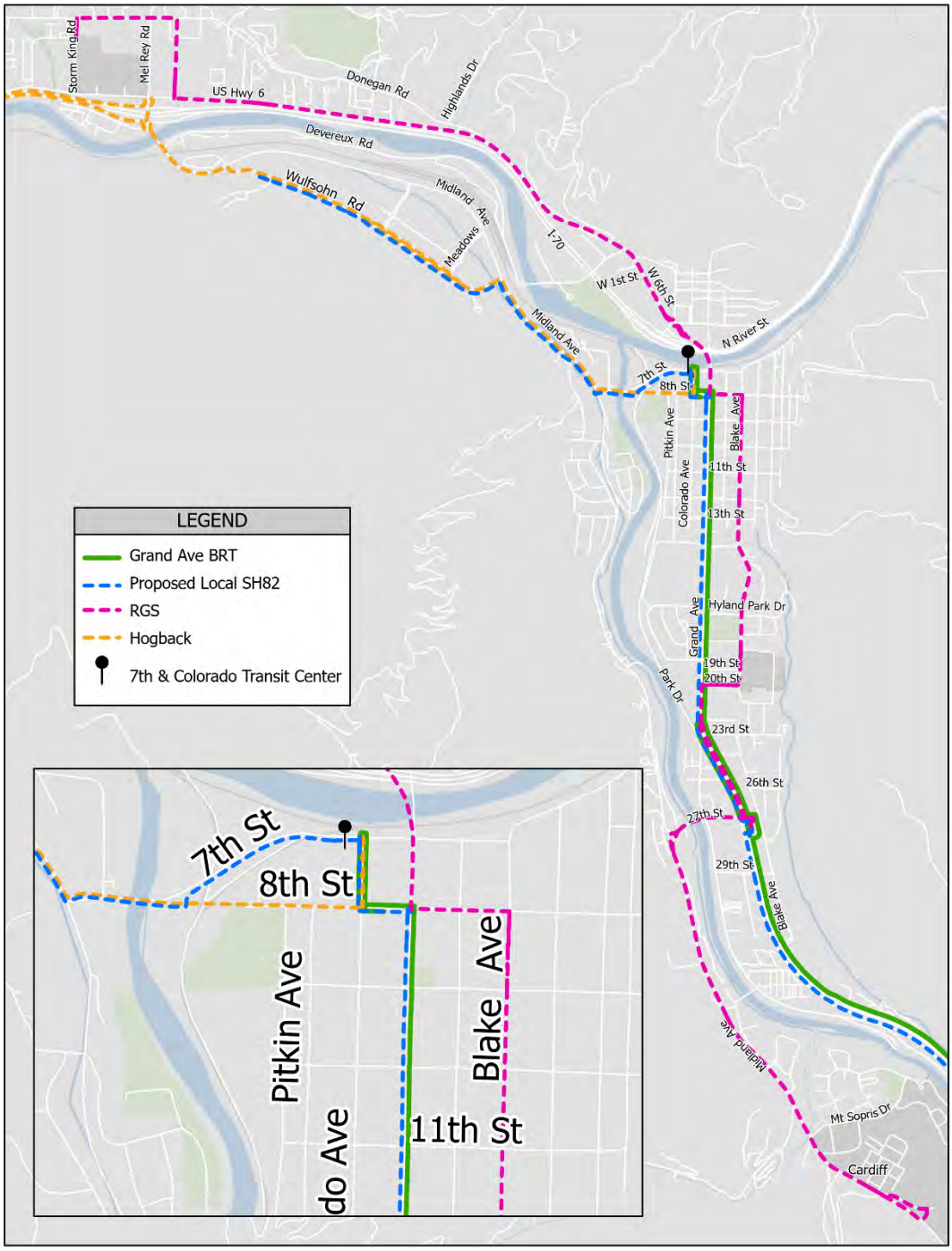



Figure 9 - Grand Ave Corridor Integrated Bus Concept B

## HYBRID BRT ALTERNATIVE

Figure 10 shows the integrated service concept for the Hybrid alternative BRT featuring the RFTA Property Transit Center:

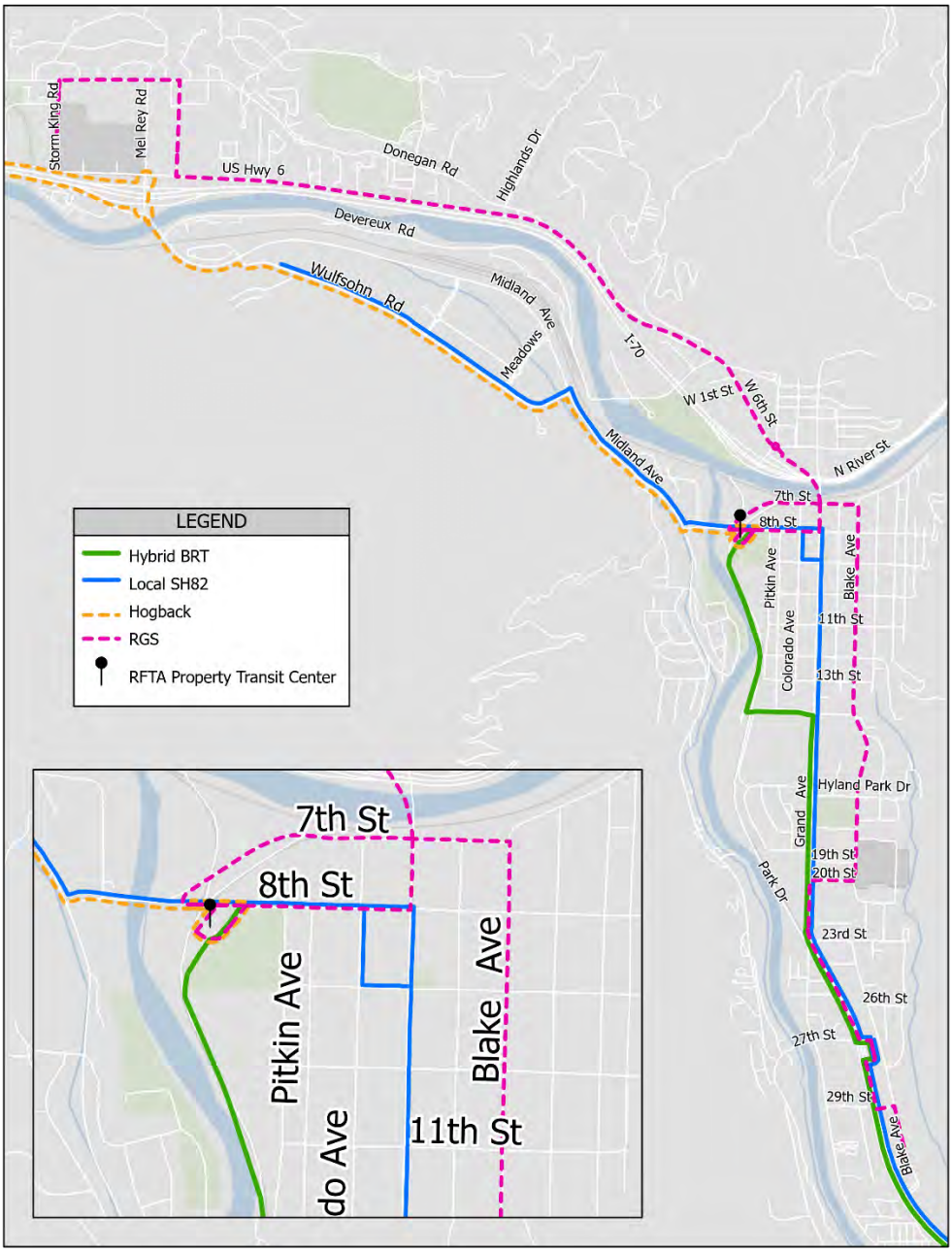



Figure 10 - Hybrid BRT Corridor Integrated Bus Concept

- **BRT**: BRT uses portions of Grand Avenue and Rio Grande Corridor
- Integrated bus concept generally follows concept for Rio Grande Corridor

## Pre-BRT Extension Transit Optimization Concepts

Opportunities to explore modifications to existing service to better serve Glenwood Springs can be considered before BRT is extended through Glenwood Springs. The following analysis is based on review of ridership data, previous studies, public feedback (all described earlier in this report) as well as feedback from RFTA and the City of Glenwood.

### TARGET AREAS FOR IMPROVED SERVICE

The following discussion focuses on four basic areas of exploration: Grand Avenue corridor service; improved coverage of North Glenwood; improved coverage of South Glenwood; and opportunities for alternative service delivery.

#### Grand Avenue corridor service

Grand Avenue serves as the backbone of Glenwood Springs and is the obvious corridor for regular, frequent transit service. A common theme is to explore whether all four fixed routes traversing Glenwood Springs should remain on Grand Avenue, or whether an opportunity exists to move service off Glenwood Avenue to potentially spread service to other north-south corridors.

Currently, combined service on Grand Avenue offers an average 15-minute "guaranteed" frequency all day between RGS and Local Valley service, since each of these routes offer 30-minute all-day frequencies in both directions. This minimum service is supplemented by occasional Hogback and BRT service. For example, during 3pm to 5pm in the winter, up to 8 buses an hour (leading to an average frequency of every 7.5 minutes) make local stops on Grand Avenue.

It is important to note that in practice, the afternoon northbound direction in particular does not achieve smooth spacing between buses. This is inevitable because the BRT and Local routes are long-haul services from Aspen. As they proceed along the long route to Glenwood Springs, they are bound to have inconsistencies in running time due to varying traffic congestion along SH-82 and local communities up and down the route. RFTA's internal timepoint analysis has confirmed that there is no regular pattern of congestion that would allow them to build these afternoon delays into their timetables. They do know delays are inevitable but cannot predict at what points they will occur, and they do not want to build onerous "holds" throughout the route to inconvenience passengers already on the bus in order to ensure better schedule adherence for passengers waiting at stops.

The result of this afternoon unpredictability for the long-haul routes is that the Local northbound routes do not serve Grand Avenue at regular intervals. If riders had to rely on only Local service, they may find themselves waiting 40 or 45 minutes for the next bus. Reliability is not particularly helped by the extra BRT buses that serve supplemental local trips, as these buses are also long-haul routes subject to the same variability. The reliable 30-minute service on RGS is thus used as a "guarantee" that riders waiting at local bus stops along Grand Avenue are unlikely to wait more than 15-25 minutes between the two core services. That is, the Local and RGS routes serve a symbiotic role in providing baseline frequent service on Grand Avenue, with RGS being the far more predictable of the two since it is a shorter route that stays within Glenwood Springs.

The supplemental service on Grand Avenue as provided by the Grand Hogback and BRT routes can potentially be considered for rerouting off Grand Avenue. While these routes would leave holes during certain times of the day, this could be a way to test a different market.

The two strongest alternate corridors are Midland Avenue and Blake Avenue. Midland Avenue offers a distinctly different market from Grand Avenue since Roaring Fork River acts as a barrier limiting access between Grand and Midland. In particular, pockets along Midland Avenue such as the east side of Midland Avenue, both north and south of 8th Street, have communities that may benefit from transit. However, Midland Avenue's street configuration does not allow buses to safely pull over to serve stops and therefore doesn't offer service that's readily implementable except as an express bypass of sorts since it wouldn't be able to provide local access.

Blake Avenue parallels Grand Avenue a block to the east, and directly serves Valley View Hospital and Colorado Mountain College. It is a manageable walking distance from Grand Avenue – well under a quarter-mile which is considered a convenient walkshed for transit. However, more direct service to Valley View Hospital in particular may be useful for hospital visitors with health and mobility constraints.

### Improved coverage of North Glenwood

Currently, RGS is the sole fixed transit route serving the southern border of North Glenwood via a portion of Highway 6. RGS touches the southeast corner of Glenwood Springs Mall but does not serve any further west or north. There have been requests to consider service on Donegan Road (particularly given expected new density between Mel Rey and Soccer Field Roads), and there are safety concerns of middle schoolers using the Soccer Field bus stop off Highway 6 since accidents have occurred at that location.

### Improved coverage of South Glenwood

Roaring Fork Market Place is the southernmost point served by transit in Glenwood Springs. Additional service to neighborhoods adjacent to Sopris Elementary School is desirable, but the South Glenwood community is difficult to serve due to limited crossings of Roaring Fork River. An anticipated South Bridge crossing will greatly enhance circulation possibilities.

### Opportunities for alternative service delivery

Some communities were identified for potential service but may not be good candidates for fixed route service due to limited accessibility or ridership potential. A number of areas are likely to be markets for alternate service delivery.

## CONCEPTS FOR IMPROVED LOCAL SERVICE IN GLENWOOD SPRINGS

Concepts developed for improved local service in Glenwood Springs leave the Local Valley route as-is in terms of routing. There may be value in further evaluating to what extent published schedules can incorporate afternoon delays. Concepts attempt to work within a "cost-neutral" framework.

### Concepts for improved coverage of North Glenwood

A review of a representative RGS timesheet confirms that RGS round trips take about 50 minutes, with 10 minutes reserved for recovery and layover at 27th Street. This suggests that perhaps at most

a minute (in each direction) can be added to the route without triggering an additional vehicle. The following concepts all focus on alternatives to improve coverage in North Glenwood.

All of these concepts are predicated on saving time from traveling around the full Midland/Wulfsohn loop and applying the saved travel time toward better penetration of North Glenwood. Currently, the Midland/Wulfsohn loop orients buses to always enter the West Glenwood P&R from a westbound direction. If buses instead are able to serve West Glenwood P&R "in-line," then the time to travel along Midland Avenue between the P&R and community center can be saved and applied elsewhere. However, the current street configuration does not allow for safe boardings and alightings when headed in the eastbound direction along Wulfsohn since there is no place to safely pull over unless a there is room for an eastbound curb cutout to be constructed, as well as a pedestrian crosswalk with potential warning signals. A potential concept for creating such an in-line stop for eastbound buses is presented in Appendix E.

While taking more time than a simple curbside stop along Wulfsohn, consideration can be given to having an eastbound RGS bus turn left using the W. Glenwood P&R parking lot entrance which is better configured to make a conventional left turn. It may be possible to remove a couple of parking spaces to create an exit so the bus can then enter the "jug handle" and either continue its trip by turning left (if an in-line station) or begin its return trip by making a right (if W. Glenwood P&R is a terminus station).

Absent the ability to serve W. Glenwood P&R as an in-line station, another solution would be to shorten the loop by cutting across on W. Meadows. This retains Meadows service whereas patrons headed for the Community Center would either walk the remaining distance of about a half mile, or instead transfer at W. Glenwood P&R onto a Local bus. RGS stop activity at the Community Center currently is minor, averaging 13 riders/day. These riders likely include middle school students getting to the Community Center for after school programs.

Consequently, Figure 11, Figure 12 and Figure 13 illustrate three different options to improve coverage in North Glenwood. To stay within existing resources, all options use two variations at the end of the route:

- Proceed along Wulfsohn Road, with in-line stop at West Glenwood P&R, stop at existing Meadows Shopping Center, and terminus at Glenwood Springs Community Center.
- in the case that in-line access to the West Glenwood P&R cannot be provided, second option is to shorten the full loop so that it turns at W. Meadows, retaining access to Meadows Shopping Center but requiring a half-mile walk to the community center.

Both of these options reduce the mileage and travel time enough to consider additional penetration in North Glenwood:

- Instead of remaining on SH6, RGS instead branches onto Donegan Road, then turns south on Soccer Field Road, serves W. Glenwood Springs Mall, then proceeds based on the two terminus options. Illustrated in Figure 11, this concept is the shortest of the three options while allowing a safer stop for middle school students and improving Donegan Road access.
- Instead of remaining on SH6, RGS instead branches onto Donegan Road, then turns south on Storm King Road, east onto SH6 serving W. Glenwood Springs Mall, then proceeds based on the two terminus options. Shown in Figure 12, this concept provides further coverage

along Donegan Road, allows a safer stop for middle school students, and potentially a more convenient stop at W. Glenwood Springs Mall.

- RGS remains on SH6 but turns north on Soccer Field Road, west on Donegan Road, south on Storm King Road, and back onto SH6 serving W. Glenwood Springs Mall, then proceeds based on the two terminus options. Shown in Figure 13, this concept retains service to existing stops at Elks Lodge and Johnson Park along SH6 while providing a different stop for middle school students, providing access along a portion of Donegan Road, and potentially a more convenient stop at W. Glenwood Springs Mall.
- Options routing onto Soccer Field Road allow potential consideration of using the bus pull-out in front of the middle school. An optimal stop serving students can be refined in consultation with the school.

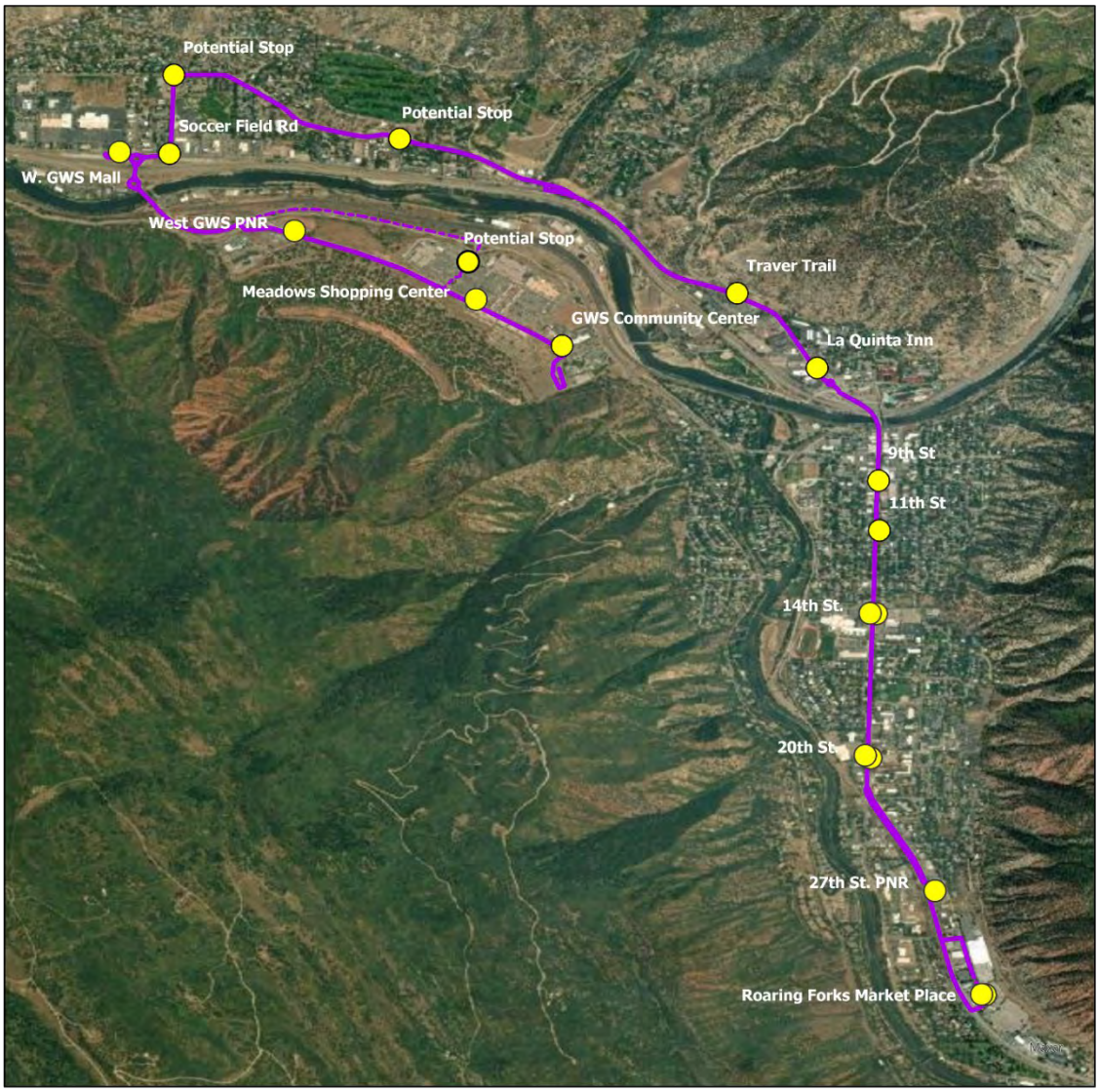



Figure 11 – RGS Donegan-Soccer Field to Community Center or W. Meadows Loop

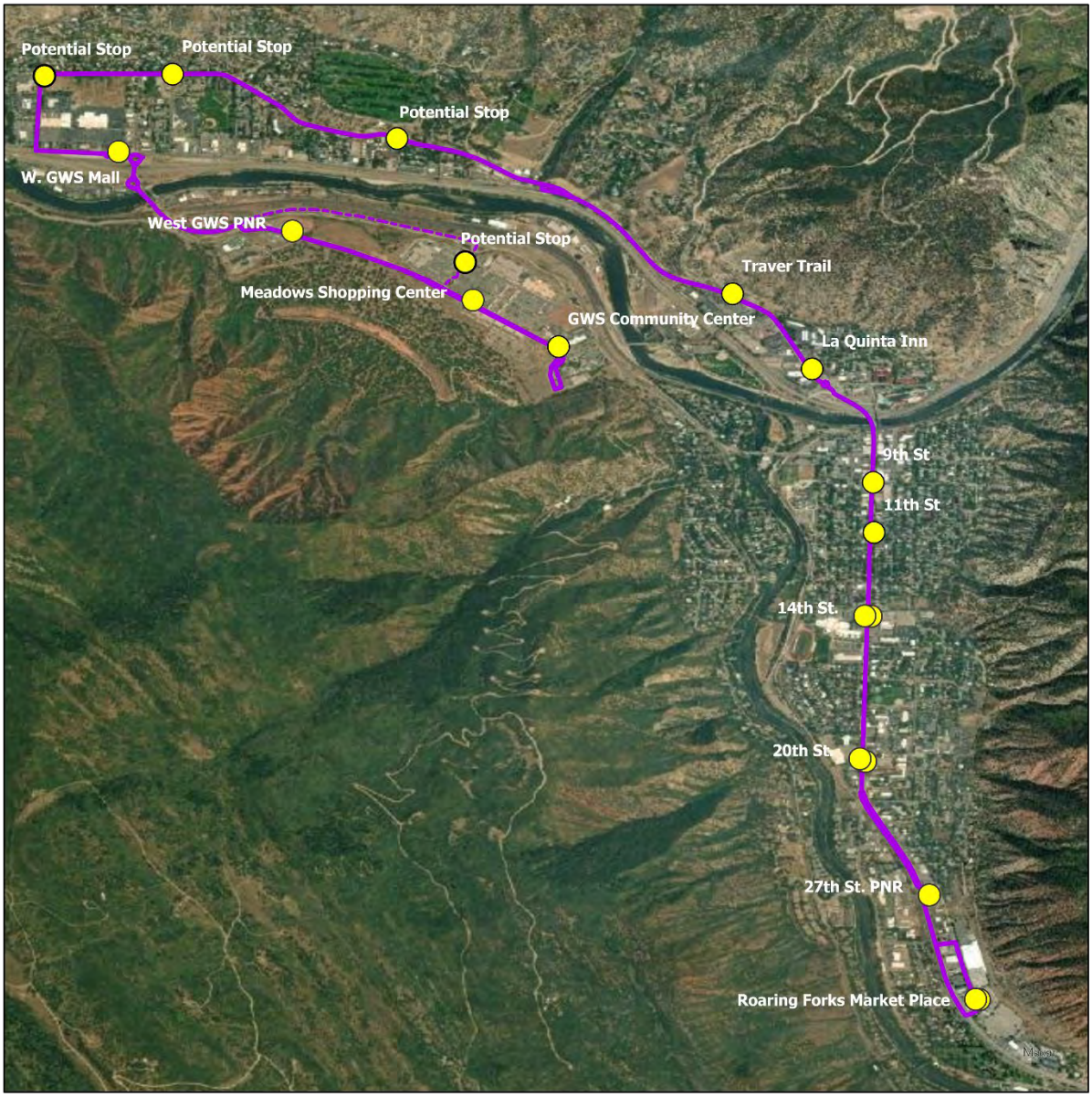



Figure 12 – RGS Donegan-Storm King to Community Center or W. Meadows loop

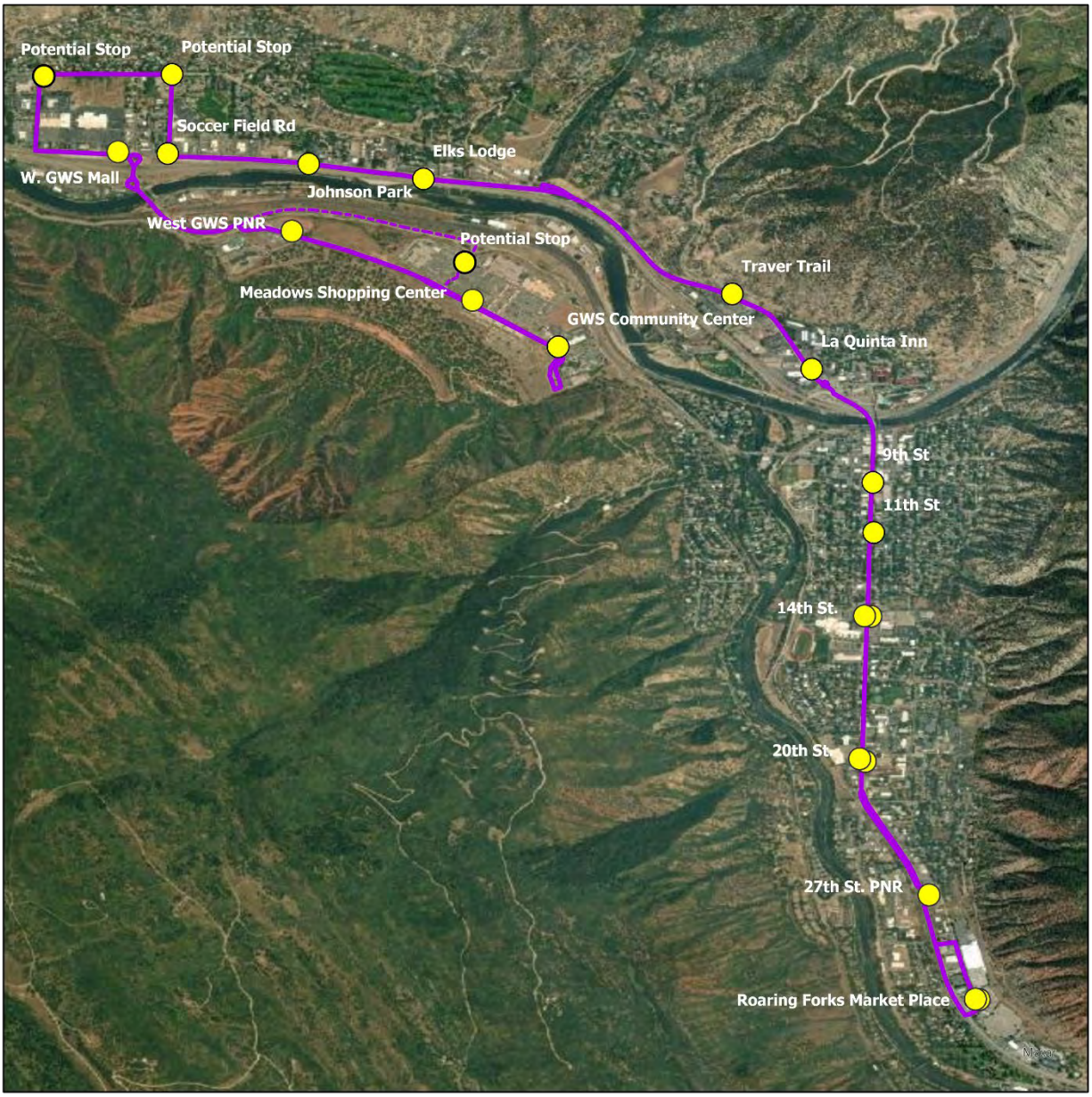



Figure 13 – RGS Hwy 6-Soccer Field-Donegan-Storm King to Community Center or W. Meadows Loop

### Grand Avenue corridor concepts

As described earlier, until BRT is extended so that every BRT trip consistently makes local stops on Grand Avenue, for now the Local route and RGS work in tandem to provide a threshold averaging 15-minute frequencies, with additional trips added by the other two routes. The strategy of maintaining both Local and RGS routes along Grand Avenue is recommended to provide this threshold service level along Grand Avenue in the near term, until all BRT trips are extended.

The potential to reroute BRT or Hogback trips to serve parallel corridors was considered but rejected since RFTA prefers these long-haul regional services to remain on Grand Avenue as a trunk route. Therefore, few options exist for modifying the multiple bus routes serving Grand Avenue. Two potential concepts are worth considering:

- Thin the number of stops along Grand Avenue for the BRT and Hogback regional services. For these two services, stops would be focused on 27th Street, 14th Street, and Court House, thereby bypassing stops at 20th Street and 9th Street. Running skip-stop service on these two routes can improve runtimes and reduce bus congestion and improve safety in the vicinity of the stops by decreasing weaving in and out of traffic.. Drawbacks to consider is rider confusion as some buses bypass stops, and potential increase in wait times/loss of ridership due to reduced access at the bypassed stops. Local and RGS routes would continue to serve all stops along Grand Avenue, guaranteeing average 15-minute frequencies throughout the day.
- It is possible to consider a deviation of RGS to serve Blake Avenue instead of Grand Avenue while still maintaining key local stops along Grand Avenue, as shown in Figure 14. However, this would add some time and distance to the route. In addition, turning at the intersection of 14th/Grand is likely to be problematic. As discussed earlier, revising the large loop serving West Glenwood P&R could save enough time to consider a deviation to Blake Avenue without requiring additional vehicles. However, this would be at the expense of considering other modifications to RGS such as providing improved coverage to North Glenwood. Since Blake Avenue is within a reasonable walking distance from Grand Avenue, this deviation is considered less of a priority than other proposed improvements for RGS.


Figure 14 – Potential Blake Avenue Diversion (RGS)

### Concepts for improved coverage of South Glenwood

An extension was evaluated from 27th Street P&R to proceed west on 27th Street, south on Midland Avenue, and east on Mt. Sopris Drive, terminating in the vicinity of Sopris Elementary School. This concept is estimated to add about six to seven minutes of one-way travel time. The additional travel time is unable to be absorbed by RGS without adding another vehicle to serve this route. This community is therefore identified as an opportunity for Mobility on Demand services.

### Opportunities for Mobility on Demand Services

The City of Glenwood Springs' recent transportation studies examined the potential for on-demand services. The costs for establishing a pilot program cannot be absorbed in the City's budget while maintaining RGS service unless additional resources (such as grant funding) are identified.

As discussed earlier, RGS plays an important role in supplementing Local service serving local stops along Grand Avenue. Grand Avenue remains the clear corridor deserving of a fixed route service with good frequencies.

In the case that additional funding can be procured, there are numerous methods to enhance community mobility, whether through on-demand services, flexible routes/microtransit, bike sharing, or reimbursement or subsidies of Transportation Network Companies (TNCs) such as Uber or Lyft. The following neighborhoods are examples of areas where alternate service delivery can be considered:

- South Glenwood: entire area can be considered an on-call zone
- West Glenwood: communities adjacent to Midland Avenue, particularly on east side of street to the north and south of 8th Avenue
- North Glenwood: Connection between middle school and community center, area west of W. Glenwood Mall

The American Public Transportation Association (APTA) provides a list transit and TNC partnerships at https://www.apta.com/research-technical-resources/mobility-innovation-hub/transit-and-tnc-partnerships/. Descriptions include the service that agencies were trying to address, whether first/last mile, late night trips, replacement for low-productivity routes, or improved access for low income households.

As more agencies gain experience with different mobility services, they may find that a program may end up underfunded if the service gains popularity with riders, or that expectations about cost savings did not materialize. A pilot program with clear goals and a predefined set of key performance indicators would assist in determining whether an alternate service delivery model is successful for Glenwood Springs.

# Summary and Next Steps

All four routes currently operating in Glenwood Springs provide service on Grand Avenue. Due to this redundant service on Grand Avenue, and building demand for the direct connection between the 27th Street P&R and the West Glenwood P&R, RFTA along with the City have been considering various BRT alignment extension options. This report focuses on service specifics for the BRT alternatives and provides concepts of how various bus services would integrate after BRT is extended.

In addition to improving service on Grand Avenue, especially in the Downtown region, public feedback and earlier studies have suggested a need for service in North Glenwood areas, as well as service improvements to existing service such that there are overall more connections, higher frequency. A need for improved first and last mile connections and better access to South Glenwood also was suggested.

Analysis results from travel time estimates, operating statistics including annual hours, miles, and peak buses, as well as the O&M Costs, were presented. Elements of these statistics and costs were used as evaluation criteria for Level 2 analysis. (The resulting Level 2 evaluation matrix is provided for reference in Appendix D.)

Integrated bus concepts were developed to take advantage of connecting with a potential new transit center, while providing connections to areas in North and South Glenwood that are underserved currently. These concepts would require modification if a new transit center is not pursued, to instead ensure route connections at West Glenwood PNR.

Finally, concepts were presented to optimize transit service before BRT service is extended. Concepts focus on routing in North Glenwood, introducing skip stops for BRT and Hogback routes along Grand Avenue, a possible deviation on Blake Avenue, and potential markets for alternate service delivery.

Next steps include the following:

- Consider pre-BRT extension optimization concepts, including the viability of an in-line stop at West Glenwood PNR and modification of service to better penetrate North Glenwood.
- Consider a pilot introducing skip-stop service on BRT and Hogback routes to assess whether these changes lead to improved operations and safety along Grand Avenue, and whether these improvements offset any potential loss in rider convenience/ridership.
- Review/interview other agencies that have initiated alternate service delivery to consider whether to pursue in Glenwood Springs.
- Pursue potential funding for alternate service delivery pilot program.

# Appendix A: Station-to-Station Travel Times

| No BRT Extension - RFTA Property Transit Center | | | | | | AM Peak | |
|---|---|---|---|---|---|---|---|
| Station | | Station | | NB Distance [mi] | SB Distance [mi] | NB Time [min] | SB Time [min] |
| 1 | 27th St PnR | 2 | Grand & 14th | 1.0 | 1.8 | 0:03:46 | 0:05:07 |
| 2 | Grand & 14th | 3 | Grand & 9th | 0.4 | 0.3 | 0:02:43 | 0:01:50 |
| 3 | Grand & 9th | 4 | RFTA Property TC | 0.3 | 0.4 | 0:01:52 | 0:02:44 |
| 4 | RFTA Property TC | 6 | West GWS PnR | 1.7 | 1.1 | 0:04:47 | 0:04:00 |
| **TOTALS** | | | | **3.48 miles** | **3.69 miles** | **0:13:08** | **0:13:41** |
| | | | *Average Speed (mph)* | | | *15.9* | *16.2* |

| No BRT Extension - 7th & Colorado Property Transit Center | | | | | | AM Peak | |
|---|---|---|---|---|---|---|---|
| Station | | Station | | NB Distance [mi] | SB Distance [mi] | NB Time [min] | SB Time [min] |
| 1 | 27th St PnR | 2 | Grand & 14th | 1.0 | 2.0 | 0:03:46 | 0:05:31 |
| 2 | Grand & 14th | 3 | Grand & 9th | 0.4 | 0.2 | 0:02:43 | 0:01:38 |
| 3 | Grand & 9th | 7 | 7th & Colorado TC | 0.2 | 0.4 | 0:01:37 | 0:02:44 |
| 7 | 7th & Colorado TC | 6 | West GWS PnR | 1.8 | 1.1 | 0:05:17 | 0:04:00 |
| **TOTALS** | | | | **3.52 miles** | **3.73 miles** | **0:13:23** | **0:13:53** |
| | | | *Average Speed (mph)* | | | *15.8* | *16.1* |

| No BRT Extension - SH6 Property Transit Center | | | | | | AM Peak | |
|---|---|---|---|---|---|---|---|
| Station | | Station | | NB Distance [mi] | SB Distance [mi] | NB Time [min] | SB Time [min] |
| 1 | 27th St PnR | 2 | Grand & 14th | 1.0 | 1.1 | 0:03:46 | 0:04:00 |
| 2 | Grand & 14th | 3 | Grand & 9th | 0.4 | 0.4 | 0:02:43 | 0:02:44 |
| 3 | Grand & 9th | 5 | SH6 TC | 0.7 | 0.7 | 0:03:09 | 0:03:02 |
| 5 | SH6 TC | 6 | West GWS PnR | 2.5 | 2.5 | 0:07:20 | 0:06:04 |
| **TOTALS** | | | | **4.65 miles** | **4.70 miles** | **0:16:58** | **0:15:50** |
| | | | *Average Speed (mph)* | | | *16.4* | *17.8* |

**With W Glenwood PnR**

| Alternative - Transit Center | AM Peak | |
|---|---|---|
| | EB | WB |
| No BRT Extension - RFTA Property Transit Center | 0:13:08 | 0:13:41 |
| No BRT Extension - 7th & Colorado Property Transit Center | 0:13:23 | 0:13:53 |
| No BRT Extension - SH6 Property Transit Center | 0:16:58 | 0:15:50 |

**Without W Glenwood PnR**

| Alternative - Transit Center | AM Peak | |
|---|---|---|
| | EB | WB |
| No BRT Extension - RFTA Property Transit Center | 0:08:21 | 0:09:41 |
| No BRT Extension - 7th & Colorado Property Transit Center | 0:08:06 | 0:09:53 |
| No BRT Extension - SH6 Property Transit Center | 0:09:38 | 0:09:46 |

| Rio Grande Trail Alternative - RFTA Property Transit Center | | | | | | AM Peak | |
|---|---|---|---|---|---|---|---|
| Station | | Station | | NB Distance [mi] | SB Distance [mi] | NB Time [min] | SB Time [min] |
| 1 | 27th St PnR | 2 | Coach Miller BRT Station | 1.0 | 1.9 | 0:03:18 | 0:05:30 |
| 2 | Coach Miller BRT Station | 3 | RFTA Property Transit Center | 0.6 | 0.6 | 0:02:25 | 0:02:10 |
| 3 | RFTA Property Transit Center | 4 | West GWS PnR | 1.7 | 1.1 | 0:05:10 | 0:03:47 |
| **TOTALS** | | | | **3.33 miles** | **3.54 miles** | **0:10:53** | **0:11:27** |
| | | | *Average Speed (mph)* | | | *18.4* | *18.6* |

| Rio Grande Trail Alternative - 7th & Colorado Transit Center | | | | | | AM Peak | |
|---|---|---|---|---|---|---|---|
| Station | | Station | | NB Distance [mi] | SB Distance [mi] | NB Time [min] | SB Time [min] |
| 1 | 27th St PnR | 2 | Coach Miller BRT Station | 1.0 | 2.0 | 0:03:17 | 0:06:07 |
| 2 | Coach Miller BRT Station | 3 | 7th & Colorado TC | 1.0 | 1.0 | 0:04:00 | 0:03:37 |
| 3 | 7th & Colorado TC | 4 | West GWS PnR | 1.8 | 1.1 | 0:05:38 | 0:03:49 |
| **TOTALS** | | | | **3.82 miles** | **4.03 miles** | **0:12:55** | **0:13:33** |
| | | | *Average Speed (mph)* | | | *17.7* | *17.8* |

| Rio Grande Trail Alternative - SH6 Transit Center | | | | | | AM Peak | |
|---|---|---|---|---|---|---|---|
| Station | | Station | | NB Distance [mi] | SB Distance [mi] | NB Time [min] | SB Time [min] |
| 1 | 27th St PnR | 2 | Coach Miller BRT Station | 1.0 | 2.5 | 0:03:17 | 0:06:18 |
| 2 | Coach Miller BRT Station | 3 | 8th/Courthouse (Pitkin) | 0.9 | 0.7 | 0:02:57 | 0:03:03 |
| 3 | 8th/Courthouse (Pitkin) | 4 | SH6 TC | 0.7 | 0.9 | 0:03:18 | 0:02:59 |
| 4 | SH6 TC | 5 | West GWS PnR | 2.5 | 1.1 | 0:07:47 | 0:03:49 |
| **TOTALS** | | | | **5.09 miles** | **5.12 miles** | **0:17:19** | **0:16:09** |
| | | | *Average Speed (mph)* | | | *17.6* | *19.0* |

**With W Glenwood PnR**

| Alternative - Transit Center | AM Peak | |
|---|---|---|
| | EB | WB |
| Rio Grande Trail Alternative - RFTA Property Transit Center | 0:10:53 | 0:11:27 |
| Rio Grande Trail Alternative - 7th & Colorado Transit Center | 0:12:55 | 0:13:33 |
| Rio Grande Trail Alternative - SH6 Transit Center | 0:17:19 | 0:16:09 |

**Without W Glenwood PnR**

| Alternative - Transit Center | AM Peak | |
|---|---|---|
| | EB | WB |
| Rio Grande Trail Alternative - RFTA Property Transit Center | 0:05:43 | 0:07:40 |
| Rio Grande Trail Alternative - 7th & Colorado Transit Center | 0:07:17 | 0:09:44 |
| Rio Grande Trail Alternative - SH6 Transit Center | 0:09:32 | 0:12:20 |

| Grand Ave Alternative - RFTA Property Transit Center | | | | | | AM Peak | |
|---|---|---|---|---|---|---|---|
| Station | | Station | | NB Distance [mi] | SB Distance [mi] | NB Time [min] | SB Time [min] |
| 1 | 27th St PnR | 2 | Grand & 14th | 1.0 | 1.8 | 0:03:46 | 0:05:07 |
| 2 | Grand & 14th | 3 | Grand & 9th | 0.4 | 0.3 | 0:02:13 | 0:01:50 |
| 3 | Grand & 9th | 4 | RFTA Property TC | 0.3 | 0.4 | 0:01:52 | 0:02:15 |
| 4 | RFTA Property TC | 5 | West GWS PnR | 1.7 | 1.1 | 0:04:47 | 0:04:00 |
| **TOTALS** | | | | **3.48 miles** | **3.69 miles** | **0:12:38** | **0:13:12** |
| | | | *Average Speed (mph)* | | | *16.5* | *16.8* |

| Grand Ave Alternative - 7th & Colorado Transit Center | | | | | | AM Peak | |
|---|---|---|---|---|---|---|---|
| Station | | Station | | NB Distance [mi] | SB Distance [mi] | NB Time [min] | SB Time [min] |
| 1 | 27th St PnR | 2 | Grand & 14th | 1.0 | 2.0 | 0:03:46 | 0:05:31 |
| 2 | Grand & 14th | 3 | Grand & 9th | 0.4 | 0.2 | 0:02:13 | 0:01:38 |
| 3 | Grand & 9th | 4 | 7th & Colorado TC | 0.2 | 0.4 | 0:01:37 | 0:02:15 |
| 4 | 7th & Colorado TC | 5 | West GWS PnR | 1.8 | 1.1 | 0:05:17 | 0:04:00 |
| **TOTALS** | | | | **3.52 miles** | **3.73 miles** | **0:12:53** | **0:13:24** |
| | | | *Average Speed (mph)* | | | *16.4* | *16.7* |

| Grand Ave Alternative - SH6 Transit Center | | | | | | AM Peak | |
|---|---|---|---|---|---|---|---|
| Station | | Station | | NB Distance [mi] | SB Distance [mi] | NB Time [min] | SB Time [min] |
| 1 | 27th St PnR | 2 | Grand & 14th | 1.0 | 2.5 | 0:03:46 | 0:06:04 |
| 2 | Grand & 14th | 3 | Grand & 9th | 0.4 | 0.7 | 0:02:13 | 0:03:02 |
| 3 | Grand & 9th | 4 | SH6 TC | 0.7 | 0.4 | 0:03:09 | 0:02:13 |
| 4 | SH6 TC | 5 | West GWS PnR | 2.5 | 1.1 | 0:07:21 | 0:04:00 |
| **TOTALS** | | | | **4.65 miles** | **4.70 miles** | **0:16:29** | **0:15:19** |
| | | | *Average Speed (mph)* | | | *16.9* | *18.4* |

**With W Glenwood PnR**

| Alternative - Transit Center | AM Peak | |
|---|---|---|
| | EB | WB |
| Grand Ave Alternative - RFTA Property Transit Center | 0:12:38 | 0:13:12 |
| Grand Ave Alternative - 7th & Colorado Transit Center | 0:12:53 | 0:13:24 |
| Grand Ave Alternative - SH6 Transit Center | 0:16:29 | 0:15:19 |

**Without W Glenwood PnR**

| Alternative - Transit Center | AM Peak | |
|---|---|---|
| | EB | WB |
| Grand Ave Alternative - RFTA Property Transit Center | 0:07:51 | 0:09:12 |
| Grand Ave Alternative - 7th & Colorado Transit Center | 0:07:36 | 0:09:24 |
| Grand Ave Alternative - SH6 Transit Center | 0:09:08 | 0:11:19 |

| Hybrid Alternative - RFTA Property Transit Center | | | | | | AM Peak | |
|---|---|---|---|---|---|---|---|
| Station | | Station | | NB Distance [mi] | SB Distance [mi] | NB Time [min] | SB Time [min] |
| 1 | 27th St PnR | 2 | 14th/Grand Station | 1.1 | 1.9 | 0:03:56 | 0:05:30 |
| 2 | 14th/Grand Station | 3 | RFTA Property Transit Center | 0.7 | 0.7 | 0:02:51 | 0:02:37 |
| 3 | RFTA Property Transit Center | 4 | West GWS PnR | 1.7 | 1.1 | 0:05:10 | 0:04:17 |
| **TOTALS** | | | | **3.46 miles** | **3.68 miles** | **0:11:56** | **0:12:24** |
| | | | *Average Speed (mph)* | | | *17.4* | *17.8* |

| Hybrid Alternative - 7th & Colorado Transit Center | | | | | | AM Peak | |
|---|---|---|---|---|---|---|---|
| Station | | Station | | NB Distance [mi] | SB Distance [mi] | NB Time [min] | SB Time [min] |
| 1 | 27th St PnR | 2 | 14th/Grand Station | 1.1 | 2.0 | 0:03:56 | 0:06:07 |
| 2 | 14th/Grand Station | 3 | 7th & Colorado TC | 1.1 | 1.1 | 0:04:17 | 0:04:01 |
| 3 | 7th & Colorado TC | 4 | West GWS PnR | 1.8 | 1.1 | 0:05:38 | 0:04:17 |
| **TOTALS** | | | | **3.95 miles** | **4.16 miles** | **0:13:50** | **0:14:25** |
| | | | *Average Speed (mph)* | | | *17.1* | *17.3* |

| Hybrid Alternative - SH6 Transit Center | | | | | | AM Peak | |
|---|---|---|---|---|---|---|---|
| Station | | Station | | NB Distance [mi] | SB Distance [mi] | NB Time [min] | SB Time [min] |
| 1 | 27th St PnR | 2 | 14th/Grand Station | 1.1 | 2.5 | 0:03:56 | 0:06:18 |
| 2 | 14th/Grand Station | 3 | 8th/Courthouse (Pitkin) | 0.9 | 0.7 | 0:03:29 | 0:03:03 |
| 3 | 8th/Courthouse (Pitkin) | 4 | SH6 TC | 0.7 | 0.9 | 0:03:17 | 0:03:23 |
| 4 | SH6 TC | 5 | West GWS PnR | 2.5 | 1.1 | 0:07:47 | 0:04:17 |
| **TOTALS** | | | | **5.22 miles** | **5.25 miles** | **0:18:28** | **0:17:01** |
| | | | *Average Speed (mph)* | | | *17.0* | *18.5* |

**With W Glenwood PnR**

| Alternative - Transit Center | AM Peak | |
|---|---|---|
| | EB | WB |
| Hybrid Alternative - RFTA Property Transit Center | 0:11:56 | 0:12:24 |
| Hybrid Alternative - 7th & Colorado Transit Center | 0:13:50 | 0:14:25 |
| Hybrid Alternative - SH6 Transit Center | 0:18:28 | 0:17:01 |

**Without W Glenwood PnR**

| Alternative - Transit Center | AM Peak | |
|---|---|---|
| | EB | WB |
| Hybrid Alternative - RFTA Property Transit Center | 0:06:46 | 0:08:07 |
| Hybrid Alternative - 7th & Colorado Transit Center | 0:08:12 | 0:10:08 |
| Hybrid Alternative - SH6 Transit Center | 0:10:41 | 0:12:44 |

# Appendix B: Operating Statistics

**Project Baseline Service Requirements**

**Estimate of Weekday Service Statistics**

| Time Period | Avg. Freq. | Route Pattern | | In-Serv. Times D. Valley | In-Serv. Times Up Valley | In-Serv. Trips D. Valley | In-Serv. Trips Up Valley | Total Trips | One-Way Distance | Rev. Miles | Vehicle Hours In-Serv. Hr. | Vehicle Hours Layover | Vehicle Hours Rev. Hrs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5:00-8:30 | 10-Min. | Rubey/Aspen | 27th St S. Glenwood | 60 | 64 | 13 | 5 | 18 | 39.6 | 713 | 18.3 | 1.2 | 22.0 |
| | | Rubey/Aspen | West GWS P&R | 72 | 79 | 5 | 18 | 23 | 43.0 | 989 | 29.7 | 1.2 | 35.6 |
| | | | | | | 18 | 23 | 41 | | 1,702 | 48.0 | | 57.6 |
| 8:30 - 12:30 | 15-Min. | Rubey/Aspen | 27th St S. Glenwood | 60 | 64 | 15 | 13 | 28 | 39.6 | 1,109 | 28.9 | 1.2 | 34.6 |
| | | Rubey/Aspen | West GWS P&R | 72 | 79 | 1 | 3 | 4 | 43 | 172 | 5.2 | 1.2 | 6.2 |
| | | | | | | 16 | 16 | | | 1,281 | 34.0 | | 40.8 |
| 12:30 - 16:00 | 15-Min. | Rubey/Aspen | 27th St S. Glenwood | 60 | 64 | 5 | 7 | 12 | 39.6 | 475 | 12.5 | 1.2 | 15.0 |
| | | Rubey/Aspen | West GWS P&R | 72 | 79 | 11 | 8 | 19 | 43 | 817 | 23.7 | 1.2 | 28.5 |
| | | | | | | 16 | 15 | 31 | | 1,292 | 36.2 | | 43.4 |
| 16:00 - 18:30 | 10-Min. | Rubey/Aspen | 27th St S. Glenwood | 60 | 64 | 12 | 12 | 24 | 39.6 | 950 | 24.8 | 1.2 | 29.8 |
| | | Rubey/Aspen | West GWS P&R | 72 | 79 | 5 | 2 | 7 | 43 | 301 | 8.6 | 1.2 | 10.4 |
| | | | | | | 17 | 14 | 31 | | 1,251 | 33.4 | | 40.1 |
| 18:30 - 20:00 | 15 Min. | Rubey/Aspen | 27th St S. Glenwood | 60 | 64 | 4 | 4 | 8 | 39.6 | 317 | 8.3 | 1.2 | 9.9 |
| | | Rubey/Aspen | West GWS P&R | 72 | 79 | 4 | 0 | 4 | 43 | 172 | 4.8 | 1.2 | 5.8 |
| | | | | | | 8 | 4 | 12 | | 489 | 13.1 | | 15.7 |
| 20:00 - 24:00 | 30-Min. | Rubey/Aspen | 27th St S. Glenwood | 60 | 64 | 4 | 8 | 12 | 39.6 | 475 | 12.5 | 1.2 | 15.0 |
| | | Rubey/Aspen | West GWS P&R | 72 | 79 | 5 | 0 | 5 | 43 | 215 | 6.0 | 1.2 | 7.2 |
| | | | | | | 9 | 8 | 17 | | 690 | 18.5 | | 22.2 |
| **TOTALS** | **n/a** | **Rubey/Aspen** | **27th St S. Glenwood** | **60** | **64** | **53** | **49** | **102** | | **4,039** | **105.3** | **1.2** | **126.3** |
| | | **Rubey/Aspen** | **West GWS P&R** | **72** | **79** | **31** | **31** | **62** | | **2,666** | **78.0** | **1.2** | **93.6** |
| | | | | | | **84** | **80** | **164** | | **6,705** | **183.3** | | **219.9** |

**Estimate of Weekend Service Statistics**

| Time Period | Avg. Freq. | Route Pattern | | In-Serv. Times D. Valley | In-Serv. Times Up Valley | In-Serv. Trips D. Valley | In-Serv. Trips Up Valley | Total Trips | One-Way Distance | Rev. Miles | Vehicle Hours In-Serv. Hr. | Vehicle Hours Layover | Vehicle Hours Rev. Hrs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5:00-20:00 | 15-Min. | Rubey/Aspen | 27th St S. Glenwood | 60 | 34 | 37 | 34 | 71 | 39.6 | 2,812 | 56.3 | 1.2 | 67.5 |
| | | Rubey/Aspen | West GWS P&R | 72 | 25 | 21 | 25 | 46 | 43.0 | 1,978 | 35.6 | 1.2 | 42.7 |
| | | | | | | 58 | 59 | 117 | | 4,790 | 91.9 | | 110.3 |
| 20:00-24:00 | 30-60-Min. | Rubey/Aspen | 27th St S. Glenwood | 60 | 34 | 2 | 4 | 6 | 39.6 | 238 | 4.3 | 1.2 | 5.1 |
| | | Rubey/Aspen | West GWS P&R | 72 | 25 | 5 | 0 | 5 | 43.0 | 215 | 6.0 | 1.2 | 7.2 |
| | | | | | | 7 | 4 | 11 | | 453 | 10.3 | | 12.3 |
| **TOTALS** | **n/a** | **Rubey/Aspen** | **27th St S. Glenwood** | **60** | **64** | **39** | **38** | **77** | | **3,049** | **79.5** | **1.2** | **95.4** |
| | | **Rubey/Aspen** | **West GWS P&R** | **72** | **79** | **26** | **25** | **51** | | **2,193** | **64.1** | **1.2** | **76.9** |
| | | | | | | **65** | **63** | **128** | | **5,242** | **143.7** | | **172.4** |

**Estimate of Annual Service Statistics**

| Day | Annual. Factor | Revenue Miles Daily | Revenue Miles Annual | Revenue Hours Daily | Revenue Hours Annual | Peak Vehicles Cycle | Peak Vehicles Freq. | Peak Vehicles | Fleet Vehicles |
|---|---|---|---|---|---|---|---|---|---|
| Weekday | 255 | 6,705 | 1,709,826 | 219.9 | 56,085 | 180 | 10 | 18 | 22 |
| Weekend | 110 | 5,242 | 576,642 | 172.4 | 18,962 | 150 | 15 | 10 | |
| **TOTALS** | **n/a** | **11,947** | **2,286,468** | **392** | **75,047** | | | | **22** |

## Rio Grande Trail Corridor Alternatives
## Without West Glenwood Springs P&R Connection

| Description | Day | One-Way Distance | Frequencies AM | Mid | PM | Eve | Nite | Service Hours AM | Mid | PM | Eve | Nite | Total Hours | One-Way Trips AM | Mid | PM | Eve | Nite | Total Trips |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 41.3 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| RFTA Prop. Transit Ctr. | Sat | 41.3 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| | Sun | 41.3 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 41.6 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| 7th & Colorado (Downtown) | Sat | 41.6 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| | Sun | 41.6 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 42.2 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| SH 6 Area Transit Center | Sat | 42.2 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| | Sun | 42.2 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |

| Description | Day | AM 1-Way | Layover | Cycle | Buses | Mid 1-Way | Layover | Cycle | Buses | PM 1-Way | Layover | Cycle | Buses | Eve 1-Way | Layover | Cycle | Buses | Nite 1-Way | Layover | Cycle | Buses | Daily Pk Bus | Rev.-Hr. | Rev.-Mi. | Annual Rev.-Hr. | Rev.-Mi. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 67.83 | 34.34 | 170.00 | 17 | 67.83 | 29.34 | 165.00 | 11 | 67.83 | 34.34 | 170.00 | 17 | 67.83 | 29.34 | 165.00 | 11 | 67.83 | 44.34 | 180.00 | 6 | 17 | 231 | 6,767 | 58,900 | 1,725,500 |
| RFTA Prop. Transit Ctr. | Sat | 67.83 | 29.34 | 165.00 | 11 | 67.83 | 29.34 | 165.00 | 11 | 67.83 | 29.34 | 165.00 | 11 | 67.83 | 29.34 | 165.00 | 11 | 67.83 | 44.34 | 180.00 | 6 | 11 | 178 | 5,281 | 9,300 | 274,600 |
| | Sun | 67.83 | 29.34 | 165.00 | 11 | 67.83 | 29.34 | 165.00 | 11 | 67.83 | 29.34 | 165.00 | 11 | 67.83 | 29.34 | 165.00 | 11 | 67.83 | 44.34 | 180.00 | 6 | 11 | 178 | 5,281 | 10,300 | 306,300 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***17*** | | | ***78,500*** | ***2,306,400*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***3,454*** | ***2,306,320*** |
| Rubey/Aspen to | M-F | 69.35 | 31.30 | 170.00 | 17 | 69.35 | 41.30 | 180.00 | 12 | 69.35 | 31.30 | 170.00 | 17 | 69.35 | 41.30 | 180.00 | 12 | 69.35 | 41.30 | 180.00 | 6 | 17 | 239 | 6,827 | 60,900 | 1,741,000 |
| 7th & Colorado (Downtown) | Sat | 69.35 | 41.30 | 180.00 | 12 | 69.35 | 41.30 | 180.00 | 12 | 69.35 | 41.30 | 180.00 | 12 | 69.35 | 41.30 | 180.00 | 12 | 69.35 | 41.30 | 180.00 | 6 | 12 | 192 | 5,329 | 10,000 | 277,100 |
| | Sun | 69.35 | 41.30 | 180.00 | 12 | 69.35 | 41.30 | 180.00 | 12 | 69.35 | 41.30 | 180.00 | 12 | 69.35 | 41.30 | 180.00 | 12 | 69.35 | 41.30 | 180.00 | 6 | 12 | 192 | 5,329 | 11,100 | 309,100 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***17*** | | | ***82,000*** | ***2,327,200*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***6,954*** | ***2,327,166*** |
| Rubey/Aspen to | M-F | 71.73 | 36.54 | 180.00 | 18 | 71.73 | 36.54 | 180.00 | 12 | 71.73 | 36.54 | 180.00 | 18 | 71.73 | 36.54 | 180.00 | 12 | 71.73 | 36.54 | 180.00 | 6 | 18 | 246 | 6,927 | 62,700 | 1,766,500 |
| SH 6 Area Transit Center | Sat | 71.73 | 36.54 | 180.00 | 12 | 71.73 | 36.54 | 180.00 | 12 | 71.73 | 36.54 | 180.00 | 12 | 71.73 | 36.54 | 180.00 | 12 | 71.73 | 36.54 | 180.00 | 6 | 12 | 192 | 5,407 | 10,000 | 281,100 |
| | Sun | 71.73 | 36.54 | 180.00 | 12 | 71.73 | 36.54 | 180.00 | 12 | 71.73 | 36.54 | 180.00 | 12 | 71.73 | 36.54 | 180.00 | 12 | 71.73 | 36.54 | 180.00 | 6 | 12 | 192 | 5,407 | 11,100 | 313,600 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***18*** | | | ***83,800*** | ***2,361,200*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***8,754*** | ***2,361,162*** |

## Rio Grande Trail Corridor Alternatives
## With West Glenwood Springs P&R Connection

| Description | Day | One-Way Distance | Frequencies AM | Mid | PM | Eve | Nite | Service Hours AM | Mid | PM | Eve | Nite | Total Hours | One-Way Trips AM | Mid | PM | Eve | Nite | Total Trips |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 43.0 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| West Glenwood P&R via | Sat | 43.0 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| RFTA Prop. Transit Ctr. | Sun | 43.0 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 43.5 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| West Glenwood P&R via | Sat | 43.5 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| 8th & Colorado (Downtown) | Sun | 43.5 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 44.7 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| West Glenwood P&R via | Sat | 44.7 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| SH 6 Area Transit Center | Sun | 44.7 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |

| Description | Day | AM 1-Way | Layover | Cycle | Buses | Mid 1-Way | Layover | Cycle | Buses | PM 1-Way | Layover | Cycle | Buses | Eve 1-Way | Layover | Cycle | Buses | Nite 1-Way | Layover | Cycle | Buses | Daily Pk Bus | Rev.-Hr. | Rev.-Mi. | Annual Rev.-Hr. | Rev.-Mi. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 73.17 | 33.66 | 180.00 | 18 | 73.17 | 33.66 | 180.00 | 12 | 73.17 | 33.66 | 180.00 | 18 | 73.17 | 33.66 | 180.00 | 12 | 73.17 | 33.66 | 180.00 | 6 | 18 | 246 | 7,059 | 62,700 | 1,799,900 |
| West Glenwood P&R via | Sat | 73.17 | 33.66 | 180.00 | 12 | 73.17 | 33.66 | 180.00 | 12 | 73.17 | 33.66 | 180.00 | 12 | 73.17 | 33.66 | 180.00 | 12 | 73.17 | 33.66 | 180.00 | 6 | 12 | 192 | 5,509 | 10,000 | 286,500 |
| RFTA Prop. Transit Ctr. | Sun | 73.17 | 33.66 | 180.00 | 12 | 73.17 | 33.66 | 180.00 | 12 | 73.17 | 33.66 | 180.00 | 12 | 73.17 | 33.66 | 180.00 | 12 | 73.17 | 33.66 | 180.00 | 6 | 12 | 192 | 5,509 | 11,100 | 319,500 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***18*** | | | ***83,800*** | ***2,405,900*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***8,754*** | ***119,432*** |
| Rubey/Aspen to | M-F | 75.22 | 39.56 | 190.00 | 19 | 75.22 | 44.56 | 195.00 | 13 | 75.22 | 39.56 | 190.00 | 19 | 75.22 | 44.56 | 195.00 | 13 | 75.22 | 59.56 | 210.00 | 7 | 19 | 265 | 7,137 | 67,600 | 1,820,000 |
| West Glenwood P&R via | Sat | 75.22 | 44.56 | 195.00 | 13 | 75.22 | 44.56 | 195.00 | 13 | 75.22 | 44.56 | 195.00 | 13 | 75.22 | 44.56 | 195.00 | 13 | 75.22 | 59.56 | 210.00 | 7 | 13 | 210 | 5,571 | 10,900 | 289,700 |
| 8th & Colorado (Downtown) | Sun | 75.22 | 44.56 | 195.00 | 13 | 75.22 | 44.56 | 195.00 | 13 | 75.22 | 44.56 | 195.00 | 13 | 75.22 | 44.56 | 195.00 | 13 | 75.22 | 59.56 | 210.00 | 7 | 13 | 210 | 5,571 | 12,200 | 323,100 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***19*** | | | ***90,700*** | ***2,432,800*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***15,654*** | ***2,432,800*** |
| Rubey/Aspen to | M-F | 78.73 | 32.54 | 190.00 | 19 | 78.73 | 37.54 | 195.00 | 13 | 78.73 | 32.54 | 190.00 | 19 | 78.73 | 37.54 | 195.00 | 13 | 78.73 | 52.54 | 210.00 | 7 | 19 | 265 | 7,332 | 67,600 | 1,869,800 |
| West Glenwood P&R via | Sat | 78.73 | 37.54 | 195.00 | 13 | 78.73 | 37.54 | 195.00 | 13 | 78.73 | 37.54 | 195.00 | 13 | 78.73 | 37.54 | 195.00 | 13 | 78.73 | 52.54 | 210.00 | 7 | 13 | 210 | 5,723 | 10,900 | 297,600 |
| SH 6 Area Transit Center | Sun | 78.73 | 37.54 | 195.00 | 13 | 78.73 | 37.54 | 195.00 | 13 | 78.73 | 37.54 | 195.00 | 13 | 78.73 | 37.54 | 195.00 | 13 | 78.73 | 52.54 | 210.00 | 7 | 13 | 210 | 5,723 | 12,200 | 331,900 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***19*** | | | ***90,700*** | ***2,499,300*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***15,654*** | ***2,499,300*** |

## Grand Avenue – Dedicated Lane Alternatives
## Without West Glenwood Springs P&R Connection

| Description | Day | One-Way Distance | Frequencies AM | Mid | PM | Eve | Nite | Service Hours AM | Mid | PM | Eve | Nite | Total Hours | One-Way Trips AM | Mid | PM | Eve | Nite | Total Trips |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 41.4 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| RFTA Prop. Transit Ctr. | Sat | 41.4 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| | Sun | 41.4 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 41.3 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| 7th & Colorado (Downtown) | Sat | 41.3 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| | Sun | 41.3 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 41.8 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| SH 6 Area Transit Center | Sat | 41.8 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| | Sun | 41.8 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |

| Description | Day | AM 1-Way | Layover | Cycle | Buses | Mid 1-Way | Layover | Cycle | Buses | PM 1-Way | Layover | Cycle | Buses | Eve 1-Way | Layover | Cycle | Buses | Nite 1-Way | Layover | Cycle | Buses | Daily Pk Bus | Rev.-Hr. | Rev.-Mi. | Annual Rev.-Hr. | Rev.-Mi. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 69.99 | 30.02 | 170.00 | 17 | 69.99 | 40.02 | 180.00 | 12 | 69.99 | 30.02 | 170.00 | 17 | 69.99 | 40.02 | 180.00 | 12 | 69.99 | 40.02 | 180.00 | 6 | 17 | 239 | 6,795 | 60,900 | 1,732,600 |
| RFTA Prop. Transit Ctr. | Sat | 69.99 | 40.02 | 180.00 | 12 | 69.99 | 40.02 | 180.00 | 12 | 69.99 | 40.02 | 180.00 | 12 | 69.99 | 40.02 | 180.00 | 12 | 69.99 | 40.02 | 180.00 | 6 | 12 | 192 | 5,303 | 10,000 | 275,800 |
| | Sun | 69.99 | 40.02 | 180.00 | 12 | 69.99 | 40.02 | 180.00 | 12 | 69.99 | 40.02 | 180.00 | 12 | 69.99 | 40.02 | 180.00 | 12 | 69.99 | 40.02 | 180.00 | 6 | 12 | 192 | 5,303 | 11,100 | 307,600 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***17*** | | | ***82,000*** | ***2,316,000*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***6,954*** | ***2,316,000*** |
| Rubey/Aspen to | M-F | 69.73 | 30.54 | 170.00 | 17 | 69.73 | 40.54 | 180.00 | 12 | 69.73 | 30.54 | 170.00 | 17 | 69.73 | 40.54 | 180.00 | 12 | 69.73 | 40.54 | 180.00 | 6 | 17 | 239 | 6,778 | 60,900 | 1,728,400 |
| 7th & Colorado (Downtown) | Sat | 69.73 | 40.54 | 180.00 | 12 | 69.73 | 40.54 | 180.00 | 12 | 69.73 | 40.54 | 180.00 | 12 | 69.73 | 40.54 | 180.00 | 12 | 69.73 | 40.54 | 180.00 | 6 | 12 | 192 | 5,290 | 10,000 | 275,100 |
| | Sun | 69.73 | 40.54 | 180.00 | 12 | 69.73 | 40.54 | 180.00 | 12 | 69.73 | 40.54 | 180.00 | 12 | 69.73 | 40.54 | 180.00 | 12 | 69.73 | 40.54 | 180.00 | 6 | 12 | 192 | 5,290 | 11,100 | 306,800 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***17*** | | | ***82,000*** | ***2,310,300*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***6,954*** | ***2,310,275*** |
| Rubey/Aspen to | M-F | 71.19 | 37.62 | 180.00 | 18 | 71.19 | 37.62 | 180.00 | 12 | 71.19 | 37.62 | 180.00 | 18 | 71.19 | 37.62 | 180.00 | 12 | 71.19 | 37.62 | 180.00 | 6 | 18 | 246 | 6,858 | 62,700 | 1,748,900 |
| SH 6 Area Transit Center | Sat | 71.19 | 37.62 | 180.00 | 12 | 71.19 | 37.62 | 180.00 | 12 | 71.19 | 37.62 | 180.00 | 12 | 71.19 | 37.62 | 180.00 | 12 | 71.19 | 37.62 | 180.00 | 6 | 12 | 192 | 5,353 | 10,000 | 278,400 |
| | Sun | 71.19 | 37.62 | 180.00 | 12 | 71.19 | 37.62 | 180.00 | 12 | 71.19 | 37.62 | 180.00 | 12 | 71.19 | 37.62 | 180.00 | 12 | 71.19 | 37.62 | 180.00 | 6 | 12 | 192 | 5,353 | 11,100 | 310,500 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***18*** | | | ***83,800*** | ***2,337,800*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***8,754*** | ***2,337,775*** |

## Grand Avenue – Dedicated Lane Alternatives
## With West Glenwood Springs P&R Connection

| Description | Day | One-Way Distance | Frequencies AM | Mid | PM | Eve | Nite | Service Hours AM | Mid | PM | Eve | Nite | Total Hours | One-Way Trips AM | Mid | PM | Eve | Nite | Total Trips |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 43.2 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| West Glenwood P&R via | Sat | 43.2 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| RFTA Prop. Transit Ctr. | Sun | 43.2 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 43.2 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| West Glenwood P&R via | Sat | 43.2 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| 7th & Colorado (Downtown) | Sun | 43.2 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 44.3 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| West Glenwood P&R via | Sat | 44.3 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| SH 6 Area Transit Center | Sun | 44.3 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |

| Description | Day | AM 1-Way | Layover | Cycle | Buses | Mid 1-Way | Layover | Cycle | Buses | PM 1-Way | Layover | Cycle | Buses | Eve 1-Way | Layover | Cycle | Buses | Nite 1-Way | Layover | Cycle | Buses | Daily Pk Bus | Rev.-Hr. | Rev.-Mi. | Annual Rev.-Hr. | Rev.-Mi. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 74.92 | 30.16 | 180.00 | 18 | 74.92 | 30.16 | 180.00 | 12 | 74.92 | 30.16 | 180.00 | 18 | 74.92 | 30.16 | 180.00 | 12 | 74.92 | 30.16 | 180.00 | 6 | 18 | 246 | 7,083 | 62,700 | 1,806,200 |
| West Glenwood P&R via | Sat | 74.92 | 30.16 | 180.00 | 12 | 74.92 | 30.16 | 180.00 | 12 | 74.92 | 30.16 | 180.00 | 12 | 74.92 | 30.16 | 180.00 | 12 | 74.92 | 30.16 | 180.00 | 6 | 12 | 192 | 5,528 | 10,000 | 287,500 |
| RFTA Prop. Transit Ctr. | Sun | 74.92 | 30.16 | 180.00 | 12 | 74.92 | 30.16 | 180.00 | 12 | 74.92 | 30.16 | 180.00 | 12 | 74.92 | 30.16 | 180.00 | 12 | 74.92 | 30.16 | 180.00 | 6 | 12 | 192 | 5,528 | 11,100 | 320,600 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***18*** | | | ***104,900*** | ***3,022,400*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***29,854*** | ***3,022,400*** |
| Rubey/Aspen to | M-F | 75.14 | 39.72 | 190.00 | 19 | 75.14 | 44.72 | 195.00 | 13 | 75.14 | 39.72 | 190.00 | 19 | 75.14 | 44.72 | 195.00 | 13 | 75.14 | 59.72 | 210.00 | 7 | 19 | 265 | 7,088 | 67,600 | 1,807,500 |
| West Glenwood P&R via | Sat | 75.14 | 44.72 | 195.00 | 13 | 75.14 | 44.72 | 195.00 | 13 | 75.14 | 44.72 | 195.00 | 13 | 75.14 | 44.72 | 195.00 | 13 | 75.14 | 59.72 | 210.00 | 7 | 13 | 210 | 5,532 | 10,900 | 287,700 |
| 7th & Colorado (Downtown) | Sun | 75.14 | 44.72 | 195.00 | 13 | 75.14 | 44.72 | 195.00 | 13 | 75.14 | 44.72 | 195.00 | 13 | 75.14 | 44.72 | 195.00 | 13 | 75.14 | 59.72 | 210.00 | 7 | 13 | 210 | 5,532 | 12,200 | 320,900 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***19*** | | | ***113,800*** | ***3,024,700*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***38,754*** | ***3,024,700*** |
| Rubey/Aspen to | M-F | 77.89 | 34.22 | 190.00 | 19 | 77.89 | 39.22 | 195.00 | 13 | 77.89 | 34.22 | 190.00 | 19 | 77.89 | 39.22 | 195.00 | 13 | 77.89 | 54.22 | 210.00 | 7 | 19 | 265 | 7,262 | 67,600 | 1,851,800 |
| West Glenwood P&R via | Sat | 77.89 | 39.22 | 195.00 | 13 | 77.89 | 39.22 | 195.00 | 13 | 77.89 | 39.22 | 195.00 | 13 | 77.89 | 39.22 | 195.00 | 13 | 77.89 | 54.22 | 210.00 | 7 | 13 | 210 | 5,668 | 10,900 | 294,700 |
| SH 6 Area Transit Center | Sun | 77.89 | 39.22 | 195.00 | 13 | 77.89 | 39.22 | 195.00 | 13 | 77.89 | 39.22 | 195.00 | 13 | 77.89 | 39.22 | 195.00 | 13 | 77.89 | 54.22 | 210.00 | 7 | 13 | 210 | 5,668 | 12,200 | 328,700 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***19*** | | | ***113,800*** | ***3,098,600*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***38,754*** | ***3,098,600*** |

## Grand Avenue – Mixed Traffic Alternatives (No Build)
## Without West Glenwood Springs P&R Connection

| Description | Day | One-Way Distance | Frequencies AM | Mid | PM | Eve | Nite | Service Hours AM | Mid | PM | Eve | Nite | Total Hours | One-Way Trips AM | Mid | PM | Eve | Nite | Total Trips |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 41.4 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| RFTA Prop. Transit Ctr. | Sat | 41.4 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| | Sun | 41.4 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 41.3 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| 7th & Colorado (Downtown) | Sat | 41.3 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| | Sun | 41.3 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 41.8 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| SH 6 Area Transit Center | Sat | 41.8 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| | Sun | 41.8 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |

| Description | Day | AM 1-Way | Layover | Cycle | Buses | Mid 1-Way | Layover | Cycle | Buses | PM 1-Way | Layover | Cycle | Buses | Eve 1-Way | Layover | Cycle | Buses | Nite 1-Way | Layover | Cycle | Buses | Daily Pk Bus | Rev.-Hr. | Rev.-Mi. | Annual Rev.-Hr. | Rev.-Mi. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 70.46 | 29.08 | 170.00 | 17 | 70.46 | 39.08 | 180.00 | 12 | 70.46 | 29.08 | 170.00 | 17 | 70.46 | 39.08 | 180.00 | 12 | 70.46 | 39.08 | 180.00 | 6 | 17 | 239 | 6,795 | 60,900 | 1,732,600 |
| RFTA Prop. Transit Ctr. | Sat | 70.46 | 39.08 | 180.00 | 12 | 70.46 | 39.08 | 180.00 | 12 | 70.46 | 39.08 | 180.00 | 12 | 70.46 | 39.08 | 180.00 | 12 | 70.46 | 39.08 | 180.00 | 6 | 12 | 192 | 5,303 | 10,000 | 275,800 |
| | Sun | 70.46 | 39.08 | 180.00 | 12 | 70.46 | 39.08 | 180.00 | 12 | 70.46 | 39.08 | 180.00 | 12 | 70.46 | 39.08 | 180.00 | 12 | 70.46 | 39.08 | 180.00 | 6 | 12 | 192 | 5,303 | 11,100 | 307,600 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***17*** | | | ***82,000*** | ***2,316,000*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***6,954*** | ***2,316,000*** |
| Rubey/Aspen to | M-F | 70.23 | 29.54 | 170.00 | 17 | 70.23 | 39.54 | 180.00 | 12 | 70.23 | 29.54 | 170.00 | 17 | 70.23 | 39.54 | 180.00 | 12 | 70.23 | 39.54 | 180.00 | 6 | 17 | 239 | 6,778 | 60,900 | 1,728,400 |
| 7th & Colorado (Downtown) | Sat | 70.23 | 39.54 | 180.00 | 12 | 70.23 | 39.54 | 180.00 | 12 | 70.23 | 39.54 | 180.00 | 12 | 70.23 | 39.54 | 180.00 | 12 | 70.23 | 39.54 | 180.00 | 6 | 12 | 192 | 5,290 | 10,000 | 275,100 |
| | Sun | 70.23 | 39.54 | 180.00 | 12 | 70.23 | 39.54 | 180.00 | 12 | 70.23 | 39.54 | 180.00 | 12 | 70.23 | 39.54 | 180.00 | 12 | 70.23 | 39.54 | 180.00 | 6 | 12 | 192 | 5,290 | 11,100 | 306,800 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***17*** | | | ***82,000*** | ***2,310,300*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***6,954*** | ***2,310,275*** |
| Rubey/Aspen to | M-F | 71.70 | 36.60 | 180.00 | 18 | 71.70 | 36.60 | 180.00 | 12 | 71.70 | 36.60 | 180.00 | 18 | 71.70 | 36.60 | 180.00 | 12 | 71.70 | 36.60 | 180.00 | 6 | 18 | 246 | 6,858 | 62,700 | 1,748,900 |
| SH 6 Area Transit Center | Sat | 71.70 | 36.60 | 180.00 | 12 | 71.70 | 36.60 | 180.00 | 12 | 71.70 | 36.60 | 180.00 | 12 | 71.70 | 36.60 | 180.00 | 12 | 71.70 | 36.60 | 180.00 | 6 | 12 | 192 | 5,353 | 10,000 | 278,400 |
| | Sun | 71.70 | 36.60 | 180.00 | 12 | 71.70 | 36.60 | 180.00 | 12 | 71.70 | 36.60 | 180.00 | 12 | 71.70 | 36.60 | 180.00 | 12 | 71.70 | 36.60 | 180.00 | 6 | 12 | 192 | 5,353 | 11,100 | 310,500 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***18*** | | | ***83,800*** | ***2,337,800*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***8,754*** | ***2,337,775*** |

## Grand Avenue – Mixed Traffic Alternatives (No Build)
## With West Glenwood Springs P&R Connection

| Description | Day | One-Way Distance | Frequencies AM | Mid | PM | Eve | Nite | Service Hours AM | Mid | PM | Eve | Nite | Total Hours | One-Way Trips AM | Mid | PM | Eve | Nite | Total Trips |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 43.2 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| West Glenwood P&R via | Sat | 43.2 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| RFTA Prop. Transit Ctr. | Sun | 43.2 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 43.2 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| West Glenwood P&R via | Sat | 43.2 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| 7th & Colorado (Downtown) | Sun | 43.2 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 44.3 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| West Glenwood P&R via | Sat | 44.3 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| SH 6 Area Transit Center | Sun | 44.3 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |

| Description | Day | AM 1-Way | Layover | Cycle | Buses | Mid 1-Way | Layover | Cycle | Buses | PM 1-Way | Layover | Cycle | Buses | Eve 1-Way | Layover | Cycle | Buses | Nite 1-Way | Layover | Cycle | Buses | Daily Pk Bus | Rev.-Hr. | Rev.-Mi. | Annual Rev.-Hr. | Rev.-Mi. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 75.41 | 39.18 | 190.00 | 19 | 75.41 | 44.18 | 195.00 | 13 | 75.41 | 39.18 | 190.00 | 19 | 75.41 | 44.18 | 195.00 | 13 | 75.41 | 59.18 | 210.00 | 7 | 19 | 265 | 7,083 | 67,600 | 1,806,200 |
| West Glenwood P&R via | Sat | 75.41 | 44.18 | 195.00 | 13 | 75.41 | 44.18 | 195.00 | 13 | 75.41 | 44.18 | 195.00 | 13 | 75.41 | 44.18 | 195.00 | 13 | 75.41 | 59.18 | 210.00 | 7 | 13 | 210 | 5,528 | 10,900 | 287,500 |
| RFTA Prop. Transit Ctr. | Sun | 75.41 | 44.18 | 195.00 | 13 | 75.41 | 44.18 | 195.00 | 13 | 75.41 | 44.18 | 195.00 | 13 | 75.41 | 44.18 | 195.00 | 13 | 75.41 | 59.18 | 210.00 | 7 | 13 | 210 | 5,528 | 12,200 | 320,600 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***19*** | | | ***113,800*** | ***3,022,400*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***38,754*** | ***3,022,400*** |
| Rubey/Aspen to | M-F | 75.63 | 38.74 | 190.00 | 19 | 75.63 | 43.74 | 195.00 | 13 | 75.63 | 38.74 | 190.00 | 19 | 75.63 | 43.74 | 195.00 | 13 | 75.63 | 58.74 | 210.00 | 7 | 19 | 265 | 7,088 | 67,600 | 1,807,500 |
| West Glenwood P&R via | Sat | 75.63 | 43.74 | 195.00 | 13 | 75.63 | 43.74 | 195.00 | 13 | 75.63 | 43.74 | 195.00 | 13 | 75.63 | 43.74 | 195.00 | 13 | 75.63 | 58.74 | 210.00 | 7 | 13 | 210 | 5,532 | 10,900 | 287,700 |
| 7th & Colorado (Downtown) | Sun | 75.63 | 43.74 | 195.00 | 13 | 75.63 | 43.74 | 195.00 | 13 | 75.63 | 43.74 | 195.00 | 13 | 75.63 | 43.74 | 195.00 | 13 | 75.63 | 58.74 | 210.00 | 7 | 13 | 210 | 5,532 | 12,200 | 320,900 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***19*** | | | ***113,800*** | ***3,024,700*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***38,754*** | ***3,024,700*** |
| Rubey/Aspen to | M-F | 78.39 | 33.22 | 190.00 | 19 | 78.39 | 38.22 | 195.00 | 13 | 78.39 | 33.22 | 190.00 | 19 | 78.39 | 38.22 | 195.00 | 13 | 78.39 | 53.22 | 210.00 | 7 | 19 | 265 | 7,262 | 67,600 | 1,851,800 |
| West Glenwood P&R via | Sat | 78.39 | 38.22 | 195.00 | 13 | 78.39 | 38.22 | 195.00 | 13 | 78.39 | 38.22 | 195.00 | 13 | 78.39 | 38.22 | 195.00 | 13 | 78.39 | 53.22 | 210.00 | 7 | 13 | 210 | 5,668 | 10,900 | 294,700 |
| SH 6 Area Transit Center | Sun | 78.39 | 38.22 | 195.00 | 13 | 78.39 | 38.22 | 195.00 | 13 | 78.39 | 38.22 | 195.00 | 13 | 78.39 | 38.22 | 195.00 | 13 | 78.39 | 53.22 | 210.00 | 7 | 13 | 210 | 5,668 | 12,200 | 328,700 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***19*** | | | ***113,800*** | ***3,098,600*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***38,754*** | ***3,098,600*** |

## Hybrid Corridor Alternatives
## Without West Glenwood Springs P&R Connection

| Description | Day | One-Way Distance | Frequencies AM | Mid | PM | Eve | Nite | Service Hours AM | Mid | PM | Eve | Nite | Total Hours | One-Way Trips AM | Mid | PM | Eve | Nite | Total Trips |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 41.4 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| RFTA Prop. Transit Ctr. | Sat | 41.4 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| | Sun | 41.4 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 41.8 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| 7th & Colorado (Downtown) | Sat | 41.8 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| | Sun | 41.8 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 42.4 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| SH 6 Area Transit Center | Sat | 42.4 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| | Sun | 42.4 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |

| Description | Day | AM 1-Way | Layover | Cycle | Buses | Mid 1-Way | Layover | Cycle | Buses | PM 1-Way | Layover | Cycle | Buses | Eve 1-Way | Layover | Cycle | Buses | Nite 1-Way | Layover | Cycle | Buses | Daily Pk Bus | Rev.-Hr. | Rev.-Mi. | Annual Rev.-Hr. | Rev.-Mi. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 68.84 | 32.32 | 170.00 | 17 | 68.84 | 42.32 | 180.00 | 12 | 68.84 | 32.32 | 170.00 | 17 | 68.84 | 42.32 | 180.00 | 12 | 68.84 | 42.32 | 180.00 | 6 | 17 | 239 | 6,788 | 60,900 | 1,730,900 |
| RFTA Prop. Transit Ctr. | Sat | 68.84 | 42.32 | 180.00 | 12 | 68.84 | 42.32 | 180.00 | 12 | 68.84 | 42.32 | 180.00 | 12 | 68.84 | 42.32 | 180.00 | 12 | 68.84 | 42.32 | 180.00 | 6 | 12 | 192 | 5,298 | 10,000 | 275,500 |
| | Sun | 68.84 | 42.32 | 180.00 | 12 | 68.84 | 42.32 | 180.00 | 12 | 68.84 | 42.32 | 180.00 | 12 | 68.84 | 42.32 | 180.00 | 12 | 68.84 | 42.32 | 180.00 | 6 | 12 | 192 | 5,298 | 11,100 | 307,300 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***17*** | | | ***82,000*** | ***2,313,700*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***6,954*** | ***2,313,700*** |
| Rubey/Aspen to | M-F | 70.25 | 29.50 | 170.00 | 17 | 70.25 | 39.50 | 180.00 | 12 | 70.25 | 29.50 | 170.00 | 17 | 70.25 | 39.50 | 180.00 | 12 | 70.25 | 39.50 | 180.00 | 6 | 17 | 239 | 6,849 | 60,900 | 1,746,400 |
| 7th & Colorado (Downtown) | Sat | 70.25 | 39.50 | 180.00 | 12 | 70.25 | 39.50 | 180.00 | 12 | 70.25 | 39.50 | 180.00 | 12 | 70.25 | 39.50 | 180.00 | 12 | 70.25 | 39.50 | 180.00 | 6 | 12 | 192 | 5,345 | 10,000 | 278,000 |
| | Sun | 70.25 | 39.50 | 180.00 | 12 | 70.25 | 39.50 | 180.00 | 12 | 70.25 | 39.50 | 180.00 | 12 | 70.25 | 39.50 | 180.00 | 12 | 70.25 | 39.50 | 180.00 | 6 | 12 | 192 | 5,345 | 11,100 | 310,000 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***17*** | | | ***82,000*** | ***2,334,400*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***6,954*** | ***2,334,375*** |
| Rubey/Aspen to | M-F | 72.70 | 34.60 | 180.00 | 18 | 72.70 | 34.60 | 180.00 | 12 | 72.70 | 34.60 | 180.00 | 18 | 72.70 | 34.60 | 180.00 | 12 | 72.70 | 34.60 | 180.00 | 6 | 18 | 246 | 6,949 | 62,700 | 1,771,900 |
| SH 6 Area Transit Center | Sat | 72.70 | 34.60 | 180.00 | 12 | 72.70 | 34.60 | 180.00 | 12 | 72.70 | 34.60 | 180.00 | 12 | 72.70 | 34.60 | 180.00 | 12 | 72.70 | 34.60 | 180.00 | 6 | 12 | 192 | 5,423 | 10,000 | 282,000 |
| | Sun | 72.70 | 34.60 | 180.00 | 12 | 72.70 | 34.60 | 180.00 | 12 | 72.70 | 34.60 | 180.00 | 12 | 72.70 | 34.60 | 180.00 | 12 | 72.70 | 34.60 | 180.00 | 6 | 12 | 192 | 5,423 | 11,100 | 314,600 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***18*** | | | ***83,800*** | ***2,368,500*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***8,754*** | ***2,368,475*** |

## Hybrid Corridor Alternatives
## With West Glenwood Springs P&R Connection

| Description | Day | One-Way Distance | Frequencies AM | Mid | PM | Eve | Nite | Service Hours AM | Mid | PM | Eve | Nite | Total Hours | One-Way Trips AM | Mid | PM | Eve | Nite | Total Trips |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 43.2 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| West Glenwood P&R via | Sat | 43.2 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| RFTA Prop. Transit Ctr. | Sun | 43.2 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 43.7 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| West Glenwood P&R via | Sat | 43.7 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| 7th & Colorado (Downtown) | Sun | 43.7 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| Rubey/Aspen to | M-F | 44.8 | 10 | 15 | 10 | 15 | 30 | 4.0 | 6.0 | 3.0 | 2.0 | 4.0 | 19.0 | 48 | 48 | 36 | 16 | 16 | 164 |
| West Glenwood P&R via | Sat | 44.8 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |
| SH 6 Area Transit Center | Sun | 44.8 | 15 | 15 | 15 | 15 | 30 | 3.0 | 6.0 | 3.0 | 2.0 | 4.0 | 18.0 | 24 | 48 | 24 | 16 | 16 | 128 |

| Description | Day | AM 1-Way | Layover | Cycle | Buses | Mid 1-Way | Layover | Cycle | Buses | PM 1-Way | Layover | Cycle | Buses | Eve 1-Way | Layover | Cycle | Buses | Nite 1-Way | Layover | Cycle | Buses | Daily Pk Bus | Rev.-Hr. | Rev.-Mi. | Annual Rev.-Hr. | Rev.-Mi. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rubey/Aspen to | M-F | 74.17 | 31.66 | 180.00 | 18 | 74.17 | 31.66 | 180.00 | 12 | 74.17 | 31.66 | 180.00 | 18 | 74.17 | 31.66 | 180.00 | 12 | 74.17 | 31.66 | 180.00 | 6 | 18 | 246 | 7,080 | 62,700 | 1,805,400 |
| West Glenwood P&R via | Sat | 74.17 | 31.66 | 180.00 | 12 | 74.17 | 31.66 | 180.00 | 12 | 74.17 | 31.66 | 180.00 | 12 | 74.17 | 31.66 | 180.00 | 12 | 74.17 | 31.66 | 180.00 | 6 | 12 | 192 | 5,526 | 10,000 | 287,300 |
| RFTA Prop. Transit Ctr. | Sun | 74.17 | 31.66 | 180.00 | 12 | 74.17 | 31.66 | 180.00 | 12 | 74.17 | 31.66 | 180.00 | 12 | 74.17 | 31.66 | 180.00 | 12 | 74.17 | 31.66 | 180.00 | 6 | 12 | 192 | 5,526 | 11,100 | 320,500 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***18*** | | | ***83,800*** | ***2,413,200*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***8,754*** | ***2,413,200*** |
| Rubey/Aspen to | M-F | 76.12 | 37.76 | 190.00 | 19 | 76.12 | 42.76 | 195.00 | 13 | 76.12 | 37.76 | 190.00 | 19 | 76.12 | 42.76 | 195.00 | 13 | 76.12 | 57.76 | 210.00 | 7 | 19 | 265 | 7,159 | 67,600 | 1,825,400 |
| West Glenwood P&R via | Sat | 76.12 | 42.76 | 195.00 | 13 | 76.12 | 42.76 | 195.00 | 13 | 76.12 | 42.76 | 195.00 | 13 | 76.12 | 42.76 | 195.00 | 13 | 76.12 | 57.76 | 210.00 | 7 | 13 | 210 | 5,587 | 10,900 | 290,500 |
| 7th & Colorado (Downtown) | Sun | 76.12 | 42.76 | 195.00 | 13 | 76.12 | 42.76 | 195.00 | 13 | 76.12 | 42.76 | 195.00 | 13 | 76.12 | 42.76 | 195.00 | 13 | 76.12 | 57.76 | 210.00 | 7 | 13 | 210 | 5,587 | 12,200 | 324,100 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***19*** | | | ***90,700*** | ***2,440,000*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***15,654*** | ***2,440,000*** |
| Rubey/Aspen to | M-F | 79.75 | 40.50 | 200.00 | 20 | 79.75 | 35.50 | 195.00 | 13 | 79.75 | 40.50 | 200.00 | 20 | 79.75 | 35.50 | 195.00 | 13 | 79.75 | 50.50 | 210.00 | 7 | 20 | 272 | 7,354 | 69,400 | 1,875,200 |
| West Glenwood P&R via | Sat | 79.75 | 35.50 | 195.00 | 13 | 79.75 | 35.50 | 195.00 | 13 | 79.75 | 35.50 | 195.00 | 13 | 79.75 | 35.50 | 195.00 | 13 | 79.75 | 50.50 | 210.00 | 7 | 13 | 210 | 5,740 | 10,900 | 298,500 |
| SH 6 Area Transit Center | Sun | 79.75 | 35.50 | 195.00 | 13 | 79.75 | 35.50 | 195.00 | 13 | 79.75 | 35.50 | 195.00 | 13 | 79.75 | 35.50 | 195.00 | 13 | 79.75 | 50.50 | 210.00 | 7 | 13 | 210 | 5,740 | 12,200 | 332,900 |
| ***Annual*** | | | | | | | | | | | | | | | | | | | | | | ***20*** | | | ***92,500*** | ***2,506,600*** |
| ***Increment to Baseline*** | | | | | | | | | | | | | | | | | | | | | | | | | ***17,454*** | ***2,506,600*** |

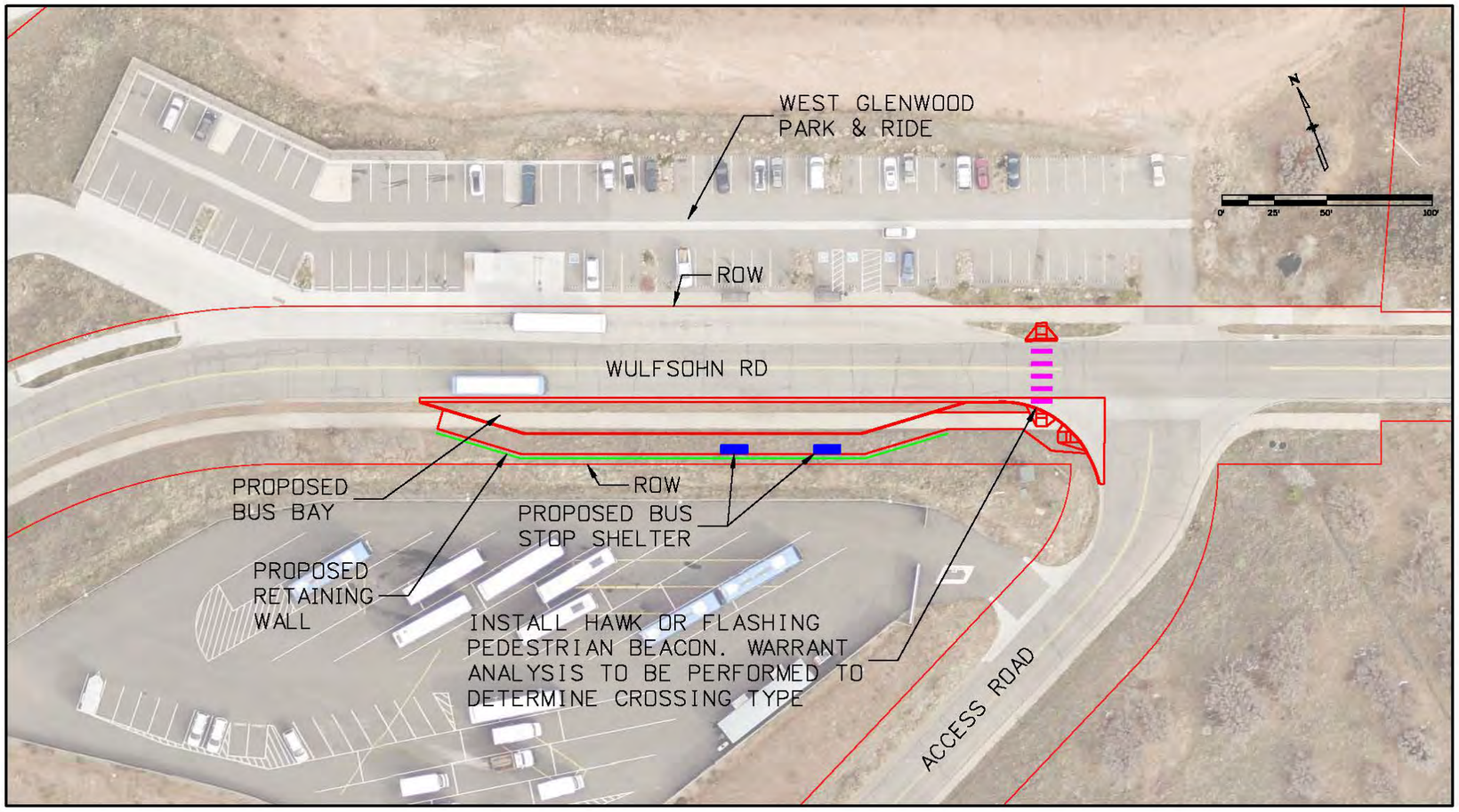
# Appendix C: Incremental O&M Costs (RFTA Cost Allocation Method)

| ROUTE (A) | TOTAL PSGRS (B) | ROUTE MILEAGE (C) | MARG. COST/MILE 1.83 (D) | ROUTE HOURS (E) | MARG. COST/HOUR 39.90 (F) | TOT MARG. COST (G) |
|---|---|---|---|---|---|---|
| RIO GRANDE - RFTA | | 19,932 | 36,569 | 3,454 | 137,808 | 174,377 |
| RIO GRANDE - 7TH/COLO | | 40,732 | 74,731 | 6,954 | 277,472 | 352,203 |
| RIO GRANDE - SH6 | | 74,732 | 137,111 | 8,754 | 349,299 | 486,410 |
| GRAND BRT - RFTA | | 29,532 | 54,183 | 6,954 | 277,472 | 331,654 |
| GRAND BRT - 7TH/COLO | | 23,832 | 43,725 | 6,954 | 277,472 | 321,196 |
| GRAND BRT - SH6 | | 51,332 | 94,179 | 8,754 | 349,299 | 443,478 |
| GRAND MIXED - RFTA | | 29,532 | 54,183 | 6,954 | 277,472 | 331,654 |
| GRAND MIXED - 7TH/COLO | | 23,832 | 43,725 | 6,954 | 277,472 | 321,196 |
| GRAND MIXED - SH6 | | 51,332 | 94,179 | 8,754 | 349,299 | 443,478 |
| HYBRID - RFTA | | 27,232 | 49,963 | 6,954 | 277,472 | 327,434 |
| HYBRID - 7TH/COLO | | 47,932 | 87,941 | 6,954 | 277,472 | 365,413 |
| HYBRID - SH6 | | 82,032 | 150,505 | 8,754 | 349,299 | 499,803 |
| RIO GRANDE - RFTA - WGS | | 119,432 | 219,123 | 8,754 | 349,299 | 568,422 |
| RIO GRANDE - 7TH/COLO - WGS | | 146,332 | 268,477 | 15,654 | 624,635 | 893,112 |
| RIO GRANDE - SH6 - WGS | | 212,832 | 390,485 | 15,654 | 624,635 | 1,015,120 |
| GRAND BRT - RFTA - WGS | | 127,832 | 234,534 | 8,754 | 349,299 | 583,833 |
| GRAND BRT - 7TH/COLO - WGS | | 129,632 | 237,837 | 15,654 | 624,635 | 862,472 |
| GRAND BRT - SH6 - WGS | | 188,732 | 346,268 | 15,654 | 624,635 | 970,904 |
| GRAND MIXED - RFTA - WGS | | 127,832 | 234,534 | 15,654 | 624,635 | 859,170 |
| GRAND MIXED - 7TH/COLO - WGS | | 129,632 | 237,837 | 15,654 | 624,635 | 862,472 |
| GRAND MIXED - SH6 - WGS | | 188,732 | 346,268 | 15,654 | 624,635 | 970,904 |
| HYBRID - RFTA - WGS | | 126,732 | 232,516 | 8,754 | 349,299 | 581,815 |
| HYBRID - 7TH/COLO - WGS | | 153,532 | 281,687 | 15,654 | 624,635 | 906,322 |
| HYBRID - SH6 - WGS | | 220,132 | 403,878 | 17,454 | 696,462 | 1,100,340 |

Estimates based on file provided by RFTA: *Cost Allocation Calculation – Audited History through Current Budget V4*

| | | EVALUATION CRITERIA | BASIC ALTERNATIVE BRT ALIGNMENTS AFTER LEVEL 1 SCREENING | | | REFINED ALTERNATIVE BRT ALIGNMENTS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | No Build: Existing Mixed Flow BRT service with 14th Street and 8th Street stops | Grand Avenue BAT Lanes 13th to 8th (with 2 stops); 24 hours | Rio Grande Corridor BRT Lanes 27th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave to North RGC at 14th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave 27th-14th and RGC 14th to 8th peak hours only | Grand Ave: BAT lanes, both directions, peak hours only (7:30 - 8:30 AM and 4:30-5:30 PM) | Grand Ave: BAT lane peak direction only (AM SB / PM NB); peak hours only | Rio Grande Corridor: 2 exclusive lanes peak hours only; minimal construction option |
| **Transit Performance** | *1* | **BRT Travel Time:** One-way transit travel time of the BRT from 27th Street PnR to Downtown based on posted speeds and # of stops. | 8.46 | 7.99 | 5.83 | 6.84 | 6.84 | 7.99 | 7.99 | 5.83 |
| | *2* | **BRT Travel Time:** One-way transit travel time of the BRT from 27th Street PnR to West Glenwood PnR based on posted speeds and # of stops. | 13.41 | 12.92 | 11.17 | 12.17 | 12.17 | 12.92 | 12.92 | 11.17 |
| | *3* | **Improve BRT Travel Time Reliability (27th Street to Downtown):** percentage of alignment in dedicated lanes | 1.6 miles; 0% dedicated | 1.6 miles; 0.4 miles dedicated (25%) | 1.7 miles; all dedicated (100%) | 1.8 miles; 0.6 miles dedicated (33%) | 1.8 miles; 0.6 miles dedicated (33%) | 1.6 miles; 0.4 miles dedicated (25%) | 1.6 miles; 0.4 miles dedicated (25%) | 1.7 miles; all dedicated (100%) |
| **Transit Service Hours** | *4* | **BRT Annual Service Hours:** Calculated BRT service hours per alternative. (27th Street PnR to Downtown) (incremental service hours compared to RFTA Baseline. Baseline assumes summer schedule adopted year-round and 40% of BRT trips extending to West Glenwood PnR.) | 6,954 | 6,954 | 3,454 | 5,204 | 5,204 | 6,954 | 6,954 | 3,454 |
| **Transit Service Hours** | *5* | **BRT Annual Service Hours:** Calculated BRT service hours per alternative. (27th Street PnR to West Glenwood PnR) (incremental service hours compared to RFTA Baseline. Baseline assumes summer schedule adopted year-round and 40% of BRT trips extending to West Glenwood PnR.) | 15,654 | 8,754 | 4,348 | 6,551 | 6,551 | 8,754 | 8,754 | 4,348 |
| **Costs** | *6* | **Incremental Annual O&M Cost:** BRT Estimated operations and maintenance costs (27th Street PnR to Downtown) (estimated using RFTA Cost Allocation model; does not include BRT-specific features such as additional maintenance at BRT stations and ROW maintenance likely required for Rio Grande alternative) | $321,000 | $321,000 | $174,000 | $327,000 | $327,000 | $321,000 | $321,000 | $174,000 |

| | | EVALUATION CRITERIA | BASIC ALTERNATIVE BRT ALIGNMENTS AFTER LEVEL 1 SCREENING | | | REFINED ALTERNATIVE BRT ALIGNMENTS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | No Build: Existing Mixed Flow BRT service with 14th Street and 8th Street stops | Grand Avenue BAT Lanes 13th to 8th (with 2 stops); 24 hours | Rio Grande Corridor BRT Lanes 27th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave to North RGC at 14th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave 27th-14th and RGC 14th to 8th peak hours only | Grand Ave: BAT lanes, both directions, peak hours only (7:30 - 8:30 AM and 4:30-5:30 PM) | Grand Ave: BAT lane peak direction only (AM SB / PM NB); peak hours only | Rio Grande Corridor: 2 exclusive lanes peak hours only; minimal construction option |
| | *7* | **Incremental Annual O&M Cost:** BRT Estimated operations and maintenance costs (27th Street PnR to West Glenwood PnR) (estimated using RFTA Cost Allocation model; does not include BRT-specific features such as additional maintenance at BRT stations and ROW maintenance likely required for Rio Grande alternative) | $1,128,813 | $862,000 | $568,000 | $582,000 | $582,000 | $862,000 | $862,000 | $568,000 |
| | *8* | **Capital Cost:** Conceptual level capital cost (separate memo) | 0 | $3.5M | $18M-$31M | $12M | $12M | $3.5M | $3.5M | $18M-$31M |
| **Automobile Impacts** | *9* | **Auto Travel Time Improvements on Grand Ave:** Through traffic improvements due to Transit Signal Priority and reduced parallel parking conflicts | No improvement | Slight improvement in traffic movement | No improvement | No improvement | No improvement | Minimal improvement in traffic movement | Minimal improvement in traffic movement | No improvement |
| | *10* | **Ped/Bike Ability to Cross BRT Alignment** | 15 | 15 | 4 | 14 | 14 | 15 | 15 | 4 |
| | *11* | **Multimodal-BRT conflict points:** number of locations where cyclists and pedestrians cross BRT route | 15 | 15 | 4 | 14 | 14 | 15 | 15 | 4 |
| | *12* | **Buffer from BRT traffic:** physical separation from BRT route (average buffer width) | 4.3' | 2' | 4.1' | 2.3' | 2.3' | 2' | 2' | 4.1' |
| **Preliminary Business Parking Displacements** | *13* | **Number of on-street parking spaces displaced** | 0 | 140 spaces between 8th and 13th | 0 | 0 | 0 | 140 spaces between 8th and 13th during peak hours | 70 spaces between 8th and 13th during peak hours | 0 |
| **Impacts on Community Amenities (trail)** | *14* | **Impacts to Rio Grande Multimodal Trail (experience of user, noise, visual)** | No Impacts | No Impacts | High Impacts | Moderate Impacts | Moderate Impacts | No Impacts | No Impacts | High Impacts |
| **Construction Challenges/Duration** | *15* | **Construction Impacts (including maintenance of traffic and trail impacts)/years for construction** | No Impacts | No Impacts | High Impacts | Moderate Impacts | Moderate Impacts | No Impacts | No Impacts | High Impacts |
| **Ridership (see separate memo)** | *16* | **Expected BRT Ridership** (General estimate based on stations and access to Downtown as well as BRT travel time and reliability) | 1 | 2 | 3 | 3 | 3 | 2 | 2 | 2 |
| | | **TOTAL SCORE** | 30 | 34 | 38 | 34 | 34 | 34 | 35 | 37 |
| | | | No Build | Grand Ave | Rio Grande | Rio Hybrid | Rio Hybrid Peak | Grand 2 lanes peak | Grand 1 lane peak | Rio Peak |
| | | **Scoring: Red=1, Yellow=2, Green=3 with higher total scores representing best alternatives** | | | | | | | | |




p307/07/21 8:14:16 AM pw:\\ANVAD1PWNT01.parsons.com:Colorado State\Documents\Colorado Ctr-ww\RFTA MOVE Busway\Design\CAD\Roadway\Sheets\WR_RD_SHEET01.dgn

| | | | | | |
|---|---|---|---|---|---|
| Print Date: 5/12/2021 | | Sheet Revisions | | | As Constructed | WEST GLENWOOD IN-LINE STATION IMPROVEMENTS | Project No./Code |
| File Name: WR_RD_SHEET01.dgn | | Date: | Comments | Init. | No Revisions: | | |
| Horiz. Scale: 1:50 Vert. Scale: | | | | | Revised: | Designer: | Structure Numbers |
| PARSONS 1776 Lincoln Suite 600 Denver, CO 80203 (303) 863-7900 | | | | | Void: | Detailer: | |
| | | | | | | Subset: | Subset Sheets: of |
| | | | | | | | Sheet Number 01 |


# Appendix D – Multimodal Improvements Memo

# GLENWOOD SPRINGS MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY (MOVE)

## Pedestrian and Bicycle Improvements Plan

April 2021


PARSONS alta GLENWOOD SPRINGS COLORADO RFTA

A well-planned transit system takes into account how passengers can travel to and from transit by all modes. Making the first- and last-mile trips easy, safe, and comfortable for people walking and bicycling will likely enhance the success of the RFTA transit system through Glenwood Springs.

There are a number of recommended improvements that can be made to the walking and cycling network in Glenwood Springs, ranging in complexity, cost, and their dependency on a future BRT alignment. These recommendations are outlined below in three groupings or phases: Phase 1, which can be implemented easily, at low cost, and independent of any specific transit improvements; Phase 2, which are still independent of transit or BRT but more complex and require planning and funds; and, Phase 3, which are dependent on a selected BRT alignment.

### Phase 1 Improvements: easy & quick implementation – Estimated improvement costs $10k-$50k

There are many improvements that can be made to the existing walking and bicycling network in Glenwood Springs to enhance the comfort and connectivity of the existing active transportation network. These improvements will enhance and facilitate walking and biking to, from, and between neighborhoods, existing transit stops, and local destinations.

- Maintenance of existing sidewalks and trails
  Proper and timely maintenance, year-round, of the existing sidewalks, multi-use trails, and on-street bicycle routes is the key to encouraging active transportation in Glenwood Springs and traveling to and from transit via foot or bike and ensuring that the network is safe and comfortable. Priority should be given to routes connecting to transit and key destinations. This includes timely repair of surface damage; prompt removal of snow, ice, and debris; keeping sidewalks and trails clear of obstructions, including temporary construction signs and barricades when not in use; providing safe and clearly marked detour routes when construction does close bike and pedestrian routes; and maintaining pavement markings, wayfinding signs, and pedestrian ramps. This attention to maintenance should also be applied to any new or proposed multimodal improvements, and regular maintenance should be accounted for in annual budgeting.
- Network Wayfinding
  Glenwood Springs has an existing wayfinding program along various pedestrian and bicycle routes. However, increasing the frequency and consistency of wayfinding signs and pavement markings will help people walking and biking feel informed and confident navigating to and from transit and destinations in between. Including information to major transit stops, long-term bicycle storage, key local destinations, and estimated travel time/distance will provide people with the information they're looking for in a consistent delivery they'll see and be able to understand. Improved wayfinding may also be used to communicate intended facilities and travel patterns meant for people walking and biking, i.e., if a cyclist should use the road or travel on a shared trail.
- Added Bicycle Parking and Storage

Providing safe, secure bicycle parking and storage at major transit stations and minor transit stops is important. The existing transit station at 27th Street currently experiences issues with the parking lot filling up and deterring people from traveling to the station. Increasing bicycle storage, both long- and short-term, will lessen the need for driving to the station if cyclists feel their bikes will be secure while traveling to and from their transit destinations. Additionally, adding more bike racks at minor stops and downtown will encourage people to travel by bike for their last-mile trips. Installing bike storage near lighting and shelter increases a sense of safety and may encourage use at night and year-round.


FIGURE 1. EXAMPLE OF BICYCLE STORAGE AT TABLE MESA PARK-N-RIDE, BOULDER

- Existing Network Connections

  In the existing bicycle and pedestrian network, there are a handful of opportunities to improve connections between facilities and destinations. The Rio Grande Trail between downtown and 27th Street is a popular commuter and recreational route for people living and working in Glenwood Springs. However, getting on/off the trail at 8th Street, 12th Street/Riverside Drive, and 14th Street/Coach Miller Drive is not ideal for cyclists and pedestrians. These locations have confusing wayfinding, rail tracks to cross over, uneven grades, uneven pavement, or gravel and other debris that make these connections uncomfortable and potentially unsafe. Adding wayfinding signage and improving accessibility at these locations would enhance the existing network and improve connections so people riding or walking feel confident accessing and traveling along the Rio Grande Trail. The connection between the Rio Grande Trail, the Meadows Trail, and 8th Street/Downtown is a critical connection between two widely used trails and transit and business services in Downtown Glenwood Springs. However, continuity between the trails, or how to access downtown from either of the trails, is not intuitive or clearly indicated. This is a specific location where increased wayfinding and design improvements would greatly add comfort and safety to the pedestrian and cyclist experience along these corridors.

  Glenwood Springs currently has two north-south on-street bicycle routes with bike lanes: Pitkin and Blake Avenues. However, there are no east-west bicycle routes to connect those cycling elsewhere in town to these routes or to the paved trail system. Improvements should be

considered on key east-west streets to improve bicycle connections and safety. On-street parking downtown is highly utilized and has frequent turnover, which presents conflict if bike lanes were added to these streets in the downtown core. However, Shared Lane Markings ("Sharrows") could be placed on streets downtown to communicate to both cyclists and vehicles that cyclists are welcome on the roadway and should take the lane. Enhancing the Sharrows with green backgrounds or by enlarging the pavement marking and adding supplemental dashed markings to indicate intended positioning. Adding bicycle detection, bike boxes, and/or bicycle push buttons at intersections would shorten the wait time if a cyclist approaches an intersection without other vehicles.

FIGURE 2: "SUPER SHARROW" PAVEMENT MARKING IN ASPEN, CO INDICATES PRIORITY & POSITIONING FOR BICYCLISTS ON SHARED ROADWAY.

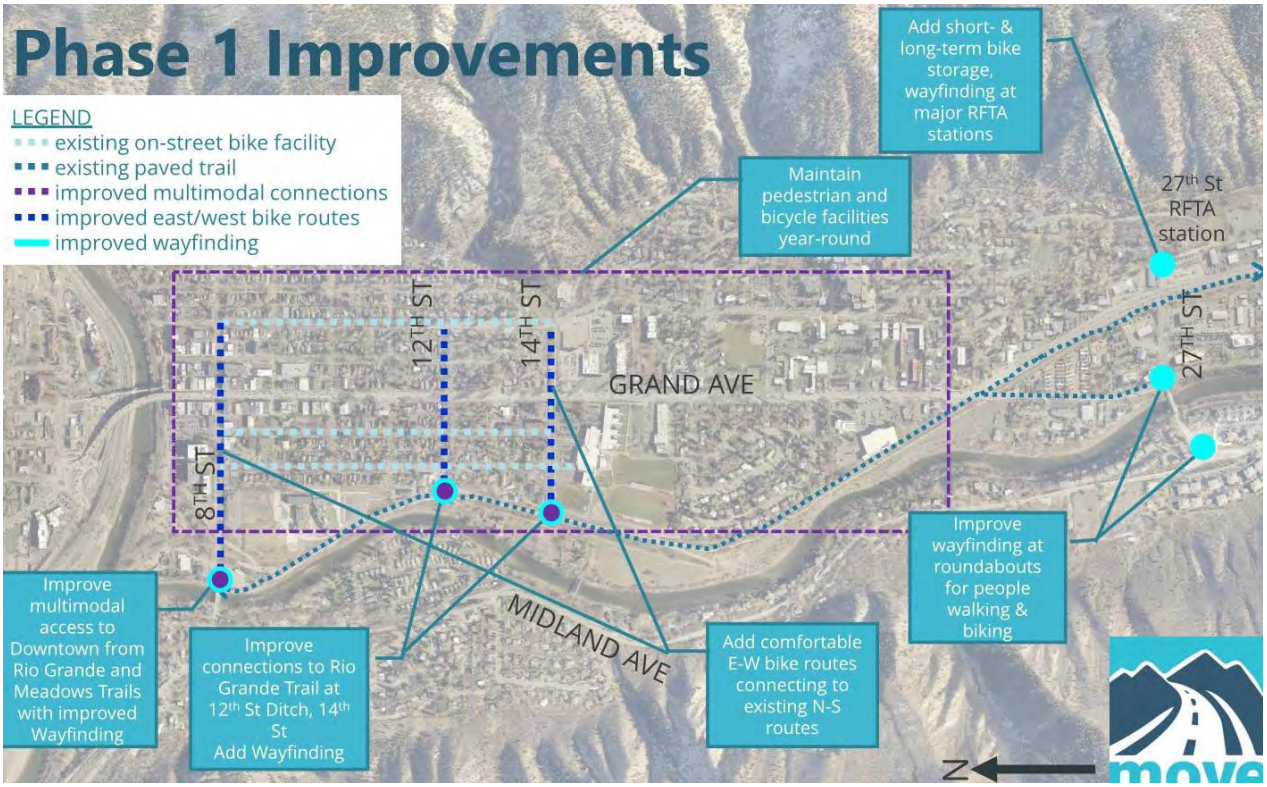



FIGURE 3. PROPOSED PHASE 1 IMPROVEMENTS

## Phase 2 Improvements: independent of BRT alignment – Estimated improvement costs $50k-$500k

- 27th Street improvements

  27th Street serves as an important multimodal connection to the 27th Street RFTA station, the Rio Grande Trail, the Atkinson Trail, and many neighborhoods off of Midland Avenue and Grand Avenue. Improvements have been made in recent years to improve intersection and trail safety, with the new bike/pedestrian bridge and roundabout at 27th Street and S Grand Avenue. However, since 27th Street is such a critical link for all modes, there are additional recommended improvements to make traveling as safe and comfortable as possible for people walking and biking. These improvements will greatly improve the multimodal network and experience in Glenwood Springs and connections to the existing transit services, independent of a future BRT service.

  Currently, there are 6-foot sidewalks on the north and south sides of 27th Street. The sidewalk on the south side, however, does not connect fully between S Grand Avenue and S Glen Avenue/SH 82; it ends west of the Roaring Fork School District parking lot. Both sidewalks should span the full length of 27th Street; the north sidewalk, as it connects to the bike/pedestrian bridge, should be widened to a 10-foot trail to accommodate both bicycles and pedestrians. Additionally, wayfinding signage should be installed directing trail users to the 27th Street RFTA station, the Rio Grande Trail, and the Atkinson Trail. Signage should identify the north sidewalk as the preferred facility for cyclists, and ramps at all intersections on the north side should be wide enough to accommodate a comfortable bicycle movement, at least 8 feet wide and 10 feet deep to allow for easy bike maneuvering to cross. Signs at intersections should warn vehicles to look for both pedestrians and cyclists crossing.

  Additionally, the existing roundabout at 27th Street and Midland Avenue has approach grades that allow vehicles to travel comfortably through the roundabout at speeds close to the posted speed limit of 25 mph. While the design of this roundabout maintains vehicle flow, it is unsafe for pedestrians and cyclists crossing the legs of the roundabout, especially with the absence of RRFB crossing signs and lights like the ones installed at the new roundabout at 27th Street and S Grand Avenue. It is recommended to improve the grades of the roundabout approaches to slow vehicles as they approach and travel through the roundabout. This will likely improve visibility of and yielding to pedestrians and cyclists wishing to cross at the roundabout. Adding flashing beacons to the crossing signs will add to the benefit of improved grades. With the addition of the new multi-use sidepath along S Midland Avenue, wayfinding should be added ahead of and around the roundabout to guide pedestrians and cyclists as they maneuver around the roundabout to connect to the Atkinson or Rio Grande Trails, the 27th Street RFTA Station, or to continue along Midland Avenue. Since many cyclists will approaching the roundabout from the new off-street sidepath on S Midland, adequate path width and maneuverability, in addition to

wayfinding, should be provided for comfortable and safe travel around the roundabout. Access between the roundabout at Midland and the 27th Street bike/ped bridge should be improved, by widening the existing sidewalk to a 10' shared-use sidepath, squaring up the intersection at Woodberry Drive and aligning the ramps for safe and visible crossings, and continuing increased wayfinding to guide pedestrians and cyclists along this route.

- Off-Street Bicycle Facilities

  Glenwood Springs has many great paved trails for both cyclists and pedestrians to use. There are also many sidewalks in Glenwood Springs that are either designated as bicycle routes, or – due to a lack of comfortable and designated on-street bicycle facilities – many cyclists choose to ride on rather than the road to avoid conflicts with vehicles. If an existing sidewalk is to be used for both cyclists and pedestrians, either due to traffic volumes, grades, alignment, or otherwise, the sidewalk should be upgraded to a 10-foot sidepath (8-foot minimum) and designed and designated as such, following trail or sidepath design standards as laid out in the *FHWA Small Town and Rural Multimodal Networks Guide* and *AASHTO Guide for the Development of Bicycle Facilities*. Wayfinding and signs should be included to communicate the trail as designated for both bikes and pedestrians and proper etiquette (yield to peds, announce to pass, etc.). Road signs should communicate to vehicles to look for both pedestrians and cyclists when turning. Ramps on these facilities should be constructed to accommodate comfortable movement by cyclists. Improvements to these routes should especially be prioritized where connecting directly to transit stations and key destinations, for example the north sidewalk on 27th Street, the sidewalk on Midland Avenue, and the sidewalk on 8th Street connecting the Rio Grande Trail to Downtown Glenwood Springs.

- Pedestrian Network

  Gaps in the sidewalk network make walking to/from transit and destinations uncomfortable and unsafe for pedestrians, and near impossible for people with mobility or vision impairments. These gaps should be identified and filled to ensure full connectivity for people walking. Existing sidewalks should be evaluated for maintenance needs, including out-of-date accessible ramps, cracks, uneven grades, etc.

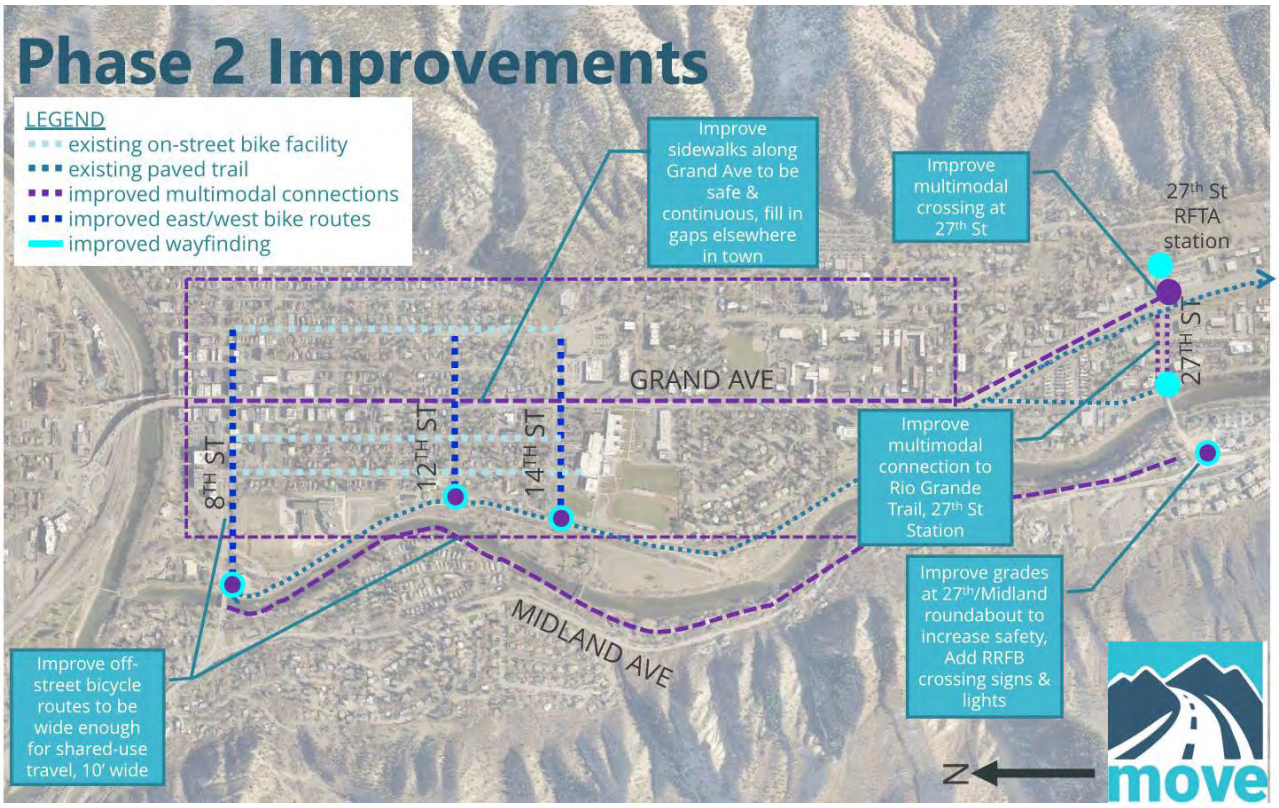



FIGURE 4. PROPOSED PHASE 2 IMPROVEMENTS

### Phase 3 Improvements: Coincident with chosen BRT alignment – Estimated improvement costs $500k+

#### Grand Ave BRT alignment

Walking or biking along or crossing Grand Avenue under current conditions is not a very comfortable experience. Traffic volumes on Grand Avenue are high, and projected to increase; between 27th Street and 14th Street, those walking or biking have to cross many large commercial parking lots – some spanning full blocks; sidewalk width and condition varies between 27th Street and Downtown; and separation from traffic by a paved or landscaped buffer or parked cars is minimal or nonexistent. There is no dedicated on-street bicycle facility on Grand Avenue, and as it is a 5-lane high-volume corridor, cycling on the road is not ideal. Of those who do bike along Grand Ave, most choose to ride on the sidewalks which are not wide enough to be comfortable shared bike-ped facilities.

The addition of a BRT alignment along Grand Avenue will provide opportunities for people to take the bus close to desired destinations or origins and travel easily by foot or bike to/from the bus. However, there are concerns with this BRT alignment related to bike and pedestrian comfort and safety that should be considered.

Currently, bus stops and bus travel along Grand Avenue are adjacent to the sidewalk, except from 13th Avenue to 8th Avenue, where a parking lane creates separation. Removing the parking lane and replacing it with a Bus Only lane will eliminate this buffer from bus traffic for an additional 5-6 blocks. To minimize conflicts and increase pedestrian comfort, a buffer should be added between the sidewalk and the roadway, where possible, in the form of a landscaped tree zone or paved furnishing zone. This buffer may be used for bus stops and provides a place for snow storage in the winter, in addition to creating a better and safer pedestrian space. This buffer should be a minimum of 3' wide. Sidewalks should be a minimum of 6' wide; if the sidewalk is intended to serve as a multi-use facility for pedestrians and cyclists, it should be a minimum of 8' wide and designated and maintained as a trail facility.

To accommodate and encourage people traveling by bike to and from bus service, it will be critical to evaluate bicycle routes that parallel the BRT alignment and navigate to bus stops and destinations. As mentioned in the Phase 1 recommendations, additional routes in Glenwood Springs should be evaluated to create a connected network of comfortable bicycle routes. These routes, along with a complete and consistent wayfinding program, will help those biking to and from BRT service find their way to bus stops, destinations, and to connecting bike routes to continue their first- and last-mile trips. Bike storage should be provided at all transit stops, with secure racks and adequate lighting.

### Rio Grande Corridor BRT alignment

The Rio Grande Trail (RGT) is a highly utilized and valued recreational and commuter corridor for people walking and biking in Glenwood Springs. For this reason, the addition of a BRT alignment along the Rio Grande Corridor must take into great consideration the comfort and safety of those who use the trail.

One of the greatest qualities of the RGT is its separation from vehicular traffic. As much as possible, physical and perceived separation between the trail and BRT alignment should be maintained. Where space allows within the corridor, the trail or BRT alignment should be laid out to provide the greatest amount of horizontal separation. Where right-of-way is constrained, creating a sense of separation with landscaping, fencing, and/or by raising the BRT alignment slightly above the trail corridor will help trail users feel their facility is still separate from the BRT route. These elements of separation will also mitigate added noise from the BRT service from disrupting the natural river trail environment.

Because of its separation from vehicular traffic, the RGT has very few conflicts with traffic and intersections. The addition of a BRT route to the corridor will change this. Safety and visibility of RGT trail users must be a top priority, especially at proposed BRT stops along the corridor and locations where buses enter and exit the trail corridor. The four locations where pedestrians and bicyclists need to cross the Rio Grande BRT corridor should also be carefully considered and planned to allow for maximum visibility; crossing signage, striping, and signals where appropriate; and accessibility. Right of way should be clearly communicated to instruct trail users and bus drivers who has priority at these locations. These crossing locations should be limited, for safety, but also placed at logical locations where trail users will likely be accessing the trail or BRT service – such as at the Glenwood Springs Elementary School, 13th Street (including the driveway), Stubler Drive (behind the Glenwood Springs High School athletic field, and near the vacant Safeway building. Wayfinding along this portion of the Rio Grande Corridor will be critical to communicate proper crossing maneuvers, BRT bus stop and destination information, and traveling from BRT to destinations in Glenwood Springs.

Opportunities to enhance the RGT experience should be explored, to mitigate any disruptions caused by the addition of BRT along the trail. In addition to separation from the bus service, adding amenities such as a soft-surface running trail alongside the paved trail, bike maintenance stations, shade structures, etc. will help maintain the quality of the RGT and encourage its continued use as a recreational corridor after bus service is added.

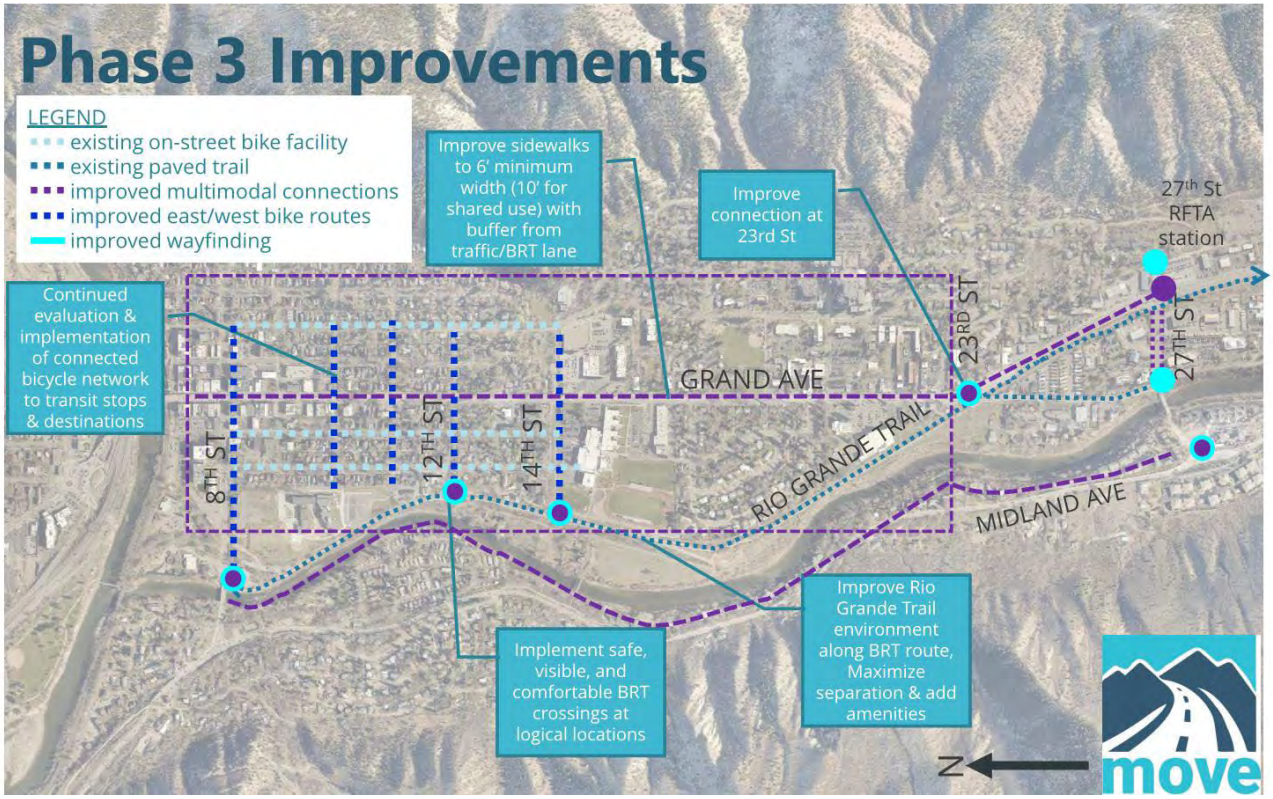



FIGURE 5. PROPOSED PHASE 3 IMPROVEMENTS

### Total Multimodal Improvements Cost, Phase 1-3: $1M+

Many of the recommended improvements described are more holistic rather than singular projects. To create a complete bicycle and pedestrian network, connected to the transit system for comfortable first- and last-mile trips, thoughtful planning and phasing will need to be done to implement the projects. Some project costs would be one-time, like the recommended 27th Street improvements, for example. Other costs would be more spread out and recurring, such as sidewalk and trail maintenance, wayfinding program maintenance, etc. More thorough considerations should be done for more accurate project costs, but all together, the combined cost for all three phases is likely over $1 million. Federal, state, and other potential funding sources are detailed below.

## Project Funding Sources

Identifying and securing future funding is essential to realizing the multimodal projects recommended to accompany transit and future BRT service through Glenwood Springs. Table 1 identifies potential funding sources from federal agencies, state agencies and private foundation sources to support the implementation and long-term maintenance of these recommended improvements. The table makes an initial determination of which of the three phases would be eligible for specific funding source based on current information. When funding is actually pursued, continued viability of the funding source and eligibility requirements will need to be verified by the lead agency or applicant(s). A brief description is provided for each funding source with a link to additional on-line resources below Table 1.

### Table 1: Funding Sources by Phase

| *Funding Sources* | *Agency* | *Phase 1 Improvements* | *Phase 2 Improvements* | *Phase 3 Improvements* |
|---|---|---|---|---|
| BUILD Grant | USDOT | ✓ | ✓ | ✓ |
| Highway Safety Improvement Program | CDOT | ✓ | ✓ | ✓ |
| Recreational Trails Program | FHWA | | | ✓ |
| Transportation Alternatives | CDOT | ✓ | ✓ | ✓ |
| Recreation Economy for Rural Communities | EPA | | | ✓ |
| Safe Routes to School | CDOT | ✓ | ✓ | ✓ |
| Connect Initiative | GOCO | | | ✓ |
| Non-Motorized Trails Grant | CPW | | ✓ | ✓ |
| Conservation Trust Fund | DOLA | | | ✓ |
| Statewide Multimodal Options Funds | CDOT | ✓ | ✓ | ✓ |
| Boettcher Foundation | | | ✓ | ✓ |
| Doppelt Family Trail Development Fund | | | | ✓ |
| Activating Places and Spaces Together | | | ✓ | ✓ |
| The National Fish and Wildlife Foundation Acres for America Grant Program | | | | ✓ |
| The International Mountain Bicycling Association Trail Accelerator Grants | | | | ✓ |
| People for Bikes Community Grant | | | ✓ | ✓ |
| AETNA Cultivating Health Community Grant | | ✓ | ✓ | ✓ |

## Federal Funding Sources

## Better Utilization Investments to Leverage Development (BUILD) Discretionary Grant

The BUILD grant, formerly known as Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grants Program, allows sponsors at the state and local levels to obtain funding for multi-modal, multi-jurisdictional projects that are more difficult to support through traditional Department of Transportation (DOT) funding programs. Recreational trails are an eligible project category among other active transportation and recreation categories. Projects are evaluated based on merit criteria that include safety, economic competitiveness, quality of life, environmental sustainability, state of good repair, innovation, and partnership. Grants applications are accepted annually in May. (A, B, C)

*Funds are programmed by the U.S. Department of Transportation.*

https://www.transportation. gov/BUILDgrants

## Highway Safety Improvement Program (HSIP)

The HSIP provides $2.4 billion nationally for projects and programs that help communities achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways, and walkways. Infrastructure and non-infrastructure projects are eligible for HSIP funds. Pedestrian and bicycle safety improvements, enforcement activities, traffic calming projects, and crossing treatments for active transportation users in school zones are all examples of eligible projects**.** In order to be eligible for the HSIP, all states must have developed a Strategic Highway Safety Plan (SHSP) that identifies projects or strategies to reduce identified safety problems, and evaluate this SHSP on a regular basis. All HSIP projects must be consistent with the state's Strategic Highway Safety Plan (SHSP) of achieving zero deaths on Colorado roads. Funds are awarded on an annual basis from the Federal Highway Administration and the Colorado Department of Transportation. (A, B)

*Funds are programmed by the Colorado Department of Transportation.*
https://www.codot.gov/library/traffic/hsip

## Recreational Trails Program (RTP)

The RTP provides funds to the States to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. The RTP is an assistance program of the Department of Transportation's Federal Highway Administration. Federal transportation funds can be used for any purposes that benefit recreation including hiking, bicycling, in-line skating, equestrian use, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving, or using other off-road motorized vehicles. These funds are available for both paved and unpaved trails, but may not be used to improve roads for general passenger vehicle use or to provide shoulders or sidewalks along roads. Eligible projects must support the goals of the State Comprehensive Outdoor Recreation Plan and the Strategic Plan of the State Trails Program. (B, C)

*Funds are programmed by Colorado Parks and Wildlife*

https://www.fhwa.dot.gov/environment/recreational_trails/

## Transportation Alternatives (TA)

The Fixing America's Surface Transportation (FAST) Act recently replaced the former Transportation Alternatives Program (TAP) with set-aside funds under the Surface Transportation Block Grant Program (STBG). For administrative purposes, the Federal Highway Administration (FHWA) refers to these funds as TA Set-Aside. Projects eligible for TA Set-Aside funds include on-and off-road active transportation facilities, improvements to non-driver access to transit, recreational trails, and safe routes to school.

*Funds are programmed by the Colorado Department of Transportation.*

https://www.codot.gov/programs/planning/documents/grants/tap/TAP-guidelines.pdf

## Recreation Economy for Rural Communities

The Environmental Protection Agency's Recreation Economy for Rural Communities program is a planning assistance program to help communities develop strategies and an action plan to revitalize their downtowns through outdoor recreation. Outdoor recreation activities have become increasingly popular across the United States and tend to aid with the conservation of natural lands and forests. This program enables communities to strategically invest in outdoor recreational opportunities that create jobs, foster environmentally friendly community development, revitalize downtowns, and offer new opportunities for people to connect with the natural world. Eligible projects include:

- Ensuring local residents, including young people, have connections and opportunities related to nearby outdoor assets to foster community pride, good stewardship, and local economic benefits.
- Developing or expanding trail networks to attract overnight visitors and new businesses and foster use by local residents.
- Developing in-town amenities, such as broadband service; housing; or shops, restaurants, or breweries, to serve residents and attract new visitors and residents with an interest in nearby outdoor assets.
- Marketing Main Street as a gateway to nearby natural lands to capture and amplify outdoor recreation dollars.
- Developing a community consensus on the management of outdoor assets to reduce potential conflicts and ensure sustainable use of resources. (B, C)

*Funds are programmed by the Environmental Protection Agency.*

https://www.epa.gov/smartgrowth/recreation-economy-rural-communities-2019-application

## Safe Routes to School (SRTS)

The SRTS program provides a source of funding for education, enforcement, evaluations, and infrastructure improvements (e.g. sidewalks, bike parking, etc.) that encourage elementary and middle

school students to walk or bike to school. The Colorado Department of Transportation (CDOT) administers these programs using Federal Surface Transportation Block Grant Set-Aside funds and HSIP Program funds. Eligible entities include local governments, regional transportation authorities, transit authorities, natural resource or public land agencies, and school districts. Funds are available for SRTS programs that benefit elementary and middle school children in Kindergarten through 8th grade. Eligible projects must be within a 2-mile radius of the identified schools. (A, B, C)

*Funds are programmed by the Colorado Department of Transportation*

https://www.codot.gov/inf_fy19srts_instructionsandguidelines.pdf

## Colorado State Agencies

### Colorado Connect Initiative

GOCO's Connect Initiative is a five-year strategy aimed at increasing access to outdoor experiences through the construction of non-motorized trails of local, regional, and statewide significance. This program aims to increase access to the outdoors in Colorado communities by filling trail gaps, building new trails, and providing better walkable and bikeable access for youth and families. Applicants may request up to $2 million for trail construction projects. Eligible grantees include municipalities, counties, and Title 32 special park and recreation districts that receive Conservation Trust Fund monies from the Department of Local Affairs. Projects must be primarily for trail construction; however, land acquisitions may be considered with staff approval. There is no requirement for surface type. Projects that present an exciting opportunity to leverage partnerships and outside funding, connect important trail segments, and are shovel-ready may score more competitively. (B, C, D)

*Funds are programmed by Great Outdoors Colorado.*

https://goco.org/grants/apply/connect-initiative-grants

### Non-Motorized Trails Grant

Colorado Parks and Wildlife (CPW) funds several types of trail grants including large recreational trail grants, small recreational trail grants, trails planning, and trail support grants. This program is a partnership among Colorado Parks and Wildlife; Great Outdoors Colorado; the Colorado Lottery; the federal Recreational Trails Program; and the Land and Water Conservation Fund. To be eligible for the Non-Motorized Trails Grant, projects must include new trail or trailhead construction; maintenance, re-route, or reconstruction of existing trails; enhancements or upgrades to existing trailheads; trail and trailhead system planning; building and enhancing support organizations; or acquiring land or easements. Projects are required to have at least a 30% match, and all properties on which the funded projects take place must be under control of the grantee. (B, C)

*Funds are programmed by Colorado Parks and Wildlife.*

https://cpw.state.co.us/aboutus/Pages/TrailsGrantsNM.aspx

### Conservation Trust Fund (CTF)

Colorado's Department of Local Affairs distributes Conservation Trust Funding to local governments, including counties, cities, towns, and Title 32 special districts that provide park and recreation services in their plans. These funds are the portion of Colorado Lottery proceeds constitutionally mandated to be distributed directly to local governments, based on population, for acquiring and maintaining parks, open space, and recreational facilities. CTF funds are distributed on a quarterly basis and can be used for numerous conservation and recreational uses, including developing parks and open space and preserving floodplains, greenbelts, and scenic areas for any scientific, historic, scenic, or recreational use. (B, C)

*Funds are programmed by the Colorado Department of Local Affairs.*

https://cdola.colorado.gov/conservation-trust-fund-ctf

### Colorado Multimodal Options Fund

The Colorado Multimodal Options Fund (MMOF) seeks to fund multimodal transportation projects and operations throughout the state because, in addition to the general benefits that it provides to all Coloradans, a complete and integrated multimodal transportation system:

(a) Benefits seniors by making aging in place more feasible for them;
(b) Benefits residents of rural areas by providing them with flexible public transportation services;
(c) Provides enhanced mobility for persons with disabilities; and
(d) Provides safe routes to schools for children.

Eligible projects are selected to receive local Multimodal Options Funds (MMOF) by the Regional Planning Commissions (RPC) of the 15 Transportation Planning Regions (TPRs). (A, B, C)

*Funds are programmed by the Colorado Department of Transportation*

https://www.codot.gov/programs/planning/grants/mmof-local

## Foundations, Corporations, and Associations

### Boettcher Foundation

The Boettcher Foundation champions excellence and invests in high-potential organizations that are developing new ideas that can drive Colorado forward. They support organizations and initiatives that strive to innovate, impact and improve the quality of life for Coloradans. They prioritize capital building or community infrastructure projects for Colorado through "a lens of rural depth." Letters of Inquiry can be submitted any time of the year. (A, B, C, D)

*Funds are programmed by the Boettcher Foundation.*

www.boettcherfoundation.org

### Doppelt Family Trail Development Fund

Launched in 2015 by the Rails-to-Trails Conservancy (RTC), the Doppelt Family Trail Development Fund supports organizations and local governments that are implementing projects to build and improve multi-use trails. RTC awards approximately $85,000 per year to several qualifying projects through a competitive process. While applications for projects on rail-trails and rails-with-trails will be given preference, rail-trail designation is not a requirement. However, the trail must serve or plan to serve multiple user types, such as bicycling, walking, and hiking, and be considered a trail, greenway, multi-use trail, or shared use path. In addition, the program must advance trail development, help establish corridor connections, or improve current conditions on the trail. Grant applications are accepted annually in January. (B, C, D)

*Funds are programmed by the Rails-to-Trails Conservancy.*

https://www.railstotrails.org/ our-work/grants/doppelt/

### Activating Places and Spaces Together

This funding opportunity, administered by the Colorado Health Foundation, supports locally-defined, place-specific efforts to get people outdoors and actively engaged in their neighborhoods – together. The goal of the funding opportunity is to help activate existing infrastructure in public places that contributes to a community's overall health through residential usage and positive experiences. Grant funds support the costs associated with project planning and implementation, and provides technical assistance for community engagement, communications, and marketing, for up to one year. Eligible projects must reflect the Foundation's cornerstones of serving low-income Coloradan residents who have historically had less power or privilege and doing everything with the intent of creating health equity. (A)

*Funds are programmed by the Colorado Health Foundation.*

https://www.coloradohealth.org/funding-opportunities/funding-opportunity-activating-places-and-spaces-together

### The National Fish and Wildlife Foundation Acres for America Grant Program

The Acres for America grant program is a joint public-private partnership between the National Fish and Wildlife Foundation and Walmart. This program works to conserve fish and wildlife habitat, protect public lands, provide access to outdoor recreation, and ensure the future of local economies that depend on outdoor recreation, forestry, or ranching. Eligible grantees include non-profit 501c organizations, state government agencies, local governments, municipal governments, Indian tribes, and education institutions. (B, C, D)

*Funds are programmed by the National Fish and Wildlife Foundation.*

https://www.nfwf.org/programs/acres-america

### International Mountain Bicycling Association (IMBA) Trail Accelerator Grant

IMBA provides Trail Accelerator Grants to help grow the quantity and quality of mountain bike trail communities. These grants provide a jump-start to communities that have the interest and political support to develop trail systems, but need assistance to get projects up and running. A Trail Accelerator grant offers awardees professional trail planning and consultation services to launch their trail development efforts, which can often leverage additional investment from local, regional, and national partners. (C)

*Funds are programmed by the International Mountain Bicycling Association.*

https://www.imba.com/trails-for-all/trail-accelerator-grants

### People for Bikes Community Grant

The PeopleForBikes Community Grant Program supports bicycle infrastructure projects and targeted advocacy initiatives that make it easier and safer for people of all ages and abilities to ride. This program accepts grant applications from non-profit organizations that focus on bicycling, active transportation, or community development; city or county agencies or departments; and state or federal agencies working locally. Requests must support a specific project or program (i.e. grant funds cannot be used for general operating costs), such as:

- Bike paths, lanes, trails, and bridges
- Mountain bike facilities
- Bike parks and pump tracks
- BMX facilities
- End-of-trip facilities such as bike racks, bike parking, bike repair stations and bike storage

PeopleForBikes funds up to $10,000 for engineering and design work, construction costs including materials, labor, and equipment rental, and reasonable volunteer support costs. This program does not require a specific percentage match, but does look at leverage and funding partnerships very carefully. (A, B, C)

*Funds are programmed by People for Bikes.*

https://peopleforbikes.org/grant-guidelines/

### Cultivating Healthy Communities (CHC) Grant Program

The CHC grant program is geared specifically towards nonprofit organizations that work with underserved, low-income, and minority populations in the contiguous United States. CHC seeks to

catalyze measurable improvements in community health outcomes by funding projects that address the social determinants of health and participants' physical, mental, and social well-being. Eligible projects must work to accomplish the following goals:

- Improve the walkability, bikeability, and use of public spaces in a community
- Increase collaboration between local law enforcement and community members to proactively address immediate public safety issues
- Decrease exposure to air and water contaminants
- Increase healthy behaviors, such as exercise and eating healthy goods
- Increase access to healthy foods through the development of new or enhanced retail options (A, B, C)

*Funds are programmed by AETNA.*

https://www.aetna-foundation.org/grants-partnerships/grants/cultivating-healthy-communities-rfp.html


# Appendix E – Parking Report

FEHR PEERS

# Memorandum

Date: April 30, 2021

To: Emily Kushto, Parsons
David Johnson, RFTA
Terri Partch, City of Glenwood Springs

From: Patrick Picard and Charlie Alexander, Fehr & Peers

**Subject: MOVE Grand Avenue – Parking Analysis & Findings UPDATED**

*DN19-0647*

# Contents

# Overview and Purpose

The City of Glenwood Springs and the Roaring Fork Transportation Authority (RFTA) are jointly leading the Multimodal Options for a Vibrant Economy (MOVE) Grand Avenue project to explore alternatives for extending the existing VelociRFTA bus rapid transit (BRT) into downtown Glenwood Springs and to the West Glenwood Park & Ride. An important aspect of this project includes evaluation and recommendations for improving parking and curb space management both downtown and at the RFTA Park & Rides.

This memo provides a summary of existing on-street parking and off-street public parking conditions in downtown Glenwood Springs and at the two RFTA Park & Rides in Glenwood Springs. This memo also summarizes existing and future parking and curb space opportunities and recommendations. Future conditions recommendations consider alternatives explored for extending BRT downtown. Parking and curb space management strategies in downtown Glenwood

Springs focus on existing supply, demand, access, and management issues from the relatively dense mix of uses downtown, as well as potential new considerations as part of extending BRT downtown. Recommendations are also included to improve access to the BRT under existing and future conditions.

Determining existing on-street parking conditions occurred in two main stages: taking inventory of curb space and off-street parking supply and then collecting parking utilization data. Existing curb space restrictions and parking management strategies (time limits, etc.) were used to classify the curb space. Ownership and user restrictions were used to classify the off-street lots. Parking utilization was observed and documented during multiple study periods in the winter of 2020. Due to the COVID-19 pandemic, other data sources were used to estimate parking demand in the summer.

# Background

## Previous Plans

Below is a summary of previously completed parking and curb space plans relevant to the study area:

- **Downtown Parking Study (2013)** – The last detailed parking study in downtown Glenwood Springs was conducted in 2013. This study was completed prior to the construction of the City Parking Garage (at 9th Street/Cooper Avenue) and the Grand Avenue Bridge project. The study area included the downtown core north of 11th Street and south of 5th Street and utilization was measured on a single Thursday in August at 9 AM and 1 PM. The study concluded that while some blocks downtown have parking shortages at times, parking was always available within a block or two and with the construction of the City Parking Garage, no new parking would be needed in the short-term. The study also concluded that paid parking was not necessary in the short-term, but should be considered long-term as parking demand increased.
- **RFTA 27th Street Pedestrian Crossing (2019)** – This analysis evaluated pedestrian crossings options across SH 82 to connect the Rio Grande Trail with the 27th Street South Glenwood Station. This study also included an analysis of potential parcels and designs to expand the Park & Ride. The analysis assumed a need for between 65 and 95 additional parking spacing and provided opportunities, constraints, design considerations, and potential design concepts for several parcels.

## Parking Enforcement

On February 28, 2020 a meeting was held with members of the project consultant team, City of Glenwood Springs staff, and parking enforcement officers in Glenwood Springs. The purpose of the meeting was to discuss current parking enforcement practices, as well as to identify existing parking and curb spaces issues, challenges, and potential solutions for downtown Glenwood Springs. Current enforcement practices and key challenges identified from that meeting are summarized here:

- Parking regulations downtown are enforced by a single enforcement officer on foot who patrols the area bound by 7th Street, 10th Street, Blake Avenue and Pitkin Avenue between 9 AM and 6 PM Monday through Friday, with occasional patrols on 6th Street.
- Chalk is used to track time parked and paper tickets are issued when needed.
- The City is currently exploring license plate readers and paid parking as a more effective and efficient management and enforcement tool.
- The most common violations are for time restrictions, vehicles illegally parked in the alley, and vehicles parked in safety zones (marked by yellow paint on the curb for driveways, sight lines, crosswalks, fire hydrants, etc.).
- Most parking violations result in a $20 ticket.
- Officers issue about 15-20 tickets per day in the winter and 30-40 tickets per day in the summer.
- Violations generate about $40,000 per year but cost the City about $50,000 per year to enforce.
- The maximum a car is allowed to park on street in unrestricted spaces is 72 hours, which is enforced in public off-street lots and in the unrestricted parking spaces.
- The 7th & Colorado lot is signed for 4-hour parking, but is not currently enforced as negotiations that allow some downtown residents and County employees to park longer are currently ongoing.

Some potential ideas for improving the parking management and enforcement downtown that were discussed include:

- Weekend enforcement
- Paid parking
- More frequent striping of curb/adopting standard practice for color designations
- Use of license plate readers for enforcement
- Development a truck delivery plan
- Increase fines

## Residential Parking Permit Program

The City of Glenwood Springs has a residential parking permit program that allows residents downtown to park in 2-hour time restricted parking spaces for up to 72 hours. The exceptions include 7th Street and the 700 Block of Cooper Avenue. The program is managed by the police department. Residents that live between 7th Street, 10th Street, Blake Avenue, and Pitkin Avenue can apply for up to two permits per unit, good for the length of their lease or up to one year before needing renewal. Demand for the program sometimes exceeds the allowed number of permits per unit.

## 27th Street Park & Ride

The RFTA-owned 27th Street Park & Ride is known to be at capacity on most days and parking occupancy data was collected in the Park & Ride lot and some surrounding locations where transit users are suspected to be parking. Conversations with RFTA staff also revealed additional background information regarding regulations and other existing issues currently observed at the station that were considered as part of recommendations for parking management. Anecdotal background information provided by RFTA staff includes the following:

- The 27th Street Park & Ride is observed to fill up early and it is suspected that many people who would ride the bus from Glenwood Springs end up driving due to the lack of sufficient parking.
- While RFTA signs the Park & Ride for the exclusive use of RFTA transit riders and Rio Grande Trail users, and prohibits storing vehicles or using lots for ridesharing, RFTA has virtually no parking enforcement program and few funds are directed at parking enforcement.
- The residents of the surrounding neighborhood sometimes store extra vehicles in the 27th Street Park & Ride.
- Epic Mountain Express, which provides shuttle service to Denver and other mountain communities, will sometimes direct its customers to park in the 27th Street Park & Ride.
- Other businesses also use the parking lot as a ride share lot.
- Without adequate parking management, the planned residential development adjacent to the 27th Street Park & Ride could increase use of the lot by non-transit users.
- Based on anecdotal observations, most other Park & Ride lots along SH 82 generally fill to capacity during the summer and winter season with the exception of the back parking lot at the Basalt Park & Ride.

- The Carbondale Park & Ride acts as a trail head for the Rio Grande trail and is also anecdotally observed to fill to capacity almost every morning during the winter season and almost to capacity during the summer season.

# Methodology

## Study Area

Parking and curb space inventory and utilization were collected for two areas in Glenwood Springs as part of this analysis. These are mapped in the Parking Inventory maps attached to this memo and are described here:

- **Downtown Glenwood Springs.** The study area includes on-street parking in downtown Glenwood Springs bound by 6th Street, 14th Street, Pitkin Avenue, and Blake Avenue. It also includes on-street parking along 8th Street between Pitkin Avenue and Defiance Avenue as well as 7th Street between Blake Avenue and Bennett Avenue.

  Six off-street public parking facilities downtown were also included:
  - City Parking Garage (at 9th Street/Cooper Avenue)
  - Cooper Avenue lot (on Cooper Avenue between 8th Street and 9th Street)
  - 7th & Colorado lot (at the SE corner of 7th Street/Colorado Avenue)
  - 7th Street lot (on 7th Street at the Confluence)
  - Colorado Mountain College Garage (at 8th Street/Cooper Avenue) – public parking on evenings after 6 PM and weekends only
  - Garfield County lot (at the SW corner of 7th Street/Colorado Avenue) – public parking on evenings after 6 PM and weekends only

- **RFTA Park & Rides.** There are two Park & Rides in Glenwood Springs that are used to access bus service. These were both included in the analysis as described below:
  - *27th Street South Glenwood Station* – The RFTA-owned Park & Ride located at the southwest corner of 27th Street and Blake Avenue in south Glenwood Springs is the primary access point to the VelociRFTA BRT. In addition to the Park & Ride, parking supply and utilization data was collected at two off-street parking lots and two on-street street segments nearby that may experience spillover parking due to limited capacity at the Park & Ride:
    - On-street: Blake Avenue between 26th Street and 27th Street
    - On-street: 26th Street between Blake Avenue and Palmer Avenue
    - Off-street: Walmart north parking lot
    - Off-street: Walmart employee parking lot (which is also the designated RFTA overflow lot)

- *West Glenwood Park & Ride* – This Park & Ride is located near the intersection of Wulfsohn Road and Midland Avenue and provides access to RFTA Local Valley buses to/from Aspen, select BRT runs, the Hogback route (to/from Rifle/Silt/New Castle) and the Bustang West Line (operated by CDOT between Grand Junction and Denver).

## Curb Space and Parking Lot Inventory

Curb space is defined as any place along the curb designated for parking or loading activity. Existing parking inventory maps of the study area and Google Maps Street View provided the basis for understanding curb space designations in the study area. Data collected from these methods was field verified to determine a classification for each segment of curb space and off-street parking facility in the study area. Field verification was completed on February 28, 2020 and the classification of each parking space, including the presence of ADA accessible parking spots, was cataloged according to the February 28, 2020 observations.

Each curb face was drawn by segment in GIS using aerial imagery as a guide. Segments were coded according to each curb space classification and separated when curb space designation changed, or is broken within a block by an alley or intersection. The number of available parking or loading spaces per segment was determined by dividing the segment length by 20 feet and rounding down. Twenty feet is a standard on-street parking space length in most urban contexts.

Off-street parking lots and garages were demarcated by a polygon on the maps and the number of parking spaces was inventoried based on the number of striped parking spaces.

### *Parking Classification*

Curb space in the study area is classified into 12 different management types, which are further differentiated by three different physical parking arrangements: parallel, diagonal, and perpendicular.

The 12 curb space classifications observed in the study area and mapped in the Parking Inventory Maps include:

- 15-Minute Parking
- 30-Minute Parking 9AM – 6PM
- 2-Hour Parking 9 AM – 6 PM
- 2-Hour Parking 8 AM – 10 PM
- 2-Hour Parking
- Bus Stop

- Disability Reserved Parking
- 10-Minute Loading
- Loading Only
- Pick Up & Drop Off Only
- No Parking
- Unrestricted Parking

Off-street parking facilities included in the analysis were categorized into four different types:

- Public
- Private
- Transit
- Shared

The following are a few high-level observations regarding the classification maps:

## Downtown Glenwood Springs

- Two-hour parking is generally limited to the area bound by 6th Street, 10th Street, Pitkin Avenue, and Blake Avenue.
- The only location where two-hour time restrictions are from 8 AM – 10 PM occur on the north side of 7th Street between Cooper Avenue and Grand Avenue; all other locations are signed for 9 AM – 6 PM or have no time designation.
- The 700 block of Cooper Avenue includes a center parking lane, a portion of which is signed for parking and a portion of which is signed for truck loading. No parking is allowed in the center lane from 12 AM to 7 AM for snow removal. Note: the center parking lane was removed in the summer of 2020.
- Of the 54 spaces at the 7th Street lot, 18 are reserved for County vehicles, leaving 36 spaces available for public use.
- The actual capacity of some of the off-street lots during winter observations was less than the capacity during the summer as several spaces were being used for snow storage (see **Table 1**)

## Park & Rides

- About 17 of 94 spaces in the West Glenwood Park & Ride are signed as Bustang-Only parking.
- The designated overflow lot for the 27th Street Park & Ride is about 1,500 feet south of the station (over a quarter mile away) and to access the overflow lot from the Park & Ride

requires drivers to detour onto SH 82 because there is a gate blocking vehicle movement along Blake Avenue south of the 27th Street South Glenwood Station.

- The Walmart North parking lot is not a designated parking facility for transit users, but was included in the analysis as it is only about 400 feet from the 27th Street South Glenwood Station.

**Table** 1 includes a summary of observations and restrictions for the ten off-street parking lots included in the analysis.

*Table 1. Off-Street Parking Lots Included in Analysis*

| Name | Type | Parking Spaces | Time Restrictions | Other Observations |
|---|---|---|---|---|
| **City Parking Garage** | Public | 148 Total:<br>• 5 Disability | 72-hours | Time restrictions not signed |
| **Cooper Avenue Lot** | Public | 42 Total:<br>• 4 Disability | 72-hours | Time restrictions not signed |
| **7th & Colorado Lot** | Public | 62 Total:<br>• 3 Disability<br>• 3 Snow Storage | 4-hours (some exceptions) | |
| **7th Street Lot** | Public | 54 Total:<br>• 2 Snow Storage<br>• 18 County-Only | 24-hours (exceptions for Amtrak patrons) | 18 spaces signed for County-only parking |
| **CMC Garage** | Shared | 65 Total:<br>• 3 Disability | Evenings after 6 PM & Weekends Only | |
| **County Lot** | Shared | 39 Total | Evenings after 6 PM & Weekends Only | |
| **West Glenwood Park & Ride** | Transit | 94 Total:<br>• 4 Disability<br>• 2 Snow Storage<br>• 17 Bustang-Only | Not specified | 17 spaces signed for Bustang-only parking |
| **27th Street Park & Ride - South Glenwood Station** | Transit | 50 Total:<br>• 2 Disability | Not specified | |
| **North Walmart Lot** | Private | 203 Total:<br>• 4 Disability<br>• 27 Snow Storage | No overnight parking | |
| **Walmart Employee Lot/ RFTA Overflow Lot** | Shared | 113 Total:<br>• 10 Snow Storage | Not specified | 6-10 Spaces used for taxi parking |

## 700 Block Cooper Avenue

The City recently restriped the parking arrangement on Cooper Avenue between 7th Street and 8th Street by converting diagonal parking that was previously on the east side to parallel parking and adding a center lane for parking and truck loading. The motivation for the change was to create a

designated space for truck loading in the heart of the restaurant area of downtown. Because of concern over the loss of on-street parking, part of the center lane allows for parking, but is a challenge to properly sign and enforce. The loading zone has helped mitigate trucks from blocking travel lanes, but there is often more trucks loading than designated space and trucks sometimes load when parking demand is highest (such as the late afternoon), resulting in additional challenges.


*Center parking/loading lane in the 700 Block of Cooper Avenue*

## Parking Utilization Study Periods

Parking utilization data was collected by driving each roadway and parking lot in the study area with a dashboard video camera during the study hours. Data collected from the field observation video recordings was entered into the GIS inventory.

Parking utilization data was collected to capture typical peak demand at the RFTA Park & Rides and downtown Glenwood Springs at different times of day and time of year. The study periods were identified based on conversations with staff at RFTA and the City of Glenwood Springs as well as based on BRT ridership data, traffic counts, and Glenwood Springs' sales and lodging tax data to understand peak demand. Data shows that activity in Glenwood Springs is highest in the summer months, peaking in July, and BRT ridership is highest in the winter and summer, with slightly higher ridership in the winter months.

Conversations with the project team revealed that the 27th Street Park & Ride does not have enough parking capacity to meet weekday demand in the winter and typically fills up sometime between 6 AM and 8 AM. Additionally parking demand in downtown Glenwood Springs is driven by a

combination of residents, employees, and visitors. Resident demand is likely highest in the evening and overnight, employee parking demand is highest during weekday business hours, and visitor demand is likely highest during the day and evening, peaking on Friday night and weekends.

Conversations with the parking enforcement officers also revealed anecdotally that parking demand in downtown Glenwood Springs tends to be highest between 9 AM and 2 PM due to business activity and the lunch scene and between 4 PM and 7 PM due to the bar and restaurant scene. In addition, Tuesday and Friday are typically the highest demand days. Tuesday demand is from jury duty and Friday is likely from an influx of visitors and high restaurant activity.

Two rounds of parking utilization data will be collected as part of this study, one in the winter and one in the summer. The winter data collection period is intended to capture peak demand for RFTA bus service and the summer collection period is intended to capture peak demand for parking in downtown Glenwood Springs. The original plan was to collect data at all locations in the winter and summer. However, do due the significant change in travel patterns and parking demand caused by the COVID-19 pandemic, other data sources were used to estimate historic parking demand in the summer of 2019. These are explained in detail in the Summer Parking Data Findings section at the end of this memo.

Two days were selected to capture peak demand in the winter:

- A mid-week weekday (Tuesday, Wednesday, or Thursday) - to capture peak commuting patterns both downtown and at the Park & Rides.
- A Friday - to capture peak afternoon and evening demand for restaurants, hotels, and other visitor/recreational activity in downtown Glenwood Springs.

Winter parking utilization data was collected on Thursday, February 27, 2020 and Friday, February 28, 2020. On each of these days, four study periods were collected to measure parking demand at different times of the day, plus an additional study period just at the 27$^{th}$ Street Park & Ride (and surrounding areas):

- 5 AM – To isolate residential parking demand.
- 7 AM – Around the 27$^{th}$ Street South Glenwood Station only to measure parking demand during the morning commute.
- 9 AM – To capture demand after the morning commute.
- 4 PM – To capture overlap between employee and visitor/recreational demand downtown.
- 7 PM – To capture evening demand associated with restaurants and other recreational activities.

## Parking Occupancy

Parking occupancy for each parking curb space segment or off-street lot was determined by comparing the number of observed parked vehicles to the number of available spaces. In the accompanying maps, parking occupancy is shown as a percentage range for each study period, symbolized by different colors. Parking occupancy are organized into the following percentage ranges, each with different implications for managing demand and planning future BRT alternatives:

- 0% - 20% - Parking is very underutilized compared to capacity
- 21% - 40% - Parking is underutilized compared to capacity
- 41% - 60% - Parking is moderately used, but with plenty of excess capacity
- 61% - 85% - Parking is well used, but with enough capacity that unoccupied spaces can still be found with relative ease
- 85% - 99% - Parking is near capacity and it may be difficult to find available parking
- 100%+ - Parking utilization is at (or may be) exceeding capacity

In some instances, a segment or lot may have more vehicles parked than the total capacity indicates is possible. This would be due to closely spaced cars parked on-street or cars parked illegally. The following methodologies should also be noted when reviewing the parking occupancy maps and data:

- Parking occupancy is measured per block face unless there is a change in the parking restrictions mid-block (for example, where part of the block includes unrestricted parking and part includes time-restricted parking).
- Disability parking occupancy was collected but was excluded from the denominator when calculating the percentages shown in the maps. For example, if a parking lot has 60 spaces and three are designated as disability parking, the occupancy rate was measured as the total occupied spaces excluding disability parking divided by 57 total spaces. This methodology better reflects general parking occupancy rates as disability parking demand is based on a different set of parameters and legal requirements.
- Parking spaces that were being used for snow storage during the winter collection period were excluded from the denominator when calculating the percentages shown in the maps.
- Parking occupancy data for the County lot and CMC Garage was only collected during the 7 PM time period as these lots were not available for public use during the other time periods.

## Bicycle Parking at Park & Rides

An additional analysis conducted in the winter included taking an inventory of bicycle parking available at the two RFTA Park & Rides in Glenwood Springs and observing occupancy during the same study periods as the motor vehicle parking.

## Summer Data Methodology

Parking occupancy data was originally to be collected on the same days of the week and during the same times in the summer as it was collected in the winter along with a Saturday count when visitor activity in Glenwood Springs is high. Due to the impact to normal travel patterns caused by the COVID-19 pandemic in the summer of 2020, summer parking demand was instead estimated using alternative data sources. These include Big Data provided by StreetLight as well as satellite imagery data from the summer of 2019. The methodology for collecting, analyzing, and applying summer data, as well as findings and implications to recommendations are summarized here.

Two data sources were used to estimate public parking demand in Downtown Glenwood Springs during the summer of 2019:

- Big Data provided by StreetLight
- Satellite imagery

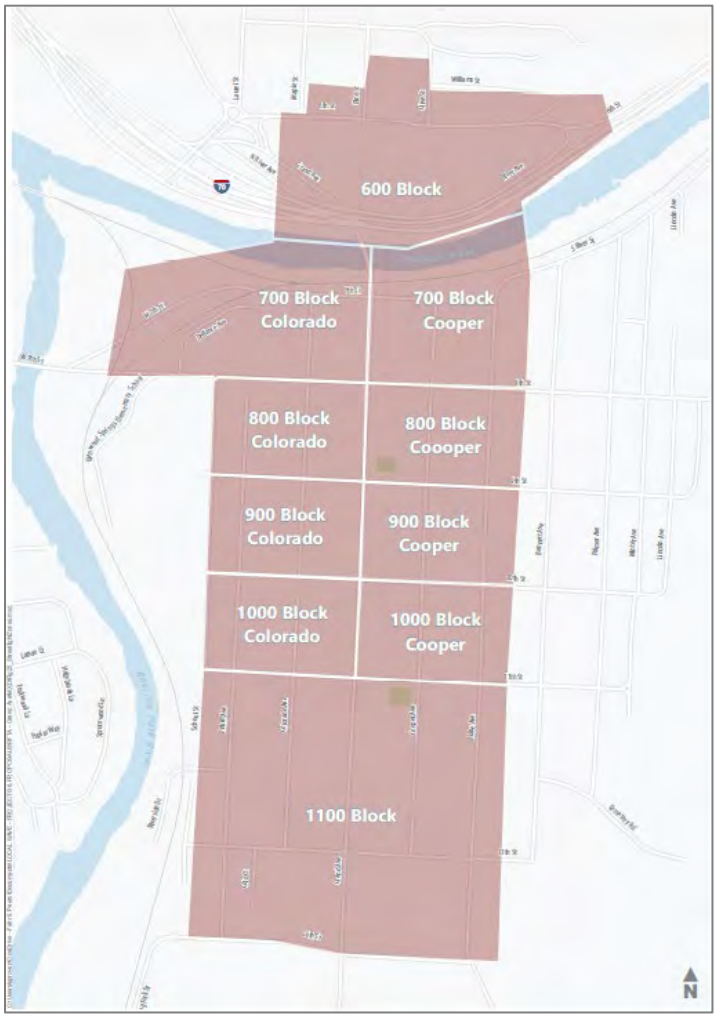
Summer parking data was only collected for the downtown area and not the two RFTA Park & Rides in Glenwood Springs. This is because more reliable data was collected at the two Park & Rides in the winter when transit parking demand is highest, while demand for parking in downtown is higher in the summer. Thus, summer data was prioritized in the downtown area. It should also be noted that while the methodology summarized here provided useful information to inform parking strategies downtown, the data is not as robust as the winter data when field observations could be accurately conducted on a block-by-block basis during multiple times of day.

### StreetLight Data

StreetLight Data is a "Big Data" provider that uses anonymous cellphone data to compile person trip counts between predefined geographic zones. Trips are recorded by mobile device tracking technology in smartphones which is enabled when a user has a location-based services application turned on. A trip is considered to end when the cellphone is stationary for at least five consecutive minutes. Trips by all modes of transportation are recorded, including people driving, riding in a car, walking, bicycling, riding a bus, or traveling by other means.

In terms of sample size, StreetLight data resources includes about 33% of all mobile devices in the United States. Given the variability of when a device's location-based application is engaged, on a given day StreetLight captures between 1% and 5% of all trips. However, data is compiled by hour of day and day of the week and averaged over the course of at least a calendar month to ensure the sample size is large enough to have a high confidence level. Lastly, trip data provided by StreetLight represents an estimate of total trips, based on the sample size captured.

*Figure 1. StreetLight Data Zones Downtown*




To estimate parking demand in the summer of 2019, the downtown area of Glenwood Springs was divided into ten zones as mapped in **Figure 1**. Activity-based data was collected from StreetLight in July 2019 and February 2020. Activity-based data represents the number of trips that begin or end in a given location and is a good proxy for estimating parking demand. July data was used as a representative of peak parking demand in the summer as July consistently records the highest

lodging tax of any month of the year in Glenwood Springs. February 2020 was collected from StreetLight as that was when parking data was collected in the field and can be compared with July 2019 data to estimate the relative change in parking demand as compared to winter. The number of trip-ends in July 2019 was compared against the number of trip-ends in February 2020 on different days of the week and different times of day to estimate parking demand in different parts of downtown in July 2019 relative to February 2020.

## Satellite Imagery

Satellite imagery of downtown Glenwood Springs from the summer of 2019 was provided by a RS Metrics, a data analytics firm. RS Metrics combed their historic satellite imagery database in the months of June, July, and August 2019 and found two images of Downtown Glenwood Springs on the following dates and times:

- Friday, August 8, 2019 at 12 PM
- Thursday, August 15, 2019 at 5:30 PM

Vehicle parking and curbspace occupancy was analyzed in these two images from the summer of 2019 on downtown streets. Not all on-street parking occupancy was visible from the satellite imagery due to street trees on some blocks. However, curbspace occupancy on the blocks that were visible were mapped and are included in the attached maps (**Figure 21** and **Figure 22**). Additionally, parking occupancy of the four public lots in downtown were visible in the satellite imagery and were also mapped, with the exception of the lower level of the City Parking Garage.

# Key Findings

A number of key takeaways from the existing parking conditions analysis from the winter are outlined below and organized by each of the three study areas. Findings of the bicycle parking analysis and more in-depth analysis of parking demand at 27th Street South Glenwood Station from other data sources are also provided in this section.

## 27th Street South Glenwood Station

- The Park & Ride lot was about 40 percent occupied at 5 AM on both Thursday and Friday and it was clear that 8-12 cars had been parked overnight (this was evident by the fact that some cars were covered in frost at 5 AM or because the same cars were parked in the same location at 7 PM Thursday and 5 AM Friday).
- The Park & Ride lot was full by 7 AM on Thursday and nearly full by 7 AM Friday. In the brief time that parking utilization was observed at this lot at 7 AM Thursday and 9 AM Friday, several cars were observed entering and exiting the lot upon finding it full.
- Some transit riders appear to park along Blake Avenue north of 27th Street and along 26th Street between Blake Avenue and Palmer Avenue based on comparing 5 AM counts with 7 AM and 9 AM counts, likely about 8 - 12 cars in total.
- Some transit riders appear to park in the north Walmart parking lot based on the number of vehicles parked at the north end of the lot away from the store entrance and close to the Park & Ride - about 25 by 9 AM. On Thursday, 19 cars were counted parked in the same location at both 9 AM and 4 PM. It is possible not all of these cars are transit users as some people may be parking here to carpool or may be store employees. It should be noted that the lot was empty at 5 AM both days.
- The overflow lot (also Walmart employee parking) is well used during the day, but it is unclear how much use is by transit riders. The 113-space lot was about 25 percent full at 5 AM and 70 percent full by 9 AM on both days.
- The Park & Ride lot is used quite a bit for pick up and drop off, although there does not appear to be a designated spot (people are using the handicap spots and double parking briefly when the lot is full).
- In total, based on these observations there may be anywhere between 30 and 70 vehicles parking at other locations besides the designated Park & Ride (on-street, at the Walmart north lot, or the designated RFTA overflow lot) to access the bus. Where exactly that number falls in this range is dependent on the number of people parking in these locations for other uses – such as carpooling or store employees – which is impossible to

know based just on observing parked cars. To get a better understanding of existing and latent demand for parking a more detailed analysis was conducted using additional data sources (see *Parking Demand Estimation at 27th Street South Glenwood Station* below).

## West Glenwood Park & Ride

- The West Glenwood Park & Ride is lightly used relative to capacity. With 94 parking spaces it was never more than 35 percent occupied during any of the time periods studied.
- The 17 Bustang-only spaces were also lightly used, with about 4-6 cars parked in those spaces during the study periods.

## Downtown Glenwood Springs Winter

- General Findings:
    - On-street parking occupancy is generally highest between 7th Street and 9th Street (except at 5 AM), and to a lesser extent between 10th and 11th Street.
        - On-street occupancy north of 9th Street is higher west of Grand Avenue weekday mornings and higher east of Grand Avenue weekday afternoons.
        - On-street parking occupancy north of 9th Street downtown is highest on Friday evenings.
        - On-street parking occupancy between 10th and 11th Street downtown remains high at 5 AM indicating this demand is likely generated by residential/hostel parking demand.
    - Parking occupancy along Grand Avenue is relatively low, generally less than 30 percent during all time periods, with two exceptions:
        - Between 8th and 9th Streets - occupancy was highest in the evening, about 75 percent.
        - On the west side of Grand Avenue between 10th and 11th Streets where occupancy was between 80 percent and 100 percent at all times of day, which may be due to the Glenwood Springs Hostel.
    - The Garfield County and CMC lots were heavily used after 6 PM on Friday, 97 percent and 84 percent full respectively (and less used on Thursday evening).
    - The 7th & Colorado lot was full at all time periods except 5 AM when it was about 25 percent full. Many vehicles were observed looking for parking in this lot at nearly every time period. The high demand may be in part due to exceptions to the 4-hour time restriction granted to County employees and some downtown

residents and that time restrictions at this lot are temporarily not being enforced. It is expected this will change when a final decision on which users will be granted exceptions is determined and an enforcement plan for this lot is developed.

  - The Cooper Avenue lot (between 8th Street and 9th Street) was full or nearly full during the day and about 40 percent full at 5 AM.
  - The City Parking Garage was most full during the day (at 9 AM and 4 PM), but never exceeded 80 percent capacity. It was less than 20 percent full overnight.
  - The public spaces at the 7th Street lot near the confluence were never more than 50 percent occupied.

- 5 AM Weekday:
  - High occupancy was observed along the residential streets between 10th Street and 13th Street and along Blake Avenue between 8th and 11th Streets.
  - The occupancy along Grand Avenue was less than 25 percent except on the west side of the street between 10th and 11th Street, which may be associated with the Glenwood Springs Hostel.
- 9 AM Weekday:
  - High occupancy was observed along 8th Street, 10th Street, and several side streets north of 9th Street.
  - Occupancy was also high along Pitkin Avenue between 13th and 14th Street likely because of the proximity to Glenwood Springs High School.
  - The 7th & Colorado lot and Cooper Avenue lot were both full and the City Parking Garage was about 80 percent occupied.
- 4 PM Weekday:
  - Occupancy was high on most streets between 9th Street and 7th Street, with the exception of Grand Avenue.
  - Occupancy was generally higher on Friday on most streets than Thursday.
- 7 PM Thursday:
  - On-street occupancy was high around 8th Street and Cooper Avenue and 7th Street and Colorado Avenue.
  - Occupancy was low at all of the off-street lots except the 7th and Colorado lot.
  - Occupancy was high between 10th Street and 11th Street along Cooper Avenue, and two nearby block faces although there were many available spaces within a block.
- 7 PM Friday

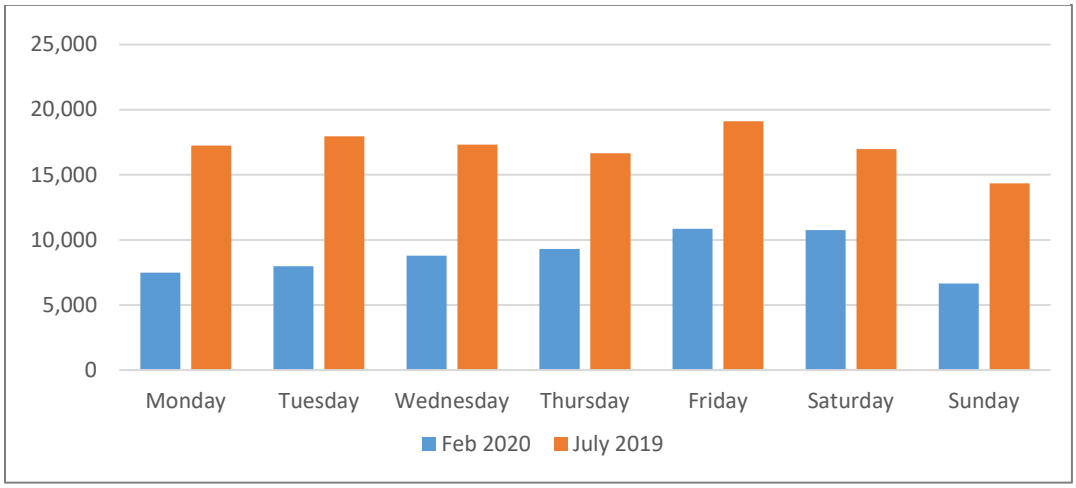
- Occupancy was high between 9th Street and 7th Street between Colorado Avenue and Blake Avenue.
- The County lot and 7th & Colorado lot were both full. The CMC garage and Cooper Avenue lot were well used, but still had available parking. The City Parking Garage was only 40 percent occupied.
- Occupancy was high between 10th Street and 11th Street along Cooper Avenue, and a couple of nearby block faces although there were plenty of available spaces on the opposing sides of the street.

## Downtown Glenwood Springs Summer

Several key findings from the summer data analysis are useful in informing parking and curbspace demand and management in downtown Glenwood Springs, including the following.

- **Nearly two times as many trips begin or end in the downtown core in the summer as compared to the winter. Figure 2** shows the average daily trip ends between 7th Street and 9th Street in downtown Glenwood Springs in February of 2020 compared to July of 2019 on each day of the week. On average there is about 1.9 times as much trip activity in the summer as compared to the winter. Additionally, while the data confirms that trip activity is highest on Friday (and Saturday in winter), it also shows that there is less variability from day to day in the summer as compared to the winter.

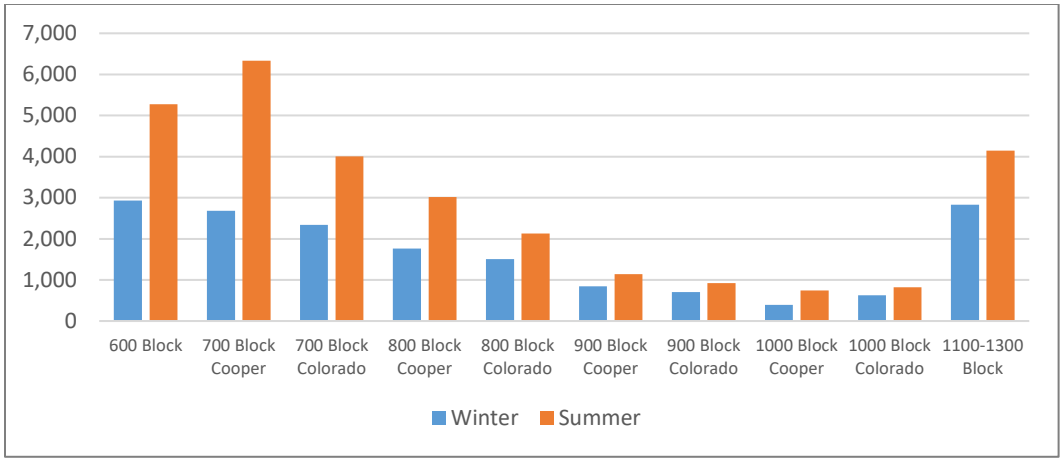
*Figure 2. Average Daily Trip Ends Downtown (7th St to 9th Street)*




Source: StreetLight Data, Fehr & Peers

- **Trip activity is highest north of 9th Street, particularly in the summer. Figure 3** shows the average daily trip ends by zone downtown on Fridays in February of 2020 and July of 2019 provided by StreetLight. This data shows that trip activity is highest in the 700 block of downtown and gets progressively lower in each block south. For example, trip activity in the 700 Block of Cooper Street is about 5.5 times higher than the 900 Block of Cooper Street in the summer and 3.1 times higher in the winter. Additionally, north of 10th Street, trip activity is on average a little higher east of Grand Avenue than west of Grand Avenue. Lastly, **Figure 3** also shows that the discrepancy between summer and winter trip activity is greater north of 9th Street compared to south. For example, there are about 1.9 times as many trip ends in the summer compared to the winter between 7th Street and 9th Street, while there are about 1.4 times as many trip ends in the summer compared to the winter between 9th Street and 14th Street.

*Figure 3. Friday Trip Ends by Downtown Zone*




Source: StreetLight Data, Fehr & Peers

It should be noted that the StreetLight activity data does not necessarily represent where people are parking their car, but instead where people are beginning or ending their trip. For example, someone who parks in the 900 block and walks to the 700 block would show up in the data as ending their trip in the 700 block. Thus, in locations where parking demand is high and spaces are full, drivers may be parking a block or more from their destination. This data reveals where people are trying to get downtown, but not necessarily where they park or how they get there.

- **Parking demand peaks around 1 PM and 6 PM and is highest on Friday and Saturday.** Hourly trip activity data from StreetLight shows that parking demand

downtown likely peaks around 1 PM and 6 PM each day, which is generally consistent with anecdotal data provide by the downtown parking enforcement officer. Additionally, the data shows that trip activity is highest on Friday in the summer and both Friday and Saturday in the winter.

- **Off-street public parking is at capacity in the summer.** Satellite imagery data from Friday, August 9, 2019 at 12 PM revealed that the all three public surface lots downtown were 100% full, including the 7th Street lot (at the confluence), the 7th & Colorado lot, and the Cooper Avenue lot (see **Figure 21** in attached map set). Additionally, while the lower level of the City Garage is not visible in the satellite imagery, the upper level of the garage was observed to be about 95% full (note: winter field observations showed the lower level of the garage to consistently have a higher occupancy than the upper level, thus the garage is presumed to be nearly full during peak times in the summer). By comparison, while the 7th & Colorado and Cooper Avenue lot were observed to be full at 9 AM in the winter counts, the 7th Street lot was never more than 53% full and the City Parking Garage was never more than 80% full in the winter. Thus, the satellite imagery provides evidence that parking demand at these lots is substantially higher in the summer and these lots are indeed effectively at capacity. Satellite imagery also revealed that the visible curbspace (not blocked by tress) was about 78% occupied at 12 PM on Friday in the summer.

While trip activity from StreetLight data is not necessarily directly correlated to parking demand, the data is a useful proxy for estimating demand. In other words, we cannot conclude with certainty that parking demand is 1.9 times higher in the downtown core in the summer as compared to the winter, but it is likely somewhere in that range. Other data sources also support the idea that parking demand may be 50% - 100% greater in the summer than the winter. For example, the Glenwood Springs Police Department issues about twice as many parking tickets in the summer compared to the winter. Additionally, hotel tax revenue is typically about 60% higher in July than March and over 200% higher in July than February. Lastly, the satellite imagery data, while limited in scope and timeframe, show that demand is at or exceeding capacity at all downtown public lots midday on Friday in the summer - and is quite high on-street as well.

**This data strongly suggests that downtown Glenwood Springs is reaching parking capacity through most of the core area at peak times in the summer.** Parking occupancy at this level can lead to several negative impacts, including increased congestion caused by people circling for parking, higher likelihood of illegal parking (as evident in the police data), and could negatively affect business activity as patrons find it difficult to park downtown. While there is no conclusive evidence of who is generating parking demand at different times of the day, both the winter and

summer data suggest that employees are likely occupying much of the off-street parking during the day, as are downtown residents. For example, the Cooper Avenue lot would typically fill up by 9 AM and start to empty out at around 4 PM in the winter, a trend typically indicative of employee parking. Overnight, this lot was observed to be about 40% occupied in the winter representing the residential demand. Based on both the summer and winter data, similar trends also occur at the City Parking Garage.

## Bicycle Parking at Park & Rides

Both the West Glenwood Park & Ride and 27th Street South Glenwood Station provide bicycle parking in the form of inverted "U" bicycle racks adjacent to the bus loading areas. The 27th Street South Glenwood Station can accommodate up to 40 bikes in a sheltered location. The West Glenwood Park & Ride can accommodate up to 20 bikes unsheltered. **Table 2** summarizes bike occupancy at the two Park & Rides during each of the study periods in the winter. Bicycle parking occupancy was low at both locations during the winter, and several bikes were observed parked overnight. Given bicycle use is higher in the summer, more conclusions on bicycle use at the stations would have been made from the summer analysis, which did not occur due to the COVID-19 pandemic.

*Table 2. Winter Bicycle Parking Occupancy at Glenwood Springs Park & Rides*

| Day & Time | 27th Street S. Glenwood Station | | West Glenwood Park & Ride | |
|---|---|---|---|---|
| | Total Bikes | Occupancy | Total Bikes | Occupancy |
| **Thursday 5 AM** | 5 | 13% | 1 | 5% |
| **Thursday 7 AM** | 5 | 13% | - | - |
| **Thursday 9 AM** | 5 | 13% | 1 | 5% |
| **Thursday 4 PM** | 5 | 13% | 1 | 5% |
| **Thursday 7 PM** | 4 | 10% | 1 | 5% |
| **Friday 5 AM** | 3 | 8% | 1 | 5% |
| **Friday 7 AM** | 4 | 10% | - | - |
| **Friday 9 AM** | 5 | 13% | 1 | 5% |
| **Friday 4 PM** | 4 | 10% | 0 | 0% |
| **Friday 7 PM** | 4 | 10% | 0 | 0% |

*Bike Parking at South Glenwood Station*


*Bike Parking at West Glenwood Park & Ride*

# Estimating Parking Demand at 27th Street South Glenwood Station

The existing designated Park & Ride at the 27th Street South Glenwood Station has 50 parking spaces. The winter parking observations revealed that this Park & Ride lot reaches capacity by about 7 AM on a mid-week weekday (and a little later in the morning on Friday) and is generally full throughout the day. RFTA is exploring opportunities to provide additional parking at this station, and a key question in doing this is, how much additional parking should be provided to meet existing and future demand?

The parking observations revealed that somewhere between 30 and 70 people are likely parking at other locations besides the designated Park & Ride to access the BRT at 27th Street South Glenwood Station. This includes on-street (along Blake Avenue and 26th Street), in the Walmart north parking lot, and in the designated RFTA overflow lot (which is about a 7-minute walk from the Park & Ride). While additional undesignated parking is available close to the 27th Street South Glenwood Station, and some people are using it, our survey research in other peer communities has shown that many people are uncomfortable parking in an undesignated space to use transit. Therefore, the estimation of people parking in other locations likely underrepresents the true parking demand as many people traveling between Glenwood Springs and Aspen/Snowmass Village are no doubt foregoing transit because there is not enough reliable parking in close proximity to the station. This latent demand for the BRT in Glenwood Springs was evidenced in comments provided in the MOVE Grand Avenue public survey, and anecdotally by RFTA staff.

Due to the inability to collect passenger survey data at the 27th Street South Glenwood Station due to the impacts of the COVID-19 pandemic, an alternative methodology was used to estimate parking demand at this station. A parking demand analysis was performed using a combination of the observed parking counts from February, 2020, bus boarding and alighting data on the same days parking data was collected, commuter data from the United States Census Bureau, and data from the most recent RFTA Onboard Transit Survey (from 2018). Because of the inability to collect survey data and so many variables are at play, parking demand was estimated as a range to account for unknowns.

## Low End Estimation

To estimate the lower end of parking demand, the pace at which the 27th Street Park & Ride lot fills in the morning was compared to bus boardings during the same time. **Figure 4** shows that the number of vehicles parking the 27th Street Park & Ride at various times on the two days when parking occupancy was observed. (It should be noted that while the capacity of this lot is 50 spaces,

two of the spaces are reserved for handicap parking and on the times when the lot was observed to have 49 cars, the only space available was one of the handicap reserved spaces). The data shows that on Friday the demand was a little less than Thursday, and by 7 AM on Friday the parking lot had not yet reached capacity. Therefore, the rate of increase in observed parking between 5 AM and 7 AM on Friday, about 20 vehicles parked during this time, is generally reflective of true existing demand for parking (but not latent demand), as anyone arriving in this time frame would have found an available parking space.

*Figure 4. 27th Street Park & Ride Parking Occupancy February 27-28, 2020*

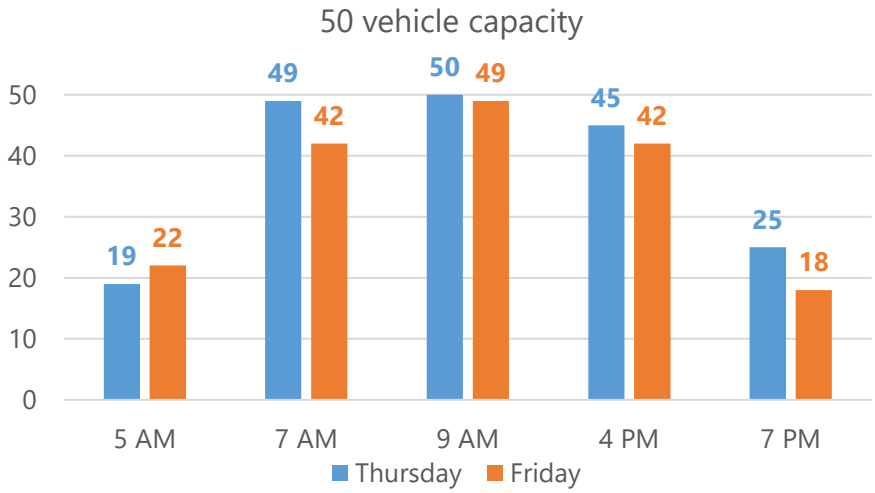



**Figure 5** and **Figure 6** show the boardings by hour at the 27th Street South Glenwood Station for the three regional services (BRT, Snowmass Express, and Valley Local) in the upvalley direction on the two days when parking was observed. **Figure 6** shows that between 5 AM and 7 AM, when 20 vehicles parked in the 27th Street Park & Ride, about 67 people boarded buses in the upvalley direction. Therefore, it is assumed that if parking was not constrained, about 30% of people boarding the bus at the 27th Street South Glenwood Station would get to the station by driving and parking (20/67 = 30%).

*Figure 5. Upvalley Boardings by Hour at the 27th Street S. Glenwood Station (Thursday, February 27th, 2020)*

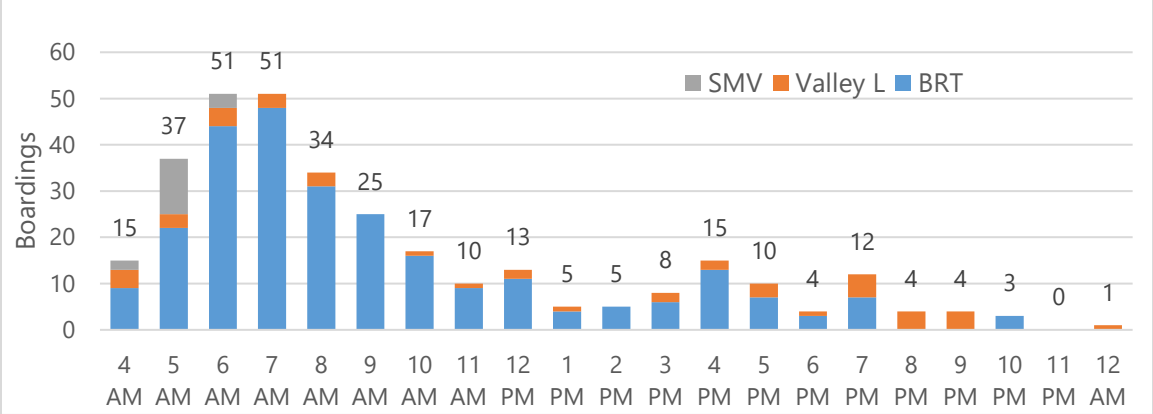
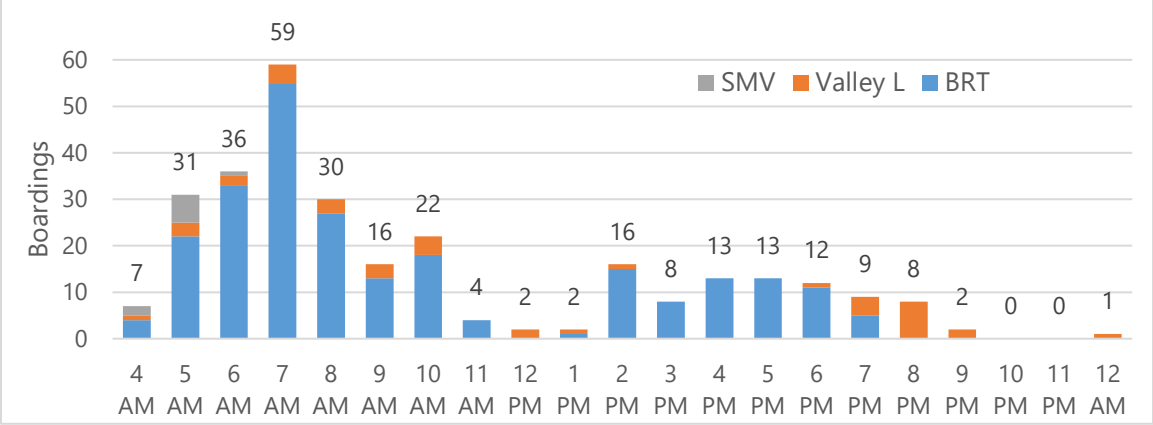



*Figure 6. Upvalley Boardings by Hour at the 27th Street S. Glenwood Station (Friday, February 28th, 2020)*




If this ratio is then applied to the 263 boardings on regional services in the upvalley direction at the 27th Street South Glenwood Station between 4 AM and 3 PM (by which time the parking lot will start emptying out), that equates to an existing parking demand of about 80 vehicles (263 * 0.3 = 80). This does not account for latent demand (i.e., the number of people that would park and catch the bus, if there was consistently reliable parking at the 27th Street South Glenwood Station). On the low end, a conservative estimate of latent demand compared to existing demand is estimated to be about 25%. Therefore, the low-end estimate for total parking demand under current conditions at the 27th Street South Glenwood Station is estimated to be about 100 parking spaces.

For comparison, the 2018 RFTA Onboard Transit Survey shows that the percent of riders who drive and park in order to take regional buses (excluding local service) is about 37%. Applying this percentage to the 263 boardings at 27th Street South Glenwood Station on a winter weekday before

3 PM would result in an estimated parking demand of about 97 vehicles (263 * 0.37 = 97), similar to the estimate of 100 vehicles derived using a slightly different methodology.

### High End Estimation

The high-end parking demand estimate is based on the potential market share of total commuters traveling between Glenwood Springs and Aspen/Snowmass Village that would take transit if parking (among other factors) was more convenient. The U.S. Census Bureau provides an estimation of commuters between community pairs through their Longitudinal Employer-Household Dynamics (LEHD) data. This data shows that in 2018 about 920 people commute from the 81601 zip code (which covers the greater Glenwood Springs area) and the City of Aspen and Town of Snowmass Village. Data from the 2012-2016 5-Year American Community Survey through the Census Transportation Planning Products shows that (about five years ago) 16% of commuters from Glenwood Springs to Aspen took the bus. Thus, it is assumed that achieving a transit mode share of 33% for this market, while likely on the high-end, would be within reason. Assuming that transit could potentially capture 33% of this market share, would equate to about 300 potential transit commuters per day.

The RFTA Onboard Transit Survey data shows that about 32% of RFTA transit riders drive and park to get to the bus. Excluding local service, the percent of riders who drive and park in order to take regional buses is about 37%. Given this number is suppressed by lack of sufficient parking along the entire system, for purposes of this analysis, it will be assumed that if there were an unlimited supply of parking about 50% of commuters between Glenwood Springs and Aspen/Snowmass Village would drive and park to get to the bus. Therefore, demand for transit parking, assuming maximum reasonable use by the commuter population between Glenwood Springs and Aspen/Snowmass Village (about 33%), would be about 150 parking spaces. However, this estimate also needs to include several other parking users, including the following:

- Those commuting to other upvalley destinations (such as Carbondale or Basalt);
- Those commuting from down valley of Glenwood Springs (such as New Castle or Rifle); and
- Non-commuters.

The parking demand for these riders was estimated using the following assumptions:

- An additional 15% for non-commuters (based-on the 2018 RFTA Onboard survey which showed that about 86% of BRT users were using the service for work-related travel).
- An additional 15% for other commuters (5% for commuters destined to other upvalley stops besides Aspen and 10% for commuters from downvalley of Glenwood Springs). The

primary other upvalley destinations via transit are Basalt and Carbondale. Given the ease of parking in those locations its unlikely many commuters bound to those locations are driving to a Park & Ride. Most folks are likely driving door-to-door or using transit door-to-door. Secondly, while LEHD Census data shows that in 2018 around 500 people commuted from the Rifle, Silt, and New Castle areas to Aspen and Snowmass Village, our experience in other communities is that most people who use a Park & Ride don't drive very far (typically less than 3 miles). So, while the 27th Street Park & Ride is the first location where someone coming from downvalley of Glenwood Springs could reliably catch the BRT to Aspen, there's likely to be a smaller portion of the commuters from this market using that Park & Ride as compared to people originating in Glenwood Springs.

When these additional transit parking users are factored in, the upper end parking demand at the 27th Street South Glenwood Station under existing conditions is estimated to be about 200 parking spaces.

**Formula:**

*[Total commuters Glenwood Springs to Aspen/Snowmass] * [max % that would use transit] * [% drive & park] + [other commuters] + [non-commuters]*

*((920 * 0.33 * 0.5) * 1.15) * 1.15 = 200*

It should be noted that there are many unknowns with this estimation. For example, if RFTA were able to capture 50% of total market share, then the parking demand estimate would increase to about 325 spaces and if they were only able to capture 25% then the parking demand estimate would be closer to 150 parking spaces.

## Existing and Future Parking Demand at 27th Street Park & Ride

Based on this analysis, the existing parking demand at the 27th Street Park & Ride, including latent demand, is likely somewhere between 100 and 200 parking spaces. Based on forecasts from the RFTA Destination 2040 project, over the next 20 years the population of Garfield County is forecast to grow by 65% and traffic in Glenwood Springs is forecast to grow by 34%. At this rate, assuming all else is equal, parking demand at the 27th Street Park & Ride would be expected to grow at a rate of somewhere in between these two, about 40-60%. This would result in an estimated parking demand of between 150 and 320 parking spaces at the 27th Street Park & Ride by 2040.

It should be noted that several future factors currently being considered would also impact parking demand if implemented. These include the following:

- **Extension of the BRT into downtown Glenwood Springs** – The extension of the BRT into downtown and the West Glenwood Park & Ride would reduce demand for parking at the 27th Street Park & Ride by about 10-20%. This is because some existing and potential riders close to downtown would be able to walk to the BRT and others originating in West Glenwood Springs or other points west would be able to park at the West Glenwood Park & Ride and more reliably catch the bus. Based on 2018 Census data about 10% of the population of the Glenwood Springs area lives in downtown and would be within walking distance to a centrally located station. However, many existing transit users downtown may already be walking to the bus today. Additionally, about 15% of the greater Glenwood Springs population lives north and west of the West Glenwood Park & Ride and would more conveniently be able to access the BRT at that station. In general, Park & Ride users are not likely to back-track. Therefore, the majority of users of the West Glenwood Park & Ride will be from locations north and west.
- **Addition of a New Park & Ride at South Bridge** – RFTA is considering adding a new BRT station between Glenwood Springs and Carbondale near where the planned South Bridge project would intersect SH 82. If implemented its estimated that this station would reduce demand for parking at the 27th Street South Glenwood Station by about 10-20% as it would be more convenient for those originating in South Glenwood Springs south of 27th Street and west of the Roaring Fork River (and along Four Mile Road). Based on 2018 U.S. Census data, about 20-25% of the population of the Glenwood Springs area live in these locations. It should be noted that if insufficient parking continues at the 27th Street Park & Ride (as exists today), demand for parking at South Bridge is likely to be much higher as many people wishing to park at the 27th Street South Glenwood Station, but finding it to be full, would instead park at a South Bridge station.
- **Addition of a Pedestrian Overpass at 27th Street South Glenwood Station** – RFTA is considering constructing a pedestrian overpass above SH 82 to better connect pedestrians and bicyclists between the 27th Street South Glenwood Station and the Rio Grande Multiuse Trail. While this may encourage some additional walking and biking to the station, it may also increase demand by recreational users of the Rio Grande Trail. As is the case with other RFTA Park & Rides adjacent to the Rio Grande Trail, such as Carbondale, some trail users are likely to park at the Park & Ride, particularly in the summer and on weekends, which may increase parking demand at the 27th Street Park & Ride.

# Opportunities & Recommendations

Opportunities and recommendations to improve parking management in the study area are divided into three general categories: parking and curb space downtown, parking at the RFTA Park & Rides, and parking considerations/potential impacts as part of evaluating alternatives for extending the BRT into downtown.

The following recommendations were made based on parking/curb-curb space occupancy data collected in the winter of 2020, estimated historic 2019 summer parking demand in downtown Glenwood Springs from other data sources, conversations with City, RFTA staff, and the police department, public feedback from the MOVE Grand Avenue project, and other data sources.

## Downtown Parking & Curb Space Management

Parking is a limited resource and valuable public asset, particularly in a downtown environment. The recommendations included here are intended to improve management of this asset to maximize the efficient use of limited curb space, better ensure convenient parking is available to serve uses downtown, and improve the efficiency and effectiveness of enforcement.

Recommendations are provided both short-term and long-term. Short-term recommendations are aimed at addressing existing challenges over the next 1-3 years. Long-term recommendations are aimed at addressing potential future challenges or more complex existing issues 4-10 years from now.

### Short-Term

Several existing parking/curb-space issues downtown were identified as part of this study. These include:

- High parking demand during the day and evening in the north end of downtown.
- The impact of truck loading on traffic flow and parking availability.
- Cost, inefficiencies, and other challenges of effectively enforcing parking regulations downtown.

To address these and other challenges, the City of Glenwood Springs should consider the following recommendations near-term:

- **Establish a Truck Loading Plan** – The businesses and restaurants downtown require regular delivery of food, beverages, and other goods. However, given the limited street spaces active truck loading can come in conflict with vehicle traffic and parking availability. To mitigate the impacts of truck loading on traffic and parking the City should consider developing a truck delivery plan to regulate the location and times of when and where trucks deliver goods downtown. Both the Town of Vail and City of Aspen have ordinances dictating when and where trucks can deliver in the core parts of those communities to limit the impact of truck loading. Glenwood Springs may consider the following restrictions: restricting truck delivery north of 9th Street to before 4 PM, limiting truck loading to designated loading zones or alleys at certain times of the day, or restricting loading activities all together on certain streets (such as 7th Street). The City should also consider coordinating with the City of Aspen and Town of Vail to explore the feasibility of coordinating loading times for trucks that may be serving all three locations. It is recommended that the City closely involve downtown businesses and operators of the loading trucks when developing this plan.

- **Manage the 700 Block of Cooper Avenue** – As explained earlier in this memo, the 700 block of Cooper Avenue was redesigned to provide designated truck loading zones in the center lane along with five parking spaces. The redesign has been effective at providing a space for trucks to deliver goods to nearby businesses without blocking travel lanes (to the extent that drivers follow the regulations). The challenge with this redesign is that drivers do not always understand or comply with the regulations, i.e. when and where they can park and where delivery trucks can load. Parking and loading regulations are indicated through paint in the pavement (which can sometimes be covered in snow and will wear quickly in the center lanes) and moveable signs. The moveable signs are not always oriented correctly, may be difficult to determine the parking/loading space the sign is referencing, and can (and sometimes are) moved by people not wanting to comply with the parking regulations. Because the regulations are not always clear, parking and loading are not generally enforced along this center lane further leading to non-compliance.

  One solution to this challenge would be to install more permanent end caps in the median at the two ends of the corridor where more permanent signs can be placed. This could be something semi-permanent, such as bollards bolted into the pavement (but that can be temporarily removed to allow for snow removal or street sweeping). Currently the south end of the street is designated for parking and the north end for loading. To clearly sign

the change in use mid-block, end caps will likely be needed mid-block on either side of the alley.

Additionally, the City may also want to consider regulating the loading zone to better accommodate the change in demand at different times of the day. For example, the loading zone could be signed to allow parking in the evening when parking demand is highest and conversely the parking spaces could be signed for loading in the morning or midday if more space is needed to accommodate loading activities.

- **Weekend Enforcement –** The City does not currently enforce parking and curb space regulations on the weekend. However, collection of Big Data (detailed at the end of this memo) demonstrated that parking demand likely remains high in parts of the downtown on the weekend, particularly on Saturday. Additionally, local drivers are more likely to ignore parking restrictions on the weekend if they know those restrictions will not be enforced. It is recommended that the City enforce parking regulations downtown on the weekends (at least occasionally) to ensure better compliance. This will help ensure parking turnover and availability of parking as well as mitigate potential safety issues (such as blocking fire hydrants, crosswalks, sight lines, or handicap parking).

- **Leverage Parking Enforcement Technology –** The City is considering the use of new technologies to aide in parking enforcement, such as handheld license plate recognition (LPR) devices pared with automated ticket printing. While use of these technologies will require upfront and annual investment, they would increase efficiency and improve the accuracy of monitoring and ticket issuance. More effective enforcement will result in higher rates of compliance and reduce the negative impacts of illegal parking, including ensuring there is more parking and loading space available. The increased efficiency from using these technologies would result in increased revenue generation that may off-set the cost of investing in the technology. Paid parking could also be used to off-set upfront costs of this technology.

- **Increase Fines for Parking Violations –** Parking violations for most offenses currently result in a $20 ticket (the exception being $100 for illegally parking in a handicap reserved parking space) and The City of Glenwood Springs has not raised these amounts for many years. These fees are comparable or on the lower end of peer communities. For comparison parking violations result in a $30 - $50 fine in Aspen, $30 fine in Breckenridge, and $25 fine in Durango for most first-time offenses. However, most peer communities use a graduating scale where parking violation amounts double or triple for

repeat offenders or for those that wait too long to pay. To increase the rate of compliance in Glenwood Springs, keep pace with inflation, and generate additional revenue to better cover the cost of enforcement, it is recommended that the City consider increasing the fines for parking violations. In particular it is recommended that the City increase the fine for repeat offenders. Additionally, if paid parking is implemented downtown, parking fines should be set to be at least 50% higher than the cost of all-day parking in order to incentivize compliance.

- **Curb Space Signage and Striping –** Proper maintenance of curb space paint and signage is important to safely manage parking downtown and properly enforce regulations. It is also important to ensure signs are consistent and clear to encourage compliance. The City currently uses yellow paint on the curb to indicate no parking zones and blue paint to indicate disability reserved parking. The areas with yellow paint are called safety zones and are at locations where parking is not allowed in order to preserve safe sight lines at intersections, driveways, crosswalks, where there are fire hydrants, or to preserve adequate space in the travel lane for safe vehicle movement.

  However, the locations with yellow paint are not always clear or consistent. In some locations downtown yellow paint is in locations signed for parking or loading. In other locations the paint is worn and only partially visible. Most locations with yellow paint also do not have corresponding no parking signs. The inconsistency can lead to confusion among the public (particularly visitors) and can make enforcing curb space regulations in safety zones more challenging.

*Example of yellow safety zone on Colorado Avenue.*

*Example of partially visible yellow paint on a curb on Colorado Avenue.*

To improve compliance and enforcement of parking regulations downtown, the following curb space signage and stripping actions are recommended.

- *Regular Maintenance of Curb Paint* – It is recommended that the City regularly maintain the curb paint to ensure the paint is clearly visible. It is also recommended to remove yellow paint in locations where parking and loading activities are allowed. Regular maintenance could be funded through fees collected from paid parking, increasing fines for parking violations, and other changes to improve the efficiency of enforcement.
- *Corresponding Signage* – Section 3B.23 of the Manual of Uniform Traffic Control Devices (MUTCD) states that "*Since yellow and white curb markings are frequently used for curb delineation and visibility, it is advisable to establish parking regulations through the installation of standard signs.*" Given this, it is recommended that the City place "No Parking" signs in corresponding safety zones where feasible, prioritizing locations where non-compliance with parking regulations is most frequent.
- *Curb Paint Color Scheme* – While there is no state or national standard color scheme for curb paint to indicate parking regulations, it is most common to use red paint to indicate no parking or standing and yellow paint to indicate loading (see California Driver Handbook and SRTS Guide among others). Given the number of out of town tourists that visit Glenwood Springs the City may want to consider converting safety zones to red paint and loading zones to yellow paint to be more consistent with what drivers are familiar with in other locations.
- *Consistency of Signs* – The following three signs were observed downtown in loading zones: "Loading Only," "10-Minute Loading Only," and "Pick-Up and Drop-Off Only." Additionally, the following three signs were observed for 2-hour parking: "2 Hour Parking 9AM-6PM," "2 Hour Parking 8AM-10PM," and "2 Hour Parking." By far the most common was "2 Hour Parking 9AM-6PM." To alleviate confusion among drivers and simplify enforcement it is recommended to use one sign type for all loading zones and one sign for all 2-hour parking consistent with what will be enforced.

- **Implement Paid Parking** – The City of Glenwood Springs is currently considering converting some of the publicly available time-restricted parking downtown to paid parking as a more effective means to enforce and manage parking where demand is high. Time restricted parking (such as 2-hour parking), enforcement of parking regulations, and provision of additional parking (such as the City Parking Garage) are the primary tools the

City of Glenwood Springs has used to manage parking demand and encourage turnover downtown. Short of further increasing parking supply, which is expensive and may encourage additional traffic congestion downtown, the most effective remaining tool to managing parking downtown is to implement paid parking.

***Note: Please see the supplemental Memo titled "Implementing Paid Parking in Downtown Glenwood Springs" for a more detailed summary of recommendations for how the City of Glenwood Springs could implement paid parking.***

There are three primary reasons to consider implementing paid parking:

- To manage demand in high-occupancy locations to ensure parking is more readily available in those locations, which will reduce traffic congestion caused by drivers circling for parking.
- To incentivize use of non-driving modes of transportation to downtown.
- To generate revenue to cover the cost of parking operations, maintenance, capital improvements, and enforcement, as well as to potentially fund transit, bicycle, and pedestrian improvements downtown to further mitigate parking demand.

If the City implemented paid parking the revenue could be used to fund parking enforcement and management with less need (or potentially without need) for general funds. Currently there is a about a ten thousand dollar gap in cost of enforcing parking downtown from the revenue generated by tickets and this does not include capital, administrative, planning, and maintenance related costs to the parking program. City general funds currently cover the gap. Revenue could also be used to fund regular maintenance of curb paint, signs, and public parking lots as well as for pedestrian, bicycle, and transit improvements downtown. Investing in other modes would further mitigate parking demand as it would make using other modes more convenient.

Paid parking could also be used to ensure parking spaces are easier to find downtown and is an effective incentive for people to walk, bike, or use transit in place of driving. To achieve this, paid parking should be implemented downtown at the locations when and where occupancy is high and turnover is desirable. This strategy will ensure that people who want to park close to their destination are more likely to have that option if willing to pay. This strategy will also result in better utilization of available parking where demand is lower.

It is also recommended to extend paid parking and time restrictions later in the evening as demand was observed to be just as high or higher on many downtown streets at 7 PM. This will help reduce congestion caused by drivers circling for parking after 4 PM, and ensure parking is more readily available close to popular evening destinations downtown.

Based on occupancy rates observed in the winter, paid parking would be most effective near-term at the following on-street locations:

- Between 9th Street and 7th Street between Pitkin Avenue and Blake Avenue. Given this covers nearly all the time-restricted parking it may be most efficient from an enforcement standpoint to convert all 2 Hour parking downtown to paid parking.
- 7th Street between Blake Avenue and Bennet Avenue. This block had high parking demand at all times of the day except overnight.

Based on winter data paid parking is also recommended at two off-street lots with high demand in the core areas of downtown where on-street paid parking would also be implemented:

- *7th & Colorado Lot* – The current 4-hour time restriction could be maintained in order to provide a slightly longer-term parking option in this area of downtown.
- *Cooper Avenue Surface Lot* – The Cooper Avenue parking lot was full during the day on both Thursday and Friday. There are no time restrictions at this lot (other than the citywide requirement to move one's vehicle every 72 hours) and its likely many employees are parking here all day as well as residents (the lot was about 40% full overnight). To encourage more turnover, the City could consider converting this lot to a 4 hour time restriction. Alternatively, if all-day parking is desired to be retained at this location, paid parking could be implemented here on an hourly and daily rate used in order ensure parking is more readily available.

Analysis of summer data demonstrated that parking demand in downtown Glenwood Springs is higher in the summer than the winter, potentially 1.5 – 2 times greater. Thus, the parking management recommendations amplify the need for many of the recommendations already discussed, including paid parking and making improvements to enforcement. The summer data (particularly the satellite imagery) demonstrated that all four of the public off-street parking facilities fill to capacity in the summer. Given this, ***it is recommended to charge for parking at all four facilities, at least in the summer***, to ensure longer-term parking is also available downtown. It may not be necessary to charge

for parking all the time at all these facilities, but would be most important when demand is high, such as in the summer and during the day and early evening. The pricing in these lots would be different than most on-street spaces as these lots are intended to provide the option for longer term parking, while most on-street paid parking would serve short-term parking.

Some additional strategies related to implementing paid parking are provided below:

- *Variable Pricing* - Data demonstrates there is opportunity for implementing variable pricing schemes, such as charging more when and where demand is higher, to more effectively and efficiently manage demand. This strategy can also help demonstrate transparency to the public that the primary purpose of paid parking is not to generate revenue, but to manage demand. For example, the data shows that demand is highest in the summer, particularly midday and early evening, and is higher closer to the 700 block. The City of Glenwood Springs could use this data, as well as continue to monitor data after initial implementation, to implement variable pricing schemes to best meet demand.

- *Managing Spillover Parking* - Given the high demand for parking in the downtown core in the summer, and if the City were to implement paid parking, it may be necessary for the City to manage spillover parking along residential streets of downtown south of 10th Street. Winter data shows there is excess parking available during the day on most blocks south of 10th Street. However, there is likely less excess capacity in the summer and the current conditions are likely to change once paid parking is introduced and people begin to look for free parking options near downtown.

  The people most likely to be impacted by introducing paid parking downtown are downtown employees who drive to work and do not have access to a private off-street lot. Several strategies can be used to manage this demand and prevent the negative impacts of spillover parking:

  - Paid parking combined with improvements to the transit network and first/last mile connections will provide significant incentive to using transit to get downtown.
  - Additionally, employer-provided bus passes would add further incentive and mitigate parking demand.

- It may also become necessary to extend on-street parking regulations further south, including extending the downtown resident parking permit program further south. Monitoring parking occupancy on the residential streets south of downtown will be an important aspect of effectively implementing paid parking.

- *Resident Permit Program* - Given the high demand for parking downtown demonstrated by the summer data, the City may also need to consider making modifications to the resident parking permit program, especially if paid parking is introduced. Currently, the residents in downtown that have a parking permit can park up to 72 hours in any of the 2 Hour time-restricted spaces and public lots, with the exception of 7th Street and the 700 Block of Cooper Avenue. To ensure residents are not occupying large portions of high demand parking, the City may need to consider additional exceptions to the resident permit program on blocks when and where demand is highest and at some of the off-street lots. Funneling residents to park on streets when and where demand is lower will help ensure parking for people trying to access businesses downtown is readily available.

- **Monitor & Adjust** – A key aspect of managing parking will be to collect data to see what is and what is not working and then use that information to make adjustments over time to pricing, restrictions, enforcement, communication, and other aspects of the parking program. This will be a particularly critical component of implementing paid parking as it will help staff determine whether the changes are meeting the program goals and provide information on what adjustments to make. Data monitoring will also be valuable in providing transparency to the public and demonstrating the benefits of paid parking, which can be a highly controversial topic among the public and other stakeholders.

- **Bike Corrals** - Curb space in a downtown environment is a valuable commodity and should be managed to maximize access to downtown businesses. One means that many communities have used to achieve this is to convert on-street parking in high-demand locations to bike parking. This type of design is called a bike-corral. On-street bike corrals can provide parking for up to ten bikes in the same space that can accommodate one parked motor vehicle, effectively serving more people in the same space. If there are locations with demand for bike parking that is not or cannot currently be provided along the sidewalk, the City may want to consider converting an on-street parking space to a bike corral. This strategy will also incentivize people to bike downtown, which will help mitigate the need to provide parking for motor vehicles.

*Additional study is needed to quantify bike parking supply and demand downtown and determine whether this could be an effective short-term strategy.*


*Example of an on-street bike corral.*

## Long-term

Over time, new development and changing travel behaviors may shift demand for parking and curb space downtown. To respond to future changes that are more likely to occur gradually over time, the City should consider the following strategies long-term.

- **Evaluate Increasing Parking Capacity** – The City should continue to monitor parking demand downtown in the future. If data shows a growth in parking demand begins to reach capacity even with the short-term recommendations in place, the City may want to consider adding new supply. Due to the geographic constraints, urban design considerations, and the high land value downtown, this most likely would be in the form of a new parking garage. The decision to add capacity should not be based entirely on demand, but should also be a value-based decision among the community. Construction of a new parking structure

downtown is expensive and adding supply will also make it more convenient to drive and park downtown, which could contribute to additional traffic congestion. These factors should be considered against other potential options. Other strategies, such as increasing parking fees, should be considered prior to increasing supply. Instead of investing in additional parking supply (which is expensive) the City should consider applying that investment toward making it more convenient to access downtown via walking, biking, and transit.

- **Zoning regulations** – Properties within the City's General Improvement District are exempt from the City's off-street parking and loading zoning regulations. Given this area covers most of the core area of downtown (see map), no changes to the zoning code are recommended at this time. Management of parking downtown will instead be through the application of other strategies discussed in this memo.

- **Improve Transit Service Downtown** – A long-term strategy to address parking demand downtown should continue to be making investments in the transit network that make it more convenient to get to downtown via transit. This, combined with other parking management strategies (such as implementing paid parking) will incentivize more people to use transit instead of driving into downtown. One option to partially fund transit, could be through the use of parking revenue. Extending the BRT into downtown as part of this project, as well as making strategic improvements to the local transit network, will help mitigate long-term growth in parking demand downtown. Another option to be considered to incentivize transit and mitigate parking demand would be to provide downtown employees with free bus passes and/or make local bus trips free within Glenwood Springs.

- **Confluence Area Parking** – A new mixed used development is proposed for the confluence area (where the 7th Street Lot is currently located). Final plans for development were not available as of publication. However, this development will change parking demand and supply within this area of downtown and will likely amplify the need for other recommendations, including paid parking.

- **Planning for TNCs an AVs** – The rise in transportation network companies (TNCs), such as Uber and Lyft, over the last decade has dramatically changed

travel patterns and demand for curb space in many urban areas across the country. While TNCs currently operate in Glenwood Springs, their use is relatively limited at this time. However, this may change in the future, and if demand for these services increases, the City should be prepared to manage the curb space in response, particularly in high-activity areas downtown. TNCs are also considered a precursor for how autonomous vehicles (AVs) are likely to operate in the future, with the ability to drop people off in high demand areas and drive unoccupied to park in low demand locations. Planning for heavier TNC use will help the City prepare for the emergence of AVs as well.

Curb space in a downtown environment is a valuable commodity and should be managed to maximize access to downtown businesses. In studies for other communities Fehr & Peers has developed a curb productivity index, to measure how many people a curb can "serve" depending on its use. Just like time restricted parking encourages more turnover than unrestricted parking, these studies have found that allocating curb space to bus stops and passenger loading (to serve TNCs) where that demand exists serve many more people per hour than a two-hour parking space.

To maximize productivity of the curb space, as TNC use becomes more ubiquitous in Glenwood Springs in the future, the City should consider designating curb space in high demand areas specifically for passenger loading. These spaces can be managed flexibly over the course of the day. For example, if passenger loading demand is associated with the evening bar and restaurant scene, the curb can be signed for parking during the day and loading in the evening. The City already designates curb space for loading and short-term parking in high activity areas, including loading zones in front of hotels, the hot springs, and Amtrak station, and 15-minute parking on the 700 Block of Cooper Avenue and adjacent to the post office. These types of locations along with locations where parking demand is highest are likely the best candidates for designating loading zones.

Design of passenger loading zones should account for the curb space needed to fully pull in and out, to not block the travel-way. Our research has shown that when placed near a corner, driveway, or bus stop, the space needed for a loading area is about 40 feet (or the equivalent of two parking spaces). If placed mid-block the loading areas should be at least 60 feet (or the equivalent of three parking spaces).

## RFTA Parking

The parking occupancy analysis shows that demand for parking at the 27th Street South Glenwood Station exceeds capacity of the adjacent 50-space Park & Ride lot. The parking occupancy analysis demonstrates that somewhere between 30 and 70 transit riders are likely parking on-street, in the Walmart north parking lot, and in the designated overflow due to the lack of available spaces at the Park & Ride. It is possible that additional transit riders from Glenwood Springs may also be driving to Carbondale or Brush Creek to park and board the bus, while other potential transit riders may be foregoing transit all together due to the challenge of finding parking at the 27th Street South Glenwood Station after 7 AM. Based on parking counts it's estimated that about 8-12 cars park in the 27th Street Park & Ride overnight. Additionally, RFTA staff have observed use of the lot for rideshare, Epic Mountain Express users, and adjacent residents. Based on this information, nearly 20% of the lot may be used by non-transit users (and non-Rio Grande Trail users) reducing the effective capacity to 40 parking spaces.

Additional analysis using boarding and alighting data at the 27th Street South Glenwood Station on the days parking counts were collected, as well as population and commuting data from the U.S Census Bureau, and mode share data from the 2018 RFTA Onboard Transit Survey, it was estimated that actual parking demand at the 27th Street Park & Ride, including latent demand, is likely between 100 and 200 parking spaces. Given use by non-transit users the Park & Ride is likely only serving about 20-40% of total parking demand for transit, and an additional 60-160 spaces are needed just to serve existing and latent demand for transit. Based on traffic and population forecast, parking demand at the 27th Street Park & Ride is likely to grow by an additional 40-60% by 2040.

In addition to considering existing demand, several future changes in the transit system are likely to impact parking demand at the 27th Street South Glenwood Station in the future. These changes should be considered as part of any parking management recommendation. RFTA is considering adding a new BRT station near the planned South Bridge connection along SH 82 just south of Glenwood Springs. Additionally, the extension of BRT service into downtown and to the West Glenwood Station and restructuring of the local and regional transit network through Glenwood Springs as part of the MOVE Grand Avenue project will impact parking demand at 27th Street South Glenwood Station. Independent of future population and employment growth in the region, both of these changes are likely to reduce the demand for parking at the 27th Street South Glenwood Station (by about 20-40% in total) as these changes will create new opportunities for people to access the BRT in Glenwood Springs. For this reason, options that provide flexibility long-term

should be considered, such as leasing parking, which can be canceled, or purchasing land, which can be resold, as oppose to constructing a parking structure.

Considering existing parking demand and potential future changes to the transit network, several potential options to address parking challenges at the 27th Street South Glenwood Station are recommended. These are organized into two general categories: strategies to increase parking capacity and strategies to reduce parking demand.

## Strategies to Increase Parking Capacity

The following options are potential strategies RFTA could explore to address the parking challenges at 27th Street South Glenwood Station by increasing the parking capacity.

- *Better Connect Existing Overflow Lot* – The existing overflow lot on Blake Street is over a quarter mile from the 27th Street South Glenwood Station equating to about a seven-minute walk. Observations show that this lot has additional parking capacity. While the distance will continue to be a significant deterrent for many potential transit users, the poor connectivity between the overflow lot and transit station likely also deters users. Because of the gate on Blake Street, drivers that find the Park & Ride to be full must make two left turns navigating traffic on SH 82 to reach the overflow lot despite there being a direct connection on Blake Avenue. Additionally, the sidewalk is discontinuous between the two. Potential improvements include opening the gate on Blake Avenue to allow through vehicle movements on Blake Avenue, paving the portion of Blake Avenue that is dirt, completing the sidewalk network, improving the pedestrian environment to make it safer and more inviting (improvements could include providing street lighting, regular sidewalk maintenance, widening the walkway, etc.), and providing clear wayfinding for pedestrian and drivers.
- *Lease Additional Parking* – A potentially cost-effective option for RFTA to consider near-term is leasing parking spaces from existing nearby privately-owned parking lots for use by transit customers. The most obvious choice for this arrangement would be the north parking lot of Walmart, which is located about 500 feet south of the 27th Street South Glenwood Station along Blake Street. The parking occupancy analysis demonstrated that 204-space lot was never more than about a third full during the times observed, and about a 30 percent of parked cars in this lot were likely already transit users. An arrangement of this type would result in formally designating a portion of the parking lot that could be used by transit riders. If this were pursued it is recommended to also improve the connection between the transit station and entrance to the Walmart parking lot for pedestrians and vehicle circulation. A small section of Blake Street is unpaved in

this area, there are no sidewalks in this area, and there is a gate blocking vehicle circulation.

- *Purchase Land for Additional Parking* – RFTA is exploring the potential to purchase nearby parcels to expand the supply of parking (see *27th Street Pedestrian Crossing* analysis above). The planned pedestrian crossing across SH 82 will additionally open the possibility for purchasing land on either side of SH 82 near 27th Street. If this option is pursued, it is recommended to develop surface parking and not structured parking, as surface parking can more easily be sold and repurposed in the future if parking demand at the 27th Street South Glenwood Station decreases long term. Due to the high cost and permanence of structured parking it is not recommended to convert the existing Park & Ride or develop new parking facilities into structured parking. Parking lot designs that allow for more flexibility if demand changes long-term should be explored.

## Strategies to Reduce Parking Demand

The following options are potential strategies to address the parking challenges at 27th Street South Glenwood Station by reducing parking demand at the station.

- *Establish a More Robust Parking Enforcement Program* – Under current conditions, the 27th Street Park & Ride is being used for parking by some non-transit and non-trail users, potentially consuming as much as 20% of available parking. Around 8-12 vehicles were observed to be parking overnight at the 27th Street Park & Ride. Better enforcement of the existing Park & Ride regulations could free up 10 or more parking spaces per day. One potential means to achieve this would be to restrict overnight parking at the 27th Street Park & Ride and conversely allow it at the West Glenwood Park & Ride where there is excess capacity. It's unclear whether the vehicles parking overnight were daily commuters working the graveyard shift or people using the Park & Ride for longer-term parking. However, if the former is occurring, RFTA may want to preserve the ability to park overnight. An alternative strategy would be to implement and enforce a 24-hour time limit to more effectively restrict the use of the Park & Ride for long-term parking.
- *Kiss & Ride* – Many drivers were observed using the existing Park & Ride to pick up and drop off people taking the bus (using both legal and illegal parking spaces). To better support and encourage pick-up and drop-off as a means to access transit and free up parking spaces for people parking, it is recommended that RFTA formalize a "kiss & ride" location near the 27th Street South Glenwood Station. A location on Blake Street may work for a formal kiss & ride location, but additional design analysis would be needed to determine the best location. The kiss & ride could serve as the designated space for TNC loading as well.

- *Additional BRT stations* – As mentioned earlier, another strategy to reduce parking demand at the 27th Street South Glenwood Station includes adding additional access points to board the BRT in Glenwood Springs. Extending the BRT into downtown Glenwood Springs would provide more options for people to access the BRT from the core of the city without driving. If the BRT were extended to the West Glenwood Park & Ride riders coming from west of Glenwood Springs would have an additional reliable option to park as well. This is estimated to reduce parking demand at the 27th Street South Glenwood Station by about 10-20%. Analysis showed the West Glenwood Park & Ride is currently underutilized and has capacity. Lastly, a new station with parking near the planned South Bridge would also shift some parking demand away from the 27th Street South Glenwood Station. This is also estimated to reduce parking demand at 27th Street South Glenwood Station by at least 10-20%, and possibly more if the 27th Street Park & Ride remains over capacity.
- *Improved Multimodal Connections* – Improvements to the pedestrian, bike, and local transit network in Glenwood Springs targeted toward making it easier for people to get to the BRT without driving would also reduce demand for parking. Near-term, the planned pedestrian crossing at SH 82 will improve access to the BRT for bicyclists and pedestrians from the Rio Grande Trail and neighborhoods west of the station. When the BRT is extended to downtown, pedestrian and bicycle connectivity to future stations will be critical to reducing demand for Park & Rides. Lastly, improving the connections to local transit at 27th Street South Glenwood Station (and future downtown stations), including improving the local transit network will enable more people to access the BRT without need for a car. For this to be effective local buses should be frequent (every 10-15 minutes) or timed to meet the BRT, and should provide direct, reliable service to high activity corridors and destinations in Glenwood Springs not directly accessible by the BRT.

Lastly, the addition of parking capacity should consider use of any designated transit parking by non-transit and non-trail users. If RFTA is unable to effectively enforce parking at their lots, the estimated demand for parking will need to be increased by about 10-20% in order to ensure sufficient parking is available to transit users.

## BRT Considerations

This section provides discussion and recommendations related to potential parking impacts in downtown Glenwood Springs that would be caused by the extension of the VelociRFTA BRT into downtown Glenwood Springs.

Two primary impacts of the BRT on parking are addressed in this section. These include:

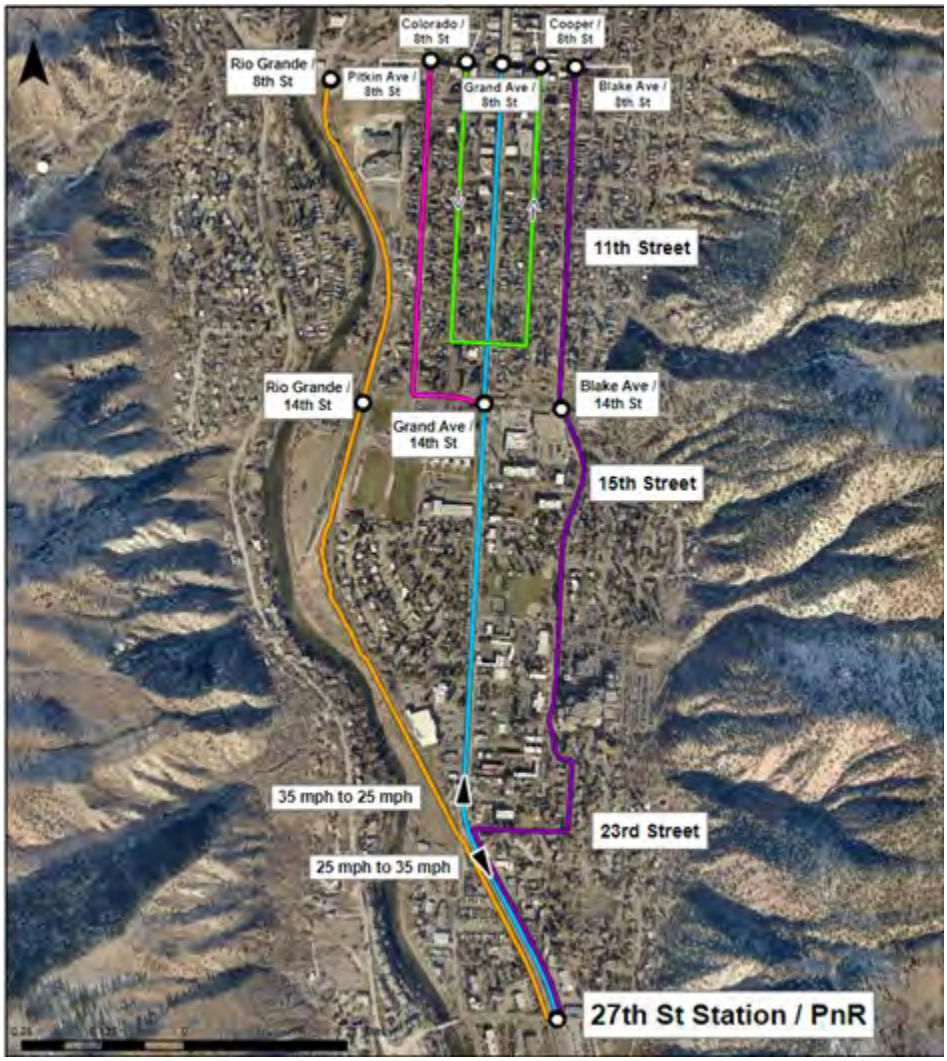
- The impact to on-street parking supply from the addition of bus-only lanes or other transit infrastructure downtown.
- The impact to parking demand by a new BRT station in downtown and parking management strategies to mitigate that demand.

## BRT Impact to On-Street Parking

Several infrastructure alternatives were explored for extending the BRT into downtown Glenwood Springs. Infrastructure options considered include the addition of bus-only lanes, queue jump lanes, bus bulbs, and in-line on-street stations, all with the potential to repurpose curb space and on-street parking supply for use by transit. Five potential BRT alignments through downtown were evaluated as part of the MOVE Grand Avenue project as mapped in **Figure 7**:

- Grand Avenue alignment
- Rio Grande Corridor alignment
- Blake Avenue alignment
- Pitkin Avenue alignment
- Cooper/Colorado Avenues one-way couplet alignment

*Figure 7. BRT Alignment Alternatives through Downtown*




With the exception of the Rio Grande Trail corridor, the other four street alignments would impact on-street parking if curb space was repurposed for bus-only lanes, queue jump lanes or in-line stations. Table 3 summarizes the sum of parking supply and average occupancy along the four on-street corridors through downtown initially considered for BRT. Along all of the corridors, parking occupancy was higher on Friday than Thursday, thus Table 3 shows the parking occupancy data for Friday. Please note that this data is from winter 2020 counts. Parking occupancy is likely to be higher in the summer, particularly north of 9th Street.

*Table 3. Winter On-Street Parking Supply and Average Occupancy along Downtown Corridors.*

| Corridor | On-Street Supply | Friday 5 AM | Friday 9 AM | Friday 4 PM | Friday 7 PM | Friday Avg. | Thurs Avg. |
|---|---|---|---|---|---|---|---|
| **Grand Ave** | 140 | 14% | 18% | 33% | 37% | 25% | 19% |
| **Cooper/ Colorado Ave** | 140[1] | 37% | 48% | 53% | 63% | 50% | 49% |
| **Pitkin Ave** | 161 | 42% | 51% | 37% | 57% | 47% | 41% |
| **Blake Street** | 200 | 35% | 29% | 39% | 43% | 36% | 35% |

1 Supply on Cooper/Colorado couplet represents one side of the street on each corridor.

**Table 3** shows that of the four on-street alternatives, Grand Avenue has the lowest parking supply and lowest average parking occupancy at all times of the day (the average occupancy is about half the Pitkin Ave and Cooper/Colorado Ave corridors). While the specific designs and impacts to parking may vary by corridor and other considerations are important, purely from a parking supply and occupancy lens, a BRT alignment along Grand Avenue would have the least impact to on-street parking of the four on-street alternatives.

### *Grand Avenue Alignment Analysis and Implications*

Of the four on-street BRT alignment options originally considered, only the Grand Avenue alignment was carried forward for further evaluation. One of the options being considered would repurpose the parking lane on Grand Avenue for a bus-only lane, potentially just during the peak period in the peak direction. This would be southbound in the morning peak and northbound in the afternoon peak. When accounting for the length of Grand Avenue from 8th Street to 13th Street on both sides of the street the average parking occupancy never exceeded 37% in the winter observations. Based on data described at the end of this memo, it is possible that summer parking could be 50% to 100% higher than the winter, particularly at the north end of the corridor during peak demand.

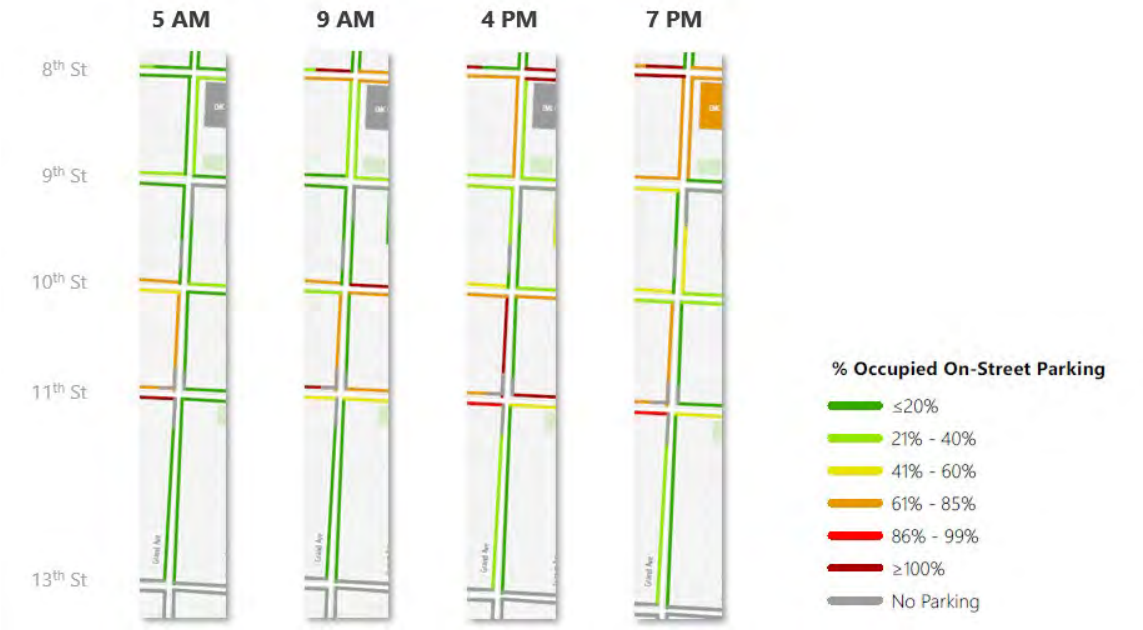
A more detailed analysis of parking occupancy at each block, during the morning and afternoon peaks in the winter is illustrated in **Figure 8**. This shows that parking occupancy is only high (>60%) on two blocks of Grand Avenue:

- Between 8th Street and 9th Street (west and east side) in the afternoon and evening
- In front of the Glenwood Springs Hostel (west side of 1000 Block of Grand Avenue) during all time periods

Parking occupancy at all other locations on Grand Avenue is generally low, typically below 20% in the winter. While summer parking demand is higher, and the impact of removing parking is

expected to be greater in the summer, removing on-street parking on these blocks is still expected to have minimal impact on these blocks. Between 8th Street and 9th Street, the on-street spaces were observed over 50% occupied at 4 PM and over 75% occupied at 7 PM on Friday in the winter, however occupancy was below 40% at 9 AM. Thus, removing parking just during the morning commute would likely have minimal impact on this block as well. Conversely, removing parking on this block during the afternoon peak period would have a greater impact on parking.

*Figure 8. Grand Avenue Parking Occupancy on Friday in Winter*




*Recommendations for Managing a Parking/Bus Lane on Grand Avenue*

If the City of Glenwood Springs and RFTA were to implement a peak period, peak direction, bus-only lane in the parking lane on Grand Avenue downtown, with on-street parking available at all other times, the following actions are recommended to ensure bus operations are not impacted:

- **Advance Communication Prior to Implementation.** Changes to parking operations on Grand Avenue should be clearly communicated to downtown businesses and residents prior to implementation. In addition, citywide public service announcements should be made.
- **Clear and Visible Signage.** Proper signage on every block should be in place, indicating the times when parking is not allowed as well as the penalty, such as: Violators Will be Towed.

- **Allow Time for Driver Adjustment.** During the first month or two following implementation, the City should show compassion to drivers who will be getting used to the change. Consider a grace period when only warnings will be issued to allow time for the public to adjust.
- **Have a Towing Plan.** Ultimately, the City will need to have a towing plan in place following the grace period. This will ensure the bus lane is not blocked (and thus ineffective) and the bus lane will need to be monitored on regular basis, likely twice daily at least at first. Based on experience with a similar situation in Aspen, towing is likely to be relatively common at first and then much less frequent as people adjust to the change. Allowing a grace period should help to minimize the need for towing as well.

## BRT Impact to Parking Demand Downtown

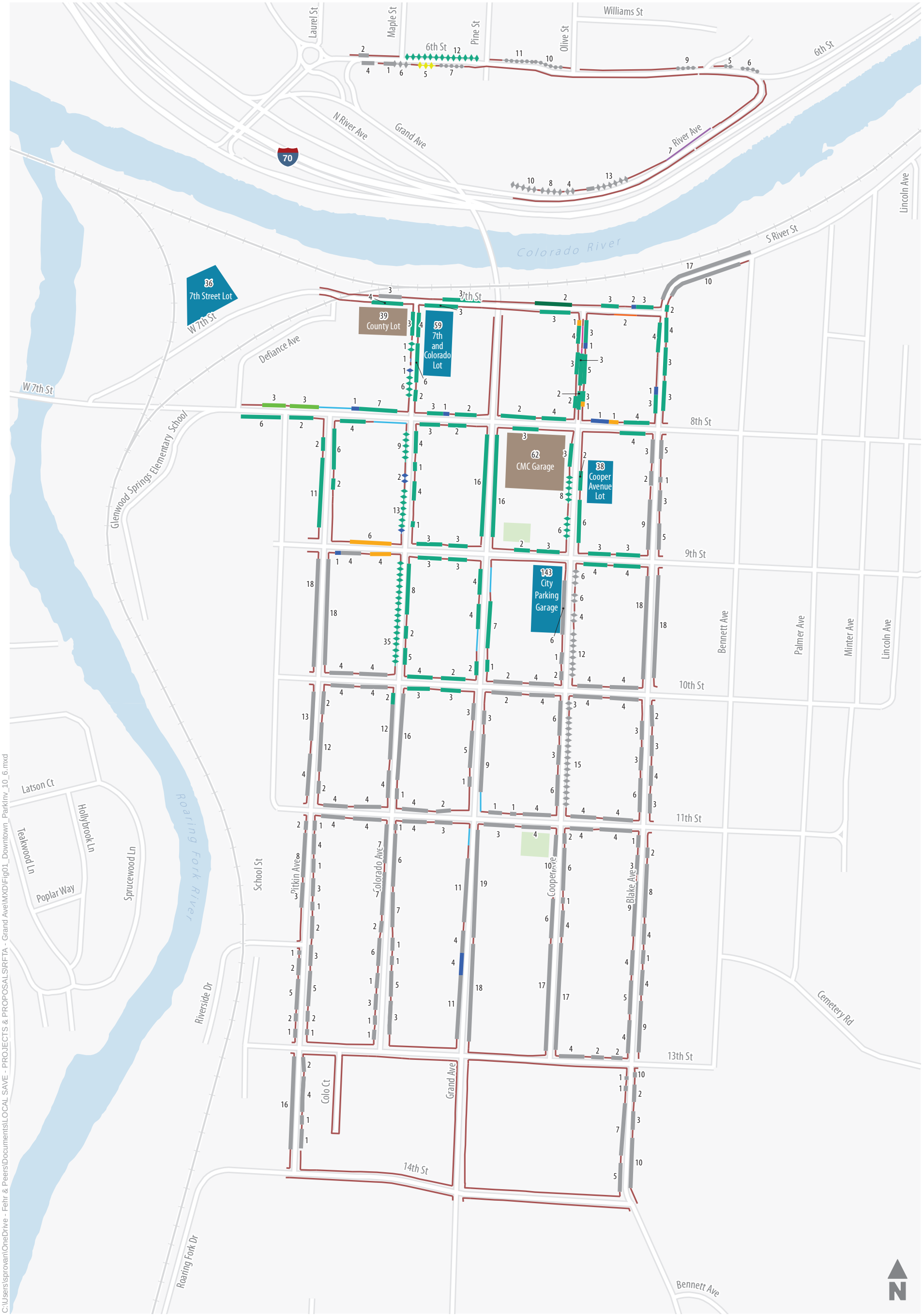
From an operational perspective, extending the BRT downtown may increase parking demand downtown from transit riders who access the BRT by driving and parking downtown. Downtown transit centers are not ideal locations for Park & Rides. In fact, one of the major benefits of a downtown transit center is its ability to increase non-driving access to downtown. Additionally, the land values downtown are typically the highest in the city and storing vehicles for people who are going to other destinations outside downtown is a highly inefficient use of that land.

Both the City of Glenwood Springs and RFTA are looking for ways to discourage transit riders from parking downtown as part of this project. At the same time, the City of Glenwood Springs is also hoping to mitigate the number of people driving through downtown Glenwood Springs to access the BRT via the 27th Street South Glenwood Station.

To achieve both outcomes with the BRT extension into downtown, the following strategies to manage parking and transit operations are recommended.

- **Eliminate Free All-Day Parking in the Downtown Core** - Transit riders that want to access the bus via driving and parking will look for free all-day parking close to a bus stop (typically within a five-minute walk). Time restricted parking (such as 2-hour Parking) will not be an option for transit riders. However, most downtown streets south of 9th Street currently have unrestricted on-street parking, and three public lots downtown offer free all-day parking. These include the 7th Street lot, the Cooper Avenue lot, and the City Parking Garage. It is recommended that in concert with the BRT extension into downtown, all publicly available parking within a five (and potentially ten) minute walk of the downtown transit center or station be converted to paid parking or time-restricted parking. Strategic exceptions can be made through a permit program for residents (similar to the existing program).

- **Connect the BRT to the West Glenwood Park & Ride** – Some BRT demand will be generated by people originating in West Glenwood and other communities to the west (such as New Castle, Silt, and Rifle). To provide those transit patrons a convenient option to park and take the BRT without driving through downtown Glenwood Springs or being tempted to park, the BRT should also be extended to the West Glenwood Park & Ride where it can intercept drivers from the west side of Glenwood Springs. There is currently excess capacity at this lot (and space to add parking in the future if needed), and parking demand will likely increase with more frequent BRT service than is offered today.
- **Provide Convenient Bicycle and Pedestrian Access to the BRT** – Investments to reduce barriers and increase convenience of pedestrian and bicycle access to BRT stations will provide better alternatives to driving and parking. Investments should target enhancing the pedestrian environment along key pedestrian corridors, improving pedestrian crossings of major streets, eliminating bike network gaps, providing low-stress bike connections between the BRT and multiuse trails (including the Rio Grande and LOVA Trails), and providing bike parking adjacent to BRT stations. A well-planned local bike share program would also increase access and modal choice to downtown.
- **Provide Convenient Connections to Local Transit** – The route structure and schedule of local transit in Glenwood Springs should be designed in part to act as a feeder service to regional transit, in particular the BRT. This will provide convenient options for more people to access the BRT without the need to drive and park. To be effective in this regard, local routes should be designed to provide direct service from high activity nodes and neighborhoods of Glenwood Springs to BRT stations. Service should also be frequent (every 15 minutes or less) or timed to connect to the BRT.

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**On-Street Parking Type**

- Diagonal Parking
- Parallel Parking
- Perpendicular Parking
- Other Curb Space Type
- X Number of Parking Spaces

**On-Street Parking Classification**

- Unrestricted Parking
- 2-Hour Parking 8AM-10PM
- 2-Hour Parking 9AM-6PM
- 15-Minute Parking
- 1-Hour Parking
- 15-Minute Parking
- Disability Reserved Parking

**Other Curb Space Type Classification**

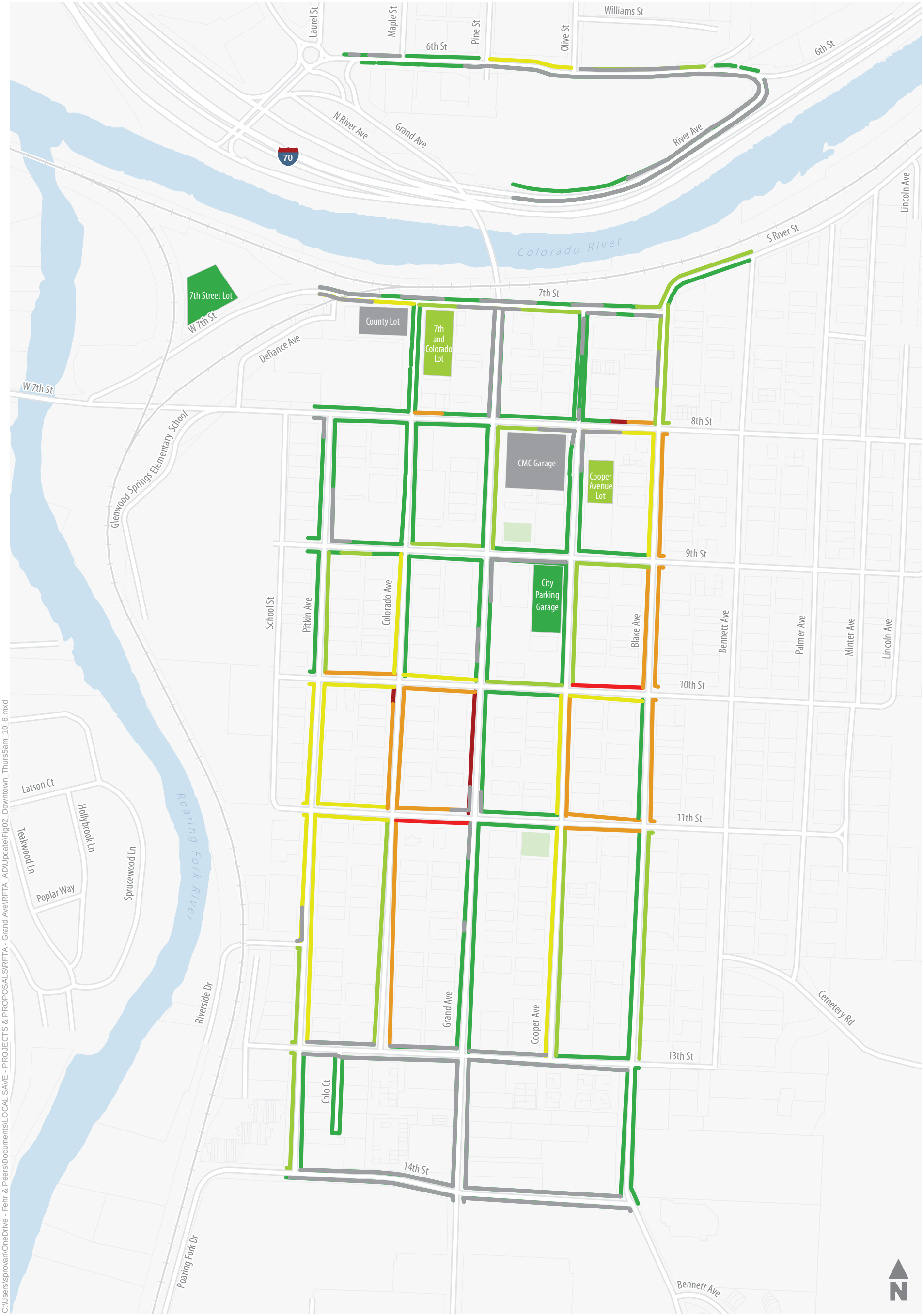
- Bus Loading
- Pick-up and Drop-off Only
- 10-Minute Loading
- Loading Only
- No Parking

**Off-Street Parking Classification**

- Public Parking
- Shared Parking

Figure 1

# Downtown Glenwood Springs - Parking Inventory




**% Occupied On-Street Parking**

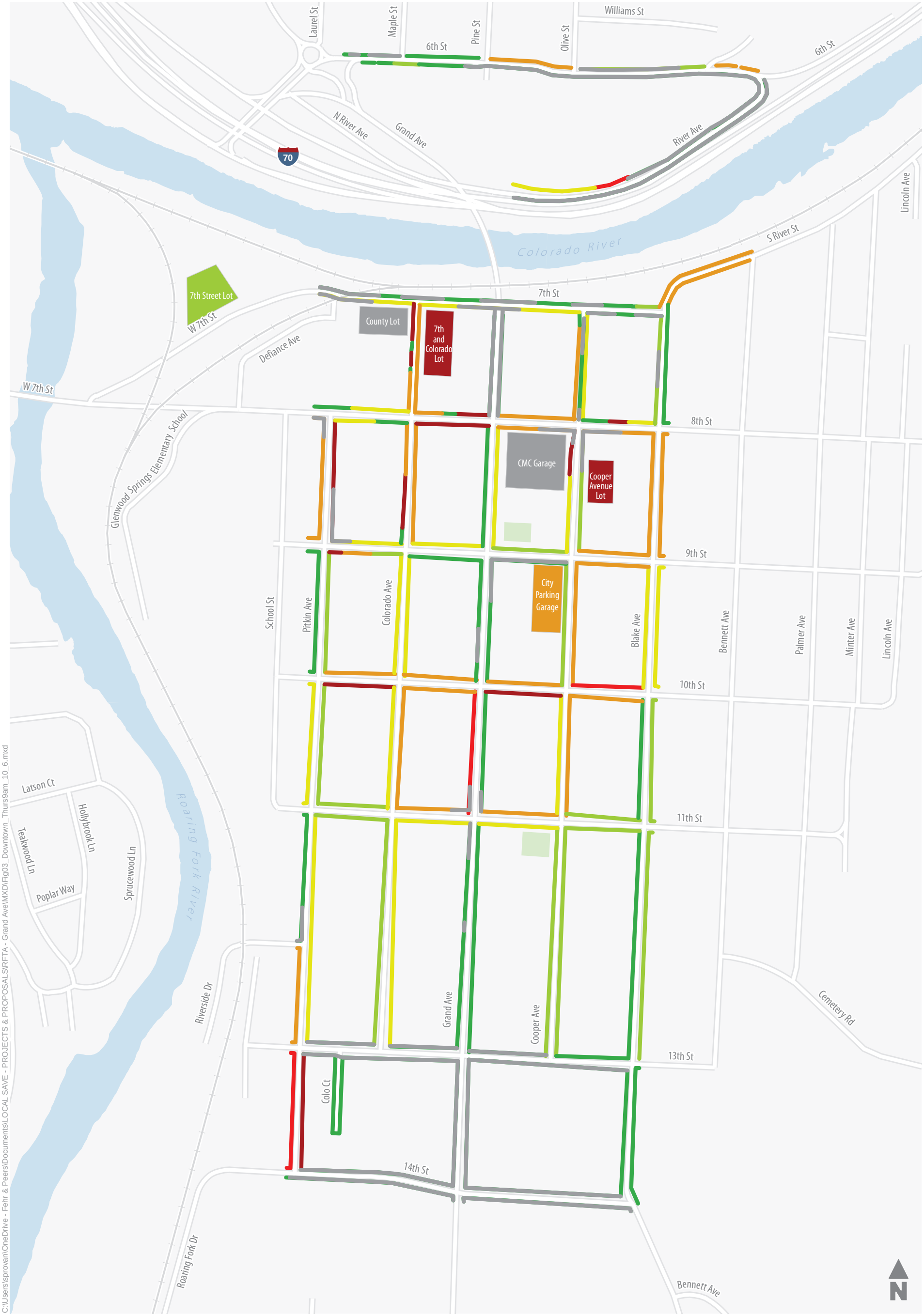
- ≤20%
- 21% - 40%
- 41% - 60%
- 61% - 85%
- 86% - 99%
- ≥100%
- No Parking

**% Occupied Off-Street Parking**

- ≤20%
- 21% - 40%
- 41% - 60%
- 61% - 85%
- 86% - 99%
- ≥100%
- No Parking

Figure 2

## Downtown Glenwood Springs - Winter Parking Utilization, Thursday 5am




**% Occupied On-Street Parking**

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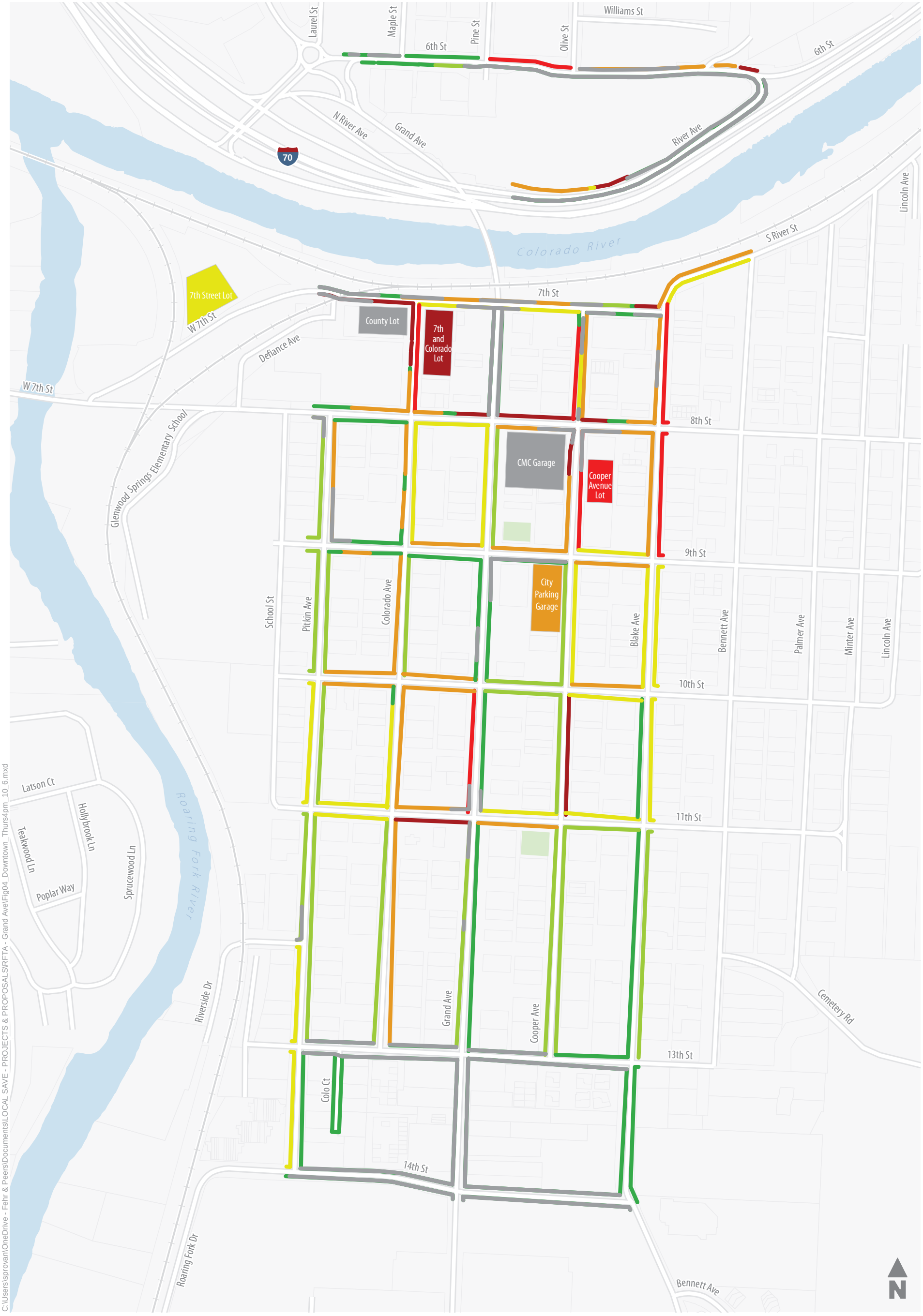
- 61% - 85%
- 86% - 99%
- ≥100%
- No Parking

**% Occupied Off-Street Parking**

- ≤20%
- 21% - 40%
- 41% - 60%
- 61% - 85%
- 86% - 99%
- ≥100%
- No Parking

Figure 3

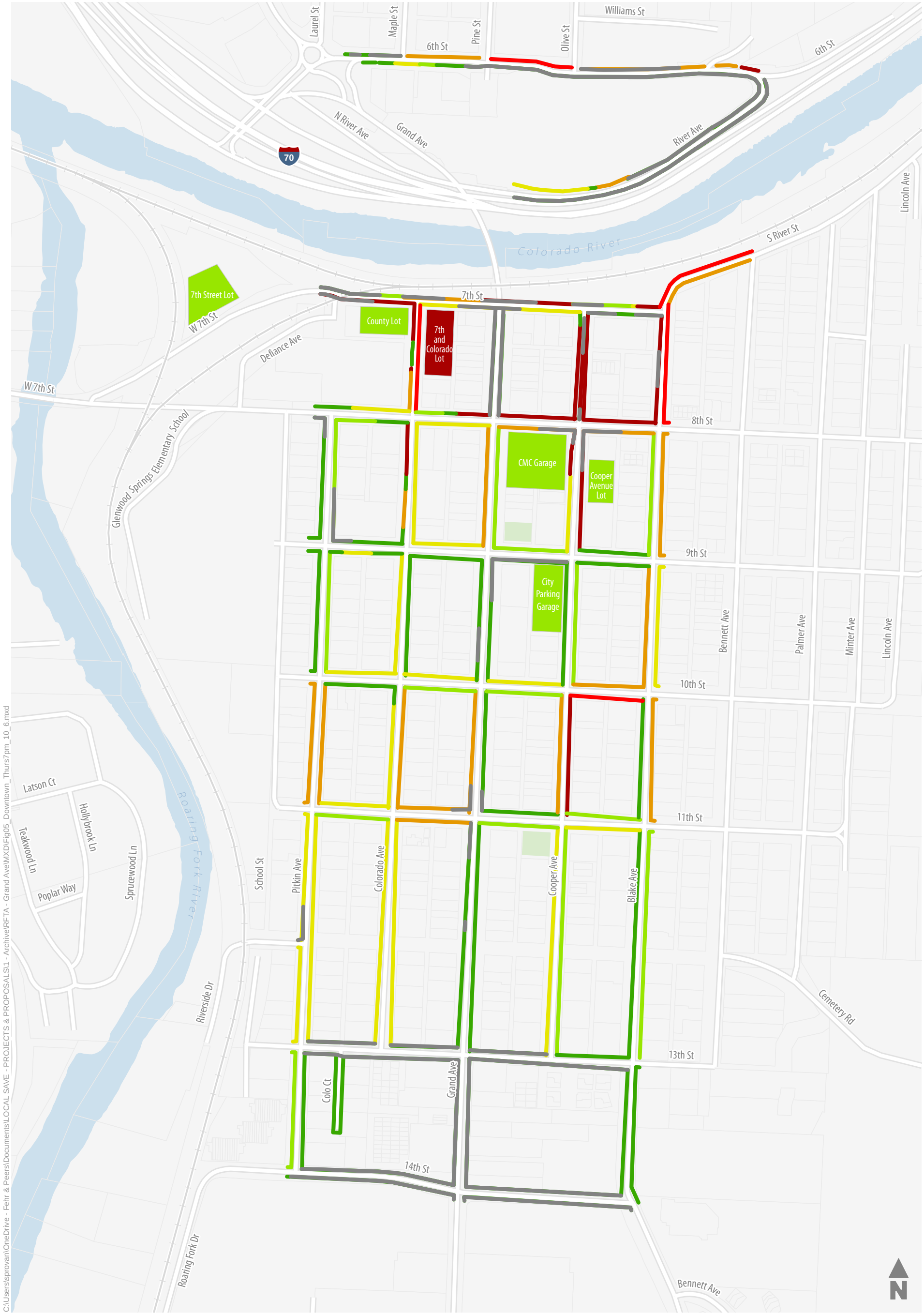
## Downtown Glenwood Springs - Winter Parking Utilization, Thursday 9am




| % Occupied On-Street Parking | % Occupied Off-Street Parking |
|---|---|
| ≤20% | ≤20% |
| 21% - 40% | 21% - 40% |
| 41% - 60% | 41% - 60% |
| 61% - 85% | 61% - 85% |
| 86% - 99% | 86% - 99% |
| ≥100% | ≥100% |
| No Parking | No Parking |

Figure 4

## Downtown Glenwood Springs - Winter Parking Utilization, Thursday 4pm




**% Occupied On-Street Parking**

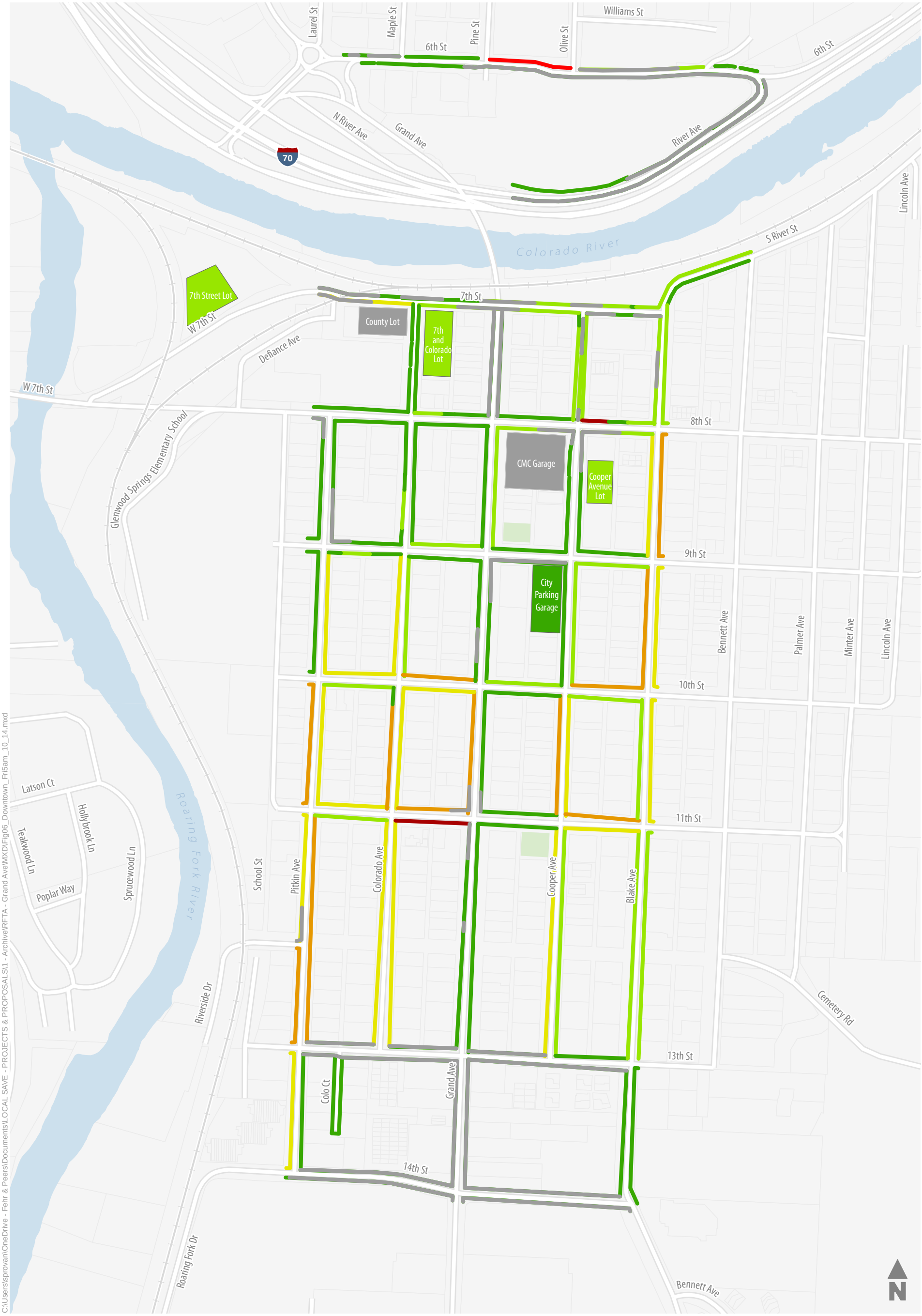
- ≤20%
- 21% - 40%
- 41% - 60%
- 61% - 85%
- 86% - 99%
- ≥100%
- No Parking

**% Occupied Off-Street Parking**

- ≤20%
- 21% - 40%
- 41% - 60%
- 61% - 85%
- 86% - 99%
- ≥100%
- No Parking

Figure 5

## Downtown Glenwood Springs - Winter Parking Utilization, Thursday 7pm




**% Occupied On-Street Parking**

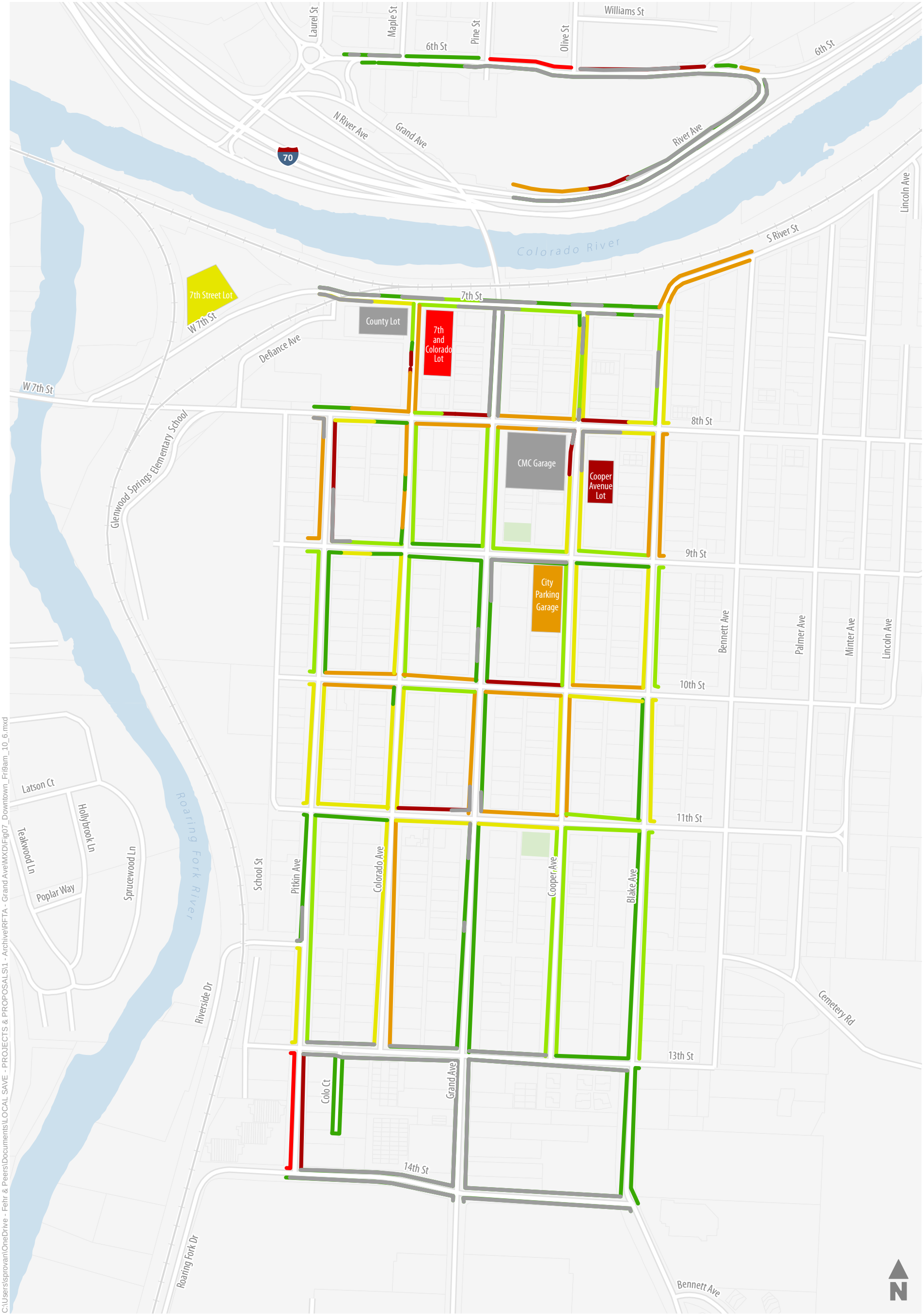
- ≤20%
- 21% - 40%
- 41% - 60%
- 61% - 85%
- 86% - 99%
- ≥100%
- No Parking

**% Occupied Off-Street Parking**

- ≤20%
- 21% - 40%
- 41% - 60%
- 61% - 85%
- 86% - 99%
- ≥100%
- No Parking

Figure 6

## Downtown Glenwood Springs - Winter Parking Utilization, Friday 5am




**% Occupied On-Street Parking**

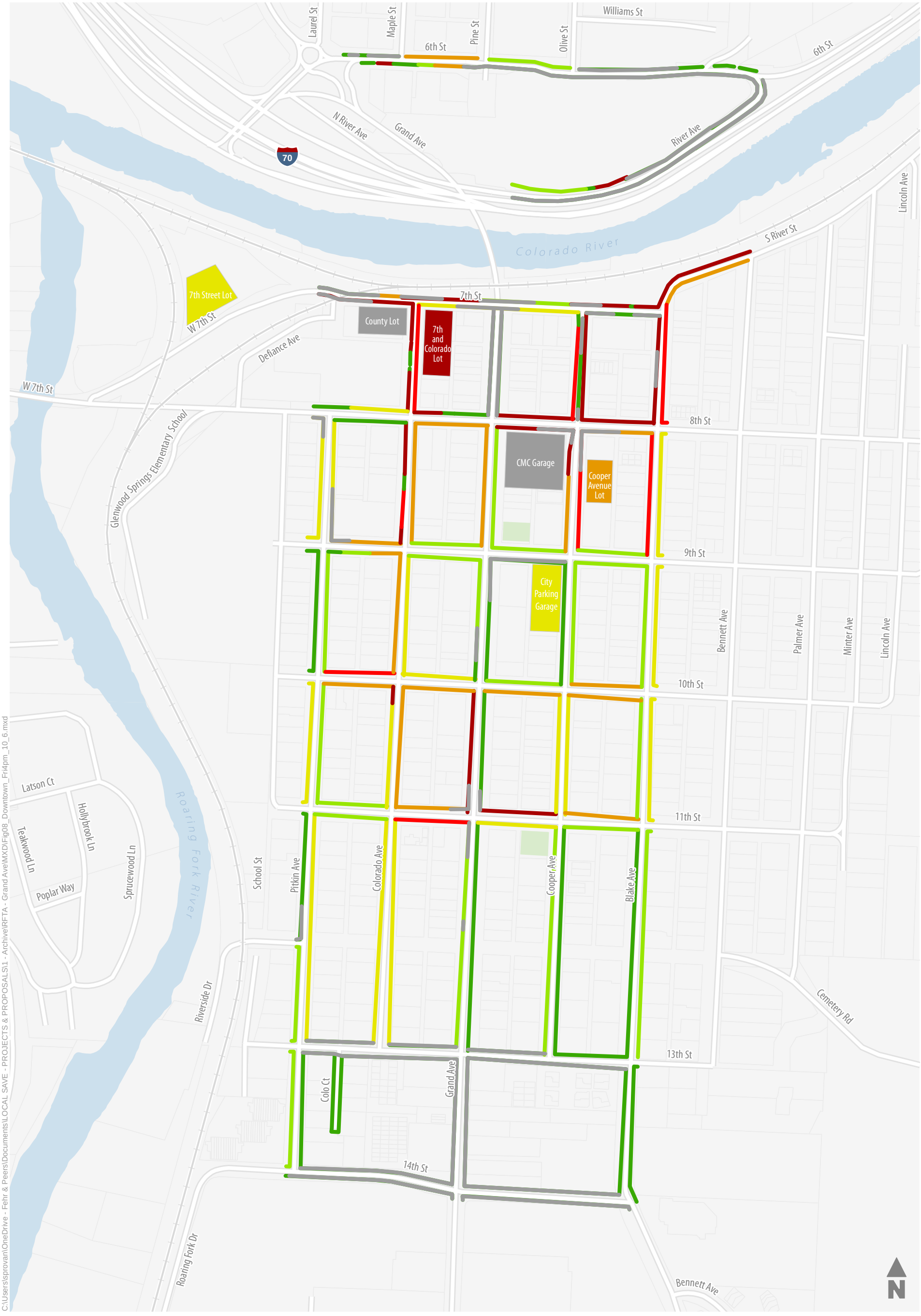
- ≤20%
- 21% - 40%
- 41% - 60%
- 61% - 85%
- 86% - 99%
- ≥100%
- No Parking

**% Occupied Off-Street Parking**

- ≤20%
- 21% - 40%
- 41% - 60%
- 61% - 85%
- 86% - 99%
- ≥100%
- No Parking

Figure 7

## Downtown Glenwood Springs - Winter Parking Utilization, Friday 9am

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| % Occupied On-Street Parking | % Occupied Off-Street Parking |
|---|---|
| ≤20% | ≤20% |
| 21% - 40% | 21% - 40% |
| 41% - 60% | 41% - 60% |
| 61% - 85% | 61% - 85% |
| 86% - 99% | 86% - 99% |
| ≥100% | ≥100% |
| No Parking | No Parking |

Figure 8

## Downtown Glenwood Springs - Winter Parking Utilization, Friday 4pm

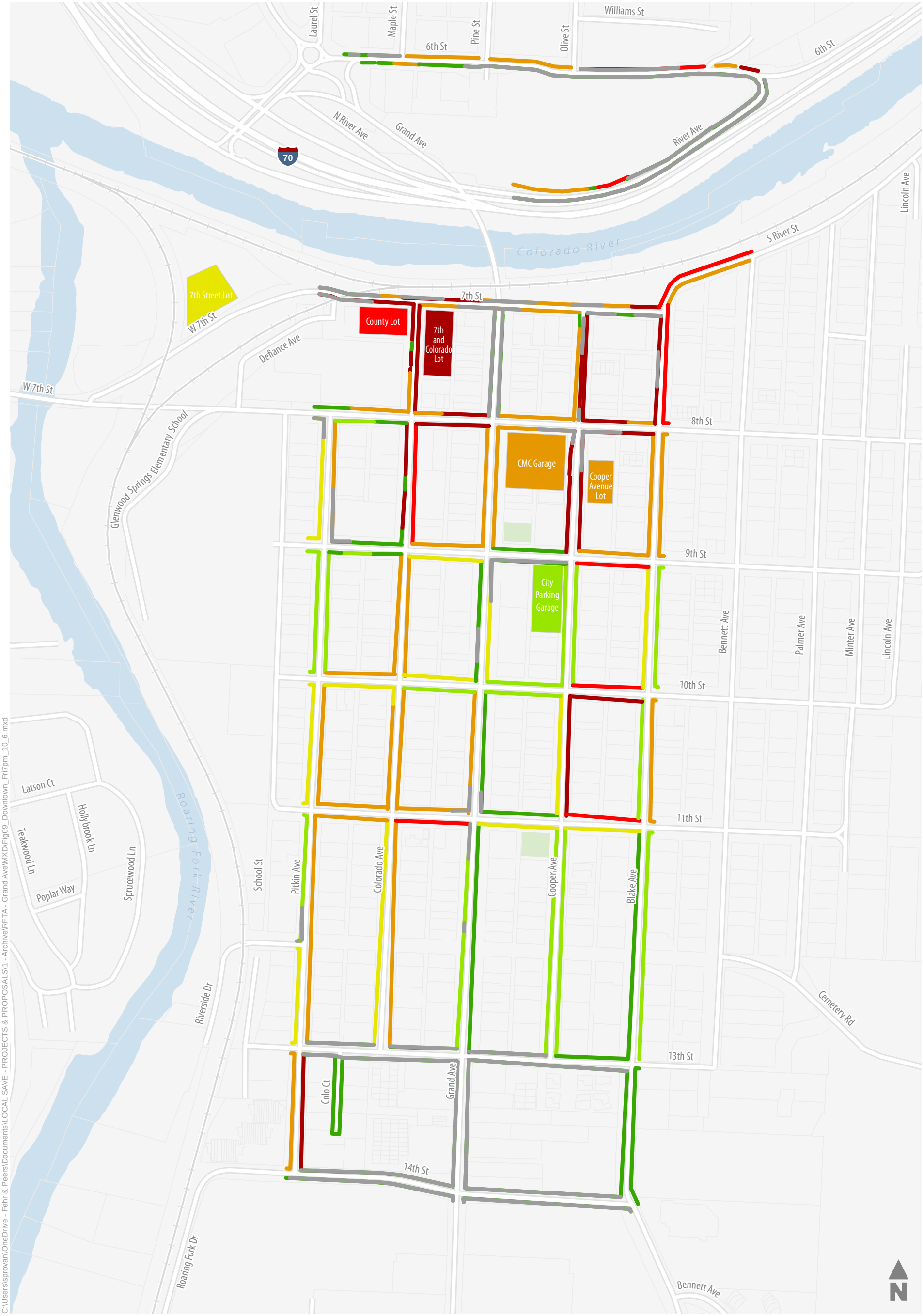


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Figure 9

## Downtown Glenwood Springs - Winter Parking Utilization, Friday 7pm


Figure 10

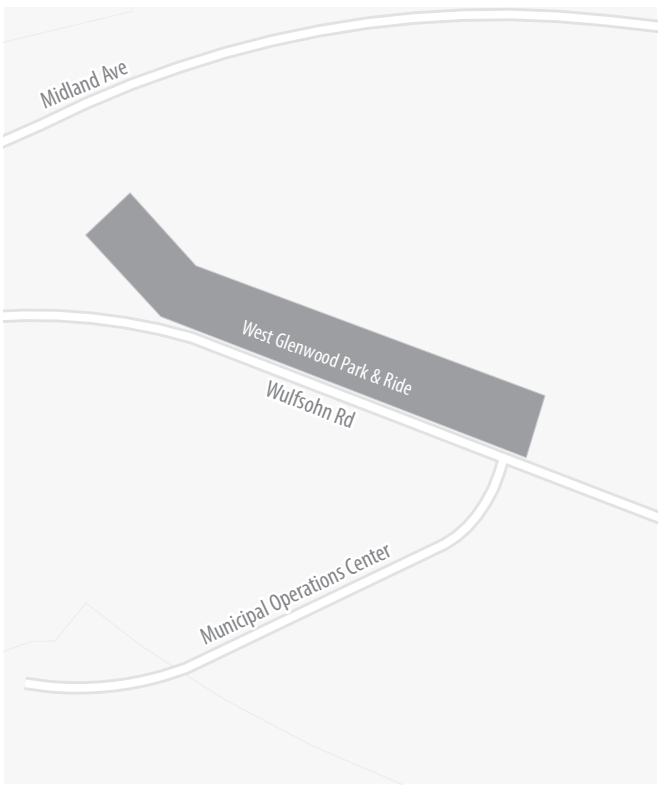
# Glenwood Springs Park & Rides- Winter Parking Inventory


Figure 11

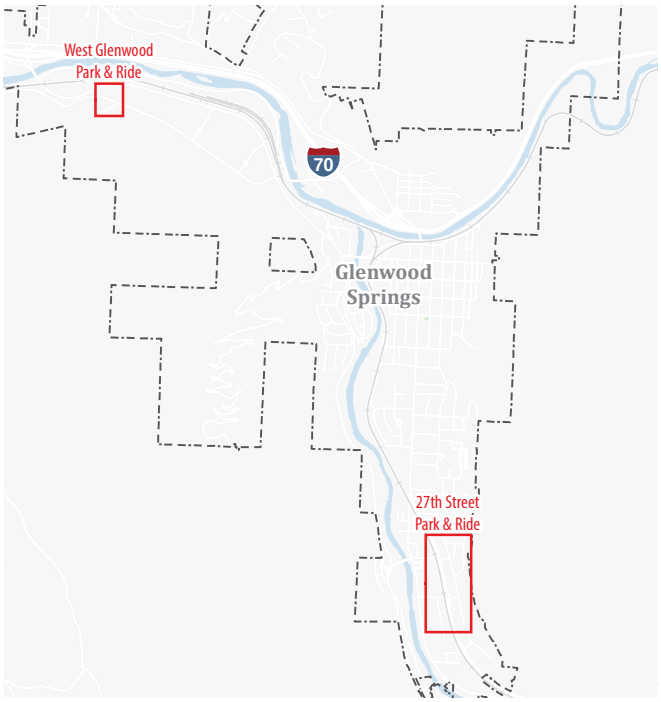
# Glenwood Springs Park & Rides- Winter Parking Utilization, Thursday 5am

## 27th Street Park & Ride


## West Glenwood Park & Ride




## Location Overview

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x Number of Parking Spaces

No Parking

Counts Not Collected During This Time Period

**% Occupied On-Street Parking**

- ≤20%
- 21% - 40%
- 41% - 60%
- 61% - 85%
- 86% - 99%
- ≥100%

**% Occupied Off-Street Parking**

- ≤20%
- 21% - 40%
- 41% - 60%
- 61% - 85%
- 86% - 99%
- ≥100%

N

Figure 12

# Glenwood Springs Park & Rides- Winter Parking Utilization, Thursday 7am


Figure 13

# Glenwood Springs Park & Rides- Winter Parking Utilization, Thursday 9am


Figure 14

# Glenwood Springs Park & Rides- Winter Parking Utilization, Thursday 4pm


Figure 15

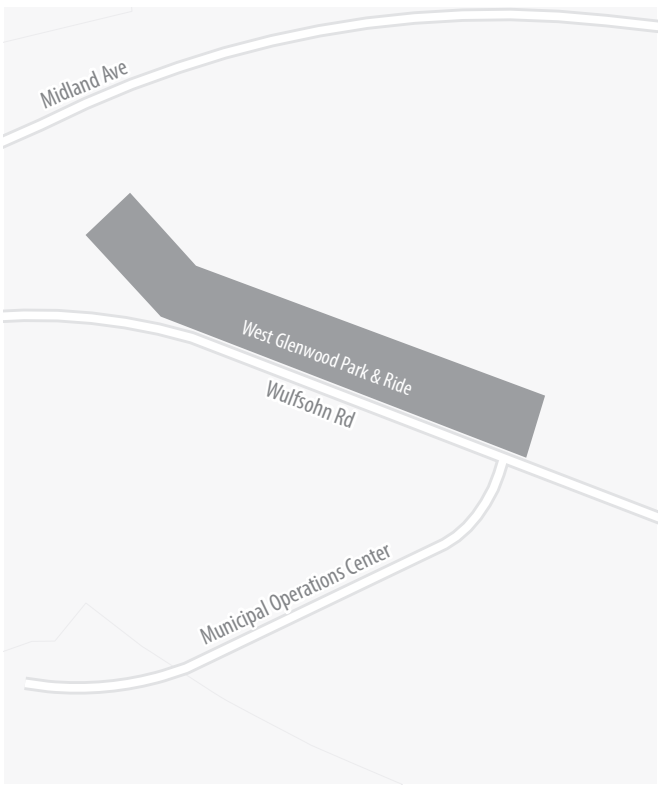
# Glenwood Springs Park & Rides- Winter Parking Utilization, Thursday 7pm


Figure 16

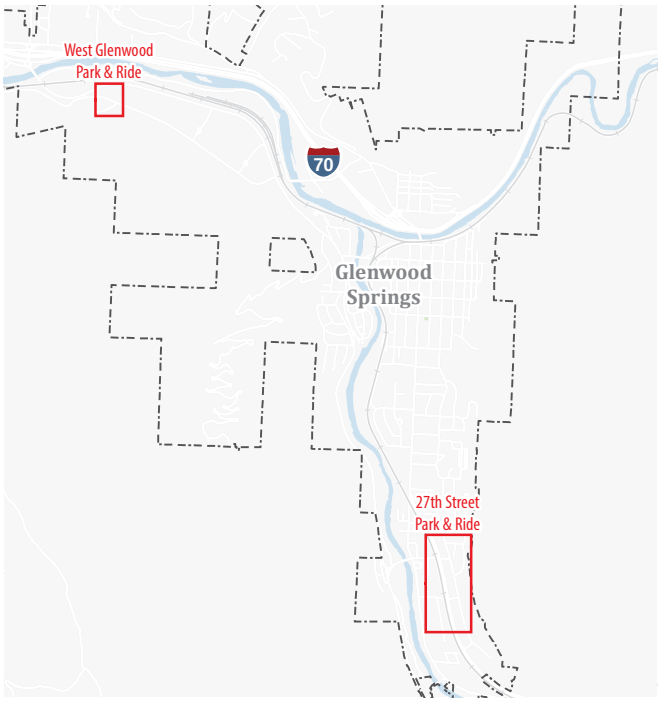
# Glenwood Springs Park & Rides- Winter Parking Utilization, Friday 5am

**27th Street Park & Ride**


**West Glenwood Park & Ride**




**Location Overview**

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x Number of Parking Spaces

No Parking

Counts Not Collected During This Time Period

**% Occupied On-Street Parking**

- ≤20%
- 21% - 40%
- 41% - 60%
- 61% - 85%
- 86% - 99%
- ≥100%

**% Occupied Off-Street Parking**

- ≤20%
- 21% - 40%
- 41% - 60%
- 61% - 85%
- 86% - 99%
- ≥100%

N

Figure 17

## Glenwood Springs Park & Rides- Winter Parking Utilization, Friday 7am


Figure 18

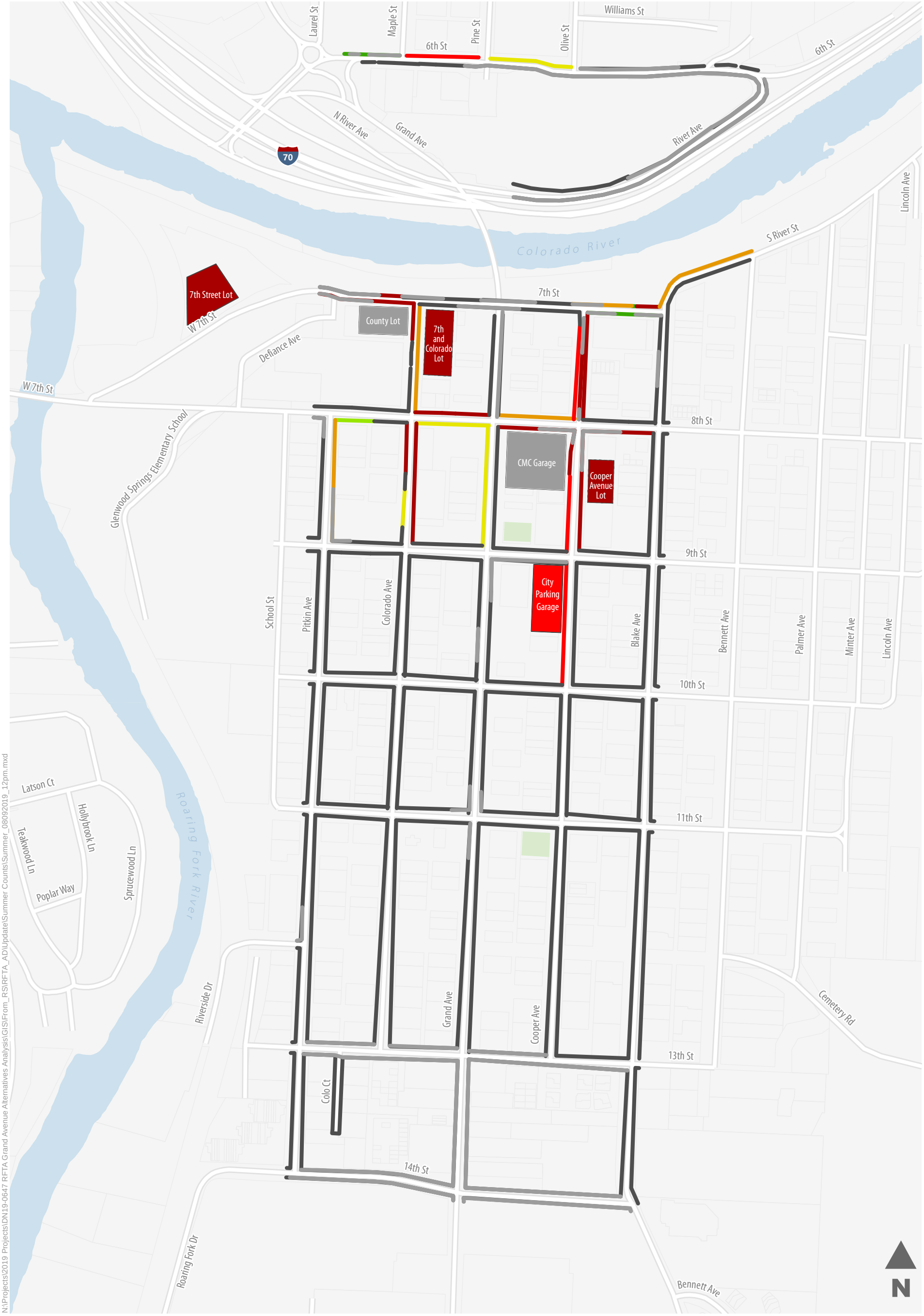
# Glenwood Springs Park & Rides- Winter Parking Utilization, Friday 9am


Figure 19

# Glenwood Springs Park & Rides- Winter Parking Utilization, Friday 4pm


Figure 20

# Glenwood Springs Park & Rides- Winter Parking Utilization, Friday 7pm




**% Occupied On-Street Parking**

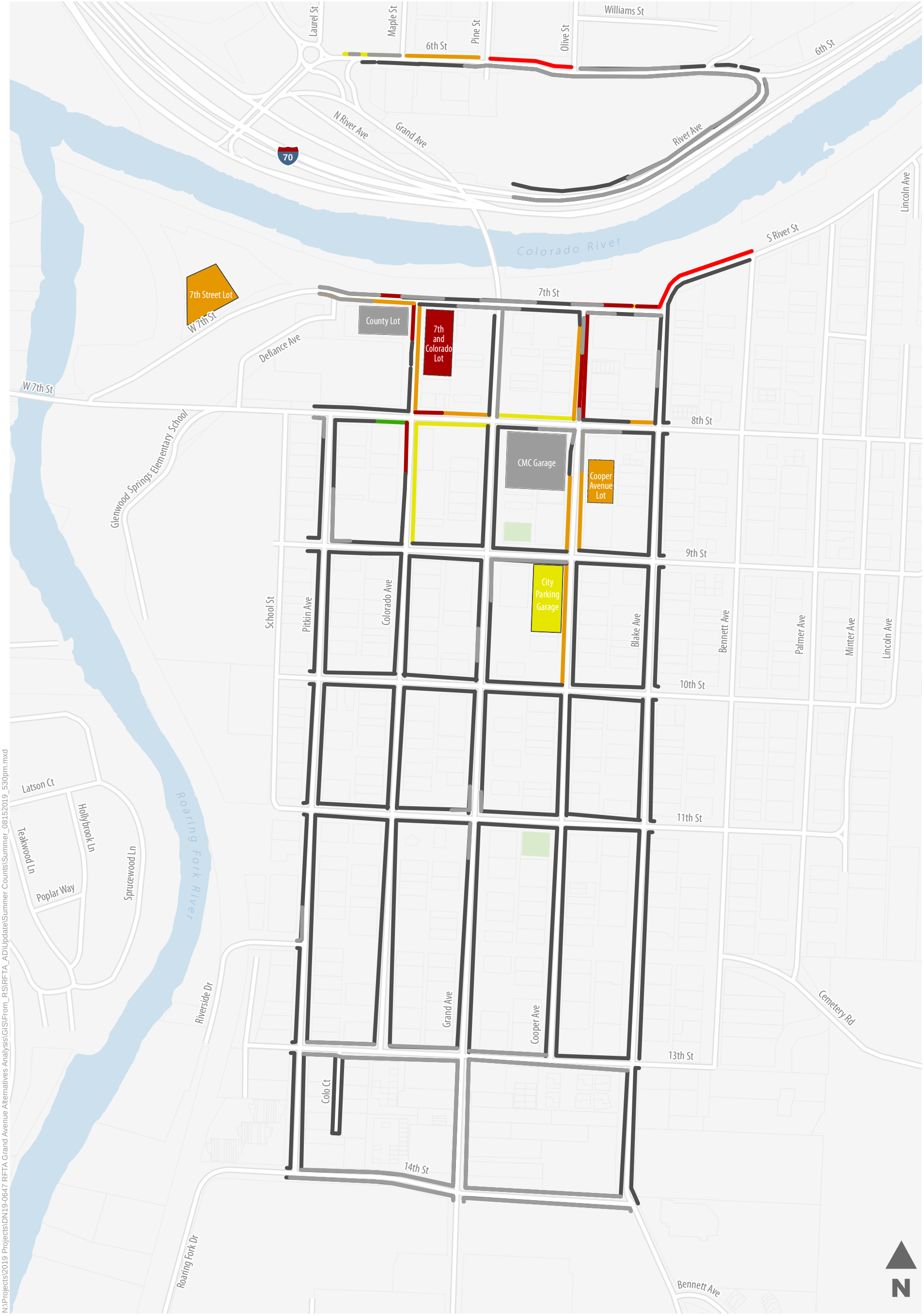
- ≤20%
- 21% - 40%
- 41% - 60%
- 61% - 85%
- 86% - 99%
- ≥100%
- No Data
- No Parking

**% Occupied Off-Street Parking**

- ≤20%
- 21 - 40%
- 41 - 60%
- 61 - 85%
- 86 - 99%
- 100%
- No Parking

Figure 21

## Downtown Glenwood Springs - Summer Parking Utilization, Friday 12 pm




**% Occupied On-Street Parking**

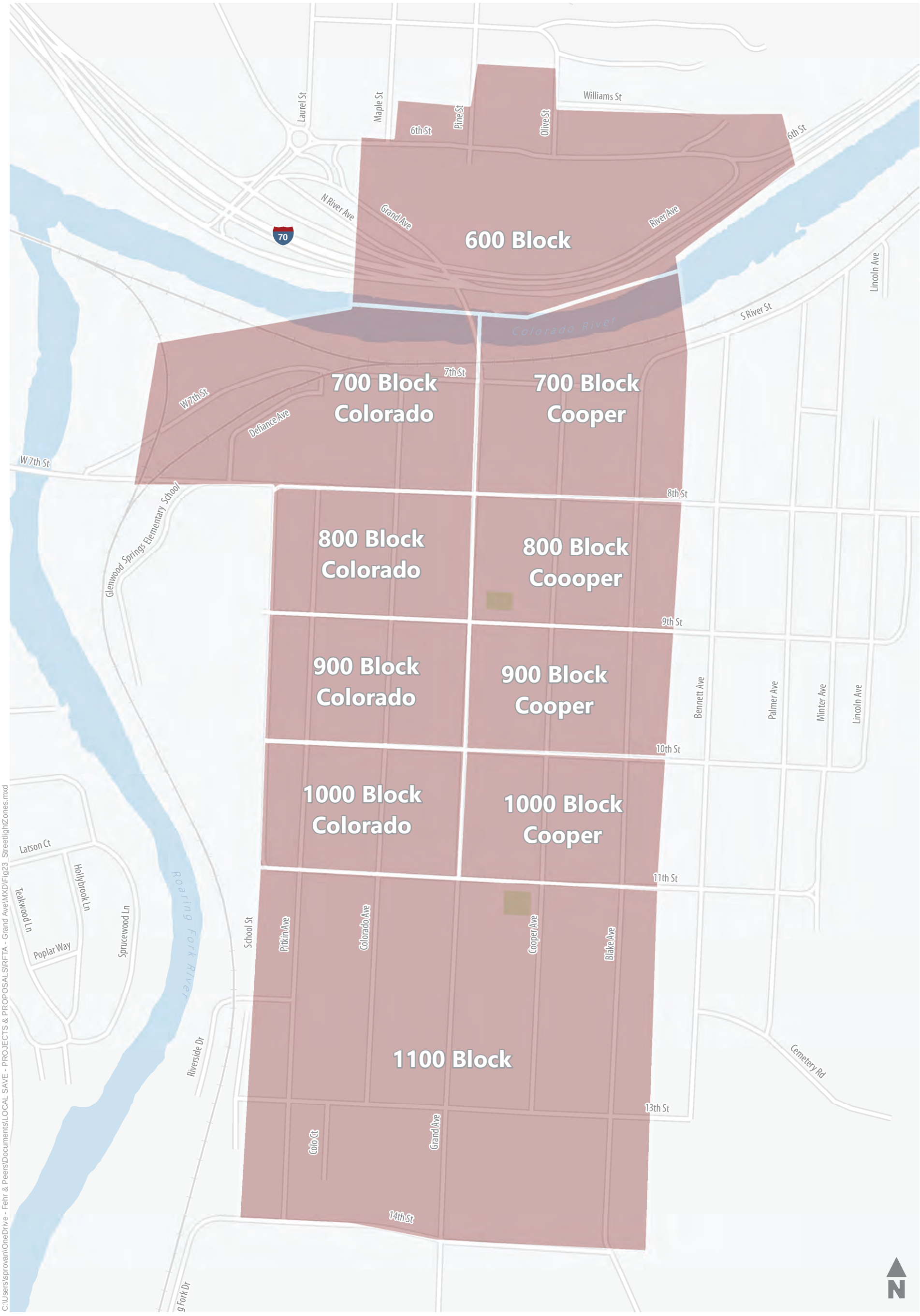
- ≤20%
- 21% - 40%
- 41% - 60%
- 61% - 85%
- 86% - 99%
- ≥100%
- No Data
- No Parking

**% Occupied Off-Street Parking**

- ≤20%
- 21 - 40%
- 41 - 60%
- 61 - 85%
- 86 - 99%
- 100%
- No Parking

Figure 22

## Downtown Glenwood Springs - Summer Parking Utilization, Thursday 5:30 pm




StreetLight Zones

Figure 23

Downtown Glenwood Springs - StreetLight Zones

FEHR PEERS

# Memorandum

Date: April 30, 2021

To: Emily Kushto, Parsons
David Johnson, RFTA
Terri Partch, City of Glenwood Springs

From: Patrick Picard, AICP and Charlie Alexander, PE, AICP

**Subject: MOVE Grand Avenue: Aspen Parking Program Case Study**

*DN19-0647*

# Case Study for Glenwood Springs:

## Aspen Parking Management Program

Staff from the City of Aspen's Transportation Department and Parking Department participated in a conversation with the members of the MOVE Grand Avenue project team on July 27, 2020. Staff from Aspen shared information about their parking program, including successes and challenges, some of which may be of value to the City of Glenwood Springs as they advance their parking management program. Key takeaways from that conversation as they relate to the City of Glenwood Springs parking management are highlighted below.

- **Parking Program Goals** – Understanding the goals of Aspen's parking program is important to understanding the strategies they have in place. There are two high-level goals of the parking program. One is to ensure there are always available on-street parking spaces downtown for people who want to park close to their destination. This is to ensure people can easily access businesses and to reduce congestion from people circling for parking. Aspen has set a goal of 85% occupancy of on-street parking spaces mostly by adjusting pricing and time restrictions. Second, the City has a larger transportation goal of keeping vehicle miles traveled into Aspen flat and uses the parking program as a means to incentivize other modes of transportation.

- **Parking is Integrated into the Transportation Program** – Parking management is a key tool in the toolbox for the larger transportation program in Aspen. The City recognizes the high value of parking in Aspen and leverages that value through pricing, permits, enforcement, and providing a variety of parking options to influence transportation in the City. Most parking downtown is paid. However, free parking is available at the Brush Creek Park & Ride, and all local bus service in Aspen (and from Brush Creek) is free, including Aspen's on-demand microtransit service, the Downtowner. Many employers also offer free bus passes (for regional service) in lieu of free parking. Bike share and car share programs are also available and free parking is available to those who carpool. Lastly, the parking program costs about $2 million annually to operate, but generates about $5 million per year in revenue. The surplus parking revenue is used to fund the bus system and other aspects of the transportation program. Therefore, the parking program is integrated into the larger transportation program using both the "carrot" (free bus, etc.) and the "stick" (paid parking) to incentivize people to use non-driving means to access downtown.

- **Progressive Pricing** – The pricing structure of the paid parking program is designed with a goal of 85% occupancy of on-street parking spaces. Therefore, parking is priced highest when and where demand is highest and gets more expensive the longer one parks. In the case of Aspen, this occurs between 11AM and 3PM on-street in the core of downtown during the summer and winter months. During this time, parking is most expensive. In addition, the public parking garage is less expensive and available for all day parking to direct people wishing to park for longer parts of the day, while on-street spaces are priced to cater to people who want convenient access over a shorter time frame. The pricing program also provides flexibility. For example, the first 30 minutes are free (once per 24 hours) to allow people who are making a quick stop downtown to do so without incurring a fee. This also incentivizes high turnover for businesses. In addition, the time restriction is capped at 4 hours (instead of 2) allowing people more time to shop and dine, but each additional hour gets more expensive. Therefore, most people still choose to park for a shorter period, but have the option to park longer if willing to pay for it. Lastly, the City manages spillover parking in the residential areas around downtown by providing residents with residential parking permits and allowing some commuter parking in residential areas through a permitting program.

- **Technology** – Much of Aspen's parking system is feasible because of the technology that is used for payment and enforcement. Aspen provides the option of kiosks as well as mobile payments through two mobile apps. The City is in the process of moving to entirely mobile payment and would like to expand to a total of five mobile apps replicating apps used in the most common home cities of Aspen tourists (such as Denver, Chicago, etc.) to make it as convenient as possible for visitors. Second, parking

enforcement officers have vehicles equipped with license plate readers (LPRs) that enable officers to cover a lot of ground in short period of time and conduct frequent checks.

- **Fines** – Aspen's fine structure for parking violations has some similarities to Glenwood Springs, but is generally higher. First time offenses for most parking violations result in a warning given the high number of tourists unfamiliar with the area. Second time offenses result in fines of $30 for failing to pay or exceeding a time limit, $50 for parking in an illegal space, and $100 for parking in a handicapped space or in front of a fire hydrant. For comparison, fines in Glenwood Springs are $20 for all parking violations except illegally parking in a handicap space which is $100. Many of those issued tickets in Aspen are repeat offenders and Aspen staff would like to move to a tiered system whereby the parking fines increase for each successive ticket.

- **Truck Loading** – Aspen has 17 loading zones in the downtown, some of which are only signed at certain parts of the day. The majority of loading activity occurs at five locations, and about 90% of loading activity is from trucks. Aspen explored regulating truck loading by certain times of the day, but this was infeasible given the distances many trucks travel to reach Aspen and the need for truckers to unload at different times of the day. Aspen is exploring using color coding in the future to delineate loading zones for different purposes or at different times of day.

- **Cost & Revenues** – As mentioned earlier, the parking program generates about $5 million annually. The majority of the revenue is from paid parking. Less than 15% of revenue is generated by fines. In addition to paid public parking, the City also charges for construction parking, $100 per day for spaces in the core and $40 per space per day in the residential areas, which generates about $700,000 annually. In comparison, Glenwood Springs generates about $40,000 per year from parking violations downtown.

- **Data Monitoring** – Aspen uses an external data analyst to monitor several metrics of their parking program. This information is used to continuously make targeted adjustments to pricing and other aspects of their parking program to ensure its meeting their goals.

- **Messaging –** Changing parking regulations and in particular paid parking can be highly controversial. Aspen has learned over time the most effective means to mitigate public backlash is to stay in front of messaging and clearly communicate what is being implemented and why. Another key strategy is to closely monitor data to show the benefits of parking management strategies. For example, many downtown businesses were initially unhappy with the City's shift to a progressive parking structure for fear of losing business with higher parking costs. The City agreed to a pilot program with

businesses and monitored sales tax revenue before and after implementation. After the pilot, data showed that sales tax revenue increased by over 10% after increasing pricing during high demand parts of the day as it increased the ability for people to find parking close to their destination. Similar to Glenwood Springs, many of the parking spaces in downtown Aspen prior to implementing the progressive pricing system were occupied by employees. By changing the pricing more on-street spaces became available for customers instead of employees.

It should be noted that Aspen and Glenwood Springs are different cities with different levels of parking demand, employment, tourism, travel patterns, and community goals. However, there are some parallels and both cities face many of the same issues related to parking. As Glenwood Springs makes improvements to parking management downtown, many of the key takeaways from Aspen's parking program listed above could also apply - albeit in a different context. Ultimately the parking strategies that Aspen uses are intended to achieve their larger economic, land use, and transportation goals. As Glenwood Springs makes adjustments to their parking management, strategies should be consistent and support the City's larger goals for their downtown and transportation system.

## Applicability to Glenwood Springs

Some of the key parking management strategies Aspen currently uses that Glenwood Springs could adopt to improve parking and access downtown include:

- **Implementing Variable Pricing** – Implement variable pricing on-street so the cost of parking can shift over time depending on demand in order to ensure some parking is always available on all blocks (i.e. parking will be more expensive when and where demand is highest). This was a key strategy in reducing congestion and increasing business activity in Aspen.
- **Provide Flexible Parking Options** – This could include things like:
    - Offer free parking on-street for the first 30 minutes to make it easy and convenient for people to make quick stops at downtown businesses.
    - Extend parking time restrictions from 2 to 3 or 4 hours, but increase the price for each additional hour to allow more flexibility when dining and shopping downtown, but still incentivize high turnover.
    - Provide all-day parking in off-street public lots. Off-street lots may need to be converted to paid parking in order to ensure availability of parking but could be priced less expensively than parking on-street.
    - Implement flexible spaces. Designate some spaces as loading zones part of the day (when demand for loading is high) and on-street parking other times (when demand for loading is lower).

- **Leverage Technology** – This would include offering mobile payment options for paid parking and LPR technology to improve enforcement.
- **Invest in Transit and Other Modes** – Use excess parking revenues to invest in the transit network and other modes to increase the viability and attractiveness of non-driving modes as a means of getting downtown. This would help reduce growth in parking demand and traffic.
- **Address Employee Parking** – Many of the parking spaces in downtown Glenwood Springs, particularly in the off-street lots, are being used by downtown employees during weekdays. One of the most successful aspects of Aspen's parking program was to free up parking downtown by dis-incentivizing use of the highest demand locations by employees. This allowed more availability of parking for visitors and people doing business, which has helped boost downtown business and sales tax revenue and reduce congestion from people circling for parking. There are a few ways Glenwood Springs could encourage the same thing, including:
    - Use pricing and regulations to incentivize all-day parking in lower demand areas outside the downtown core. This could include some of the residential areas to the south or an intercept lot like the West Glenwood Park & Ride.
    - Incentivize free bus passes for employees. The MOVE Grand Avenue project will significantly improve regional bus service downtown. An additional incentive for employees to choose the bus instead of driving would be to increase the number of employers that provide free bus passes to employees.
    - Provide free bus service in Glenwood Springs – If the City converts to paid parking downtown, one potential use of excess revenue would be to make the Ride Glenwood and other RFTA service free within Glenwood Springs, which, when combined with paid parking downtown, would further incentivize people to use transit to get downtown, particularly among employees.
    - Extend the VelociRFTA BRT to downtown Glenwood Springs and the West Glenwood Park and Ride. More frequent and faster service associated with the BRT will greatly improve non-driving access to Downtown Glenwood Springs. Additionally, if combined with free bus service in Glenwood Springs employees would have the option and could be encouraged to park in the West Glenwood Park and Ride for free and use the BRT to get to/from downtown for free. Many employees in downtown Glenwood Springs live in neighborhoods and communities west of Glenwood Springs. This would be similar to the arrangement that Aspen has where people can park for free in at the Brush Creek Park and Ride and ride the BRT for free into Aspen.
- **Messaging & Communication** - Given the controversial nature of parking, it will be important to clearly message changes to parking, gather input, and articulate the benefits that address concerns, particularly to downtown businesses and residents of the City.

- **Monitor & Adjust** – A key aspect of managing parking will be to collect data to see what is and what is not working and then use that information to make adjustments over time to pricing, restrictions, enforcement, communication, and other aspects of the parking program.

FEHR PEERS

# Memorandum

Date: April 30, 2021

To: Emily Kushto, Parsons
David Johnson, RFTA
Terri Partch, City of Glenwood Springs

From: Patrick Picard, AICP and Charlie Alexander, PE, AICP

**Subject: Implementing Paid Parking in Downtown Glenwood Springs**

*DN19-0647*

## Contents




518 17th Street | Suite 1100 | Denver, CO 80202 | (303) 296-4300 | Fax (303) 296-4302
www.fehrandpeers.com

# Implementing Paid Parking

This memo provides a high-level guidance and our recommended next steps to consider for the City of Glenwood Springs as part of its implementation of paid parking in downtown Glenwood Springs. We also provide some preliminary guidance on pricing, geography, management strategies, technology, staffing, cost considerations and other actions necessary to implement a comprehensive paid parking program downtown.

The MOVE Grand Avenue – Parking Analysis & Findings memo (prepared separately) provides an overview of parking occupancy findings as well as key issues to consider as part of implementing a paid parking program. Additionally, we prepared a separate technical memorandum on a Case Study of Aspen's Parking Program which summarizes lessons learned and describes examples that may be useful for Glenwood Springs staff in advancing the parking program in Glenwood Springs, particularly as it relates to paid parking.

## Next Steps

Outlined below are our recommended next steps for the City of Glenwood Springs to implement paid parking in downtown.

### Step 1: Develop a Comprehensive Parking Management Implementation Plan

The MOVE Grand Avenue project provided an overview of parking inventory and occupancy at select times in downtown, as well as a summary of observed challenges, opportunities and recommendations related to parking and curb space management. The next critical step in advancing many of the recommendations from the MOVE Grand Avenue project (and summarized in this document) are for the City to develop a comprehensive Parking Management Implementation Plan.

Building off data collected during the MOVE Grand Avenue project, an Implementation Plan would clearly identify the problems associated with parking, which the community wants to address. Accordingly, the Plan would formulate objectives to directly move the needle in solving the problems while ensuring the strategies align with the City's stated goals. The plan should provide guidance on three major aspects of the parking program: policy, finance, and operations. The Plan will clearly define the timeline for implementation, associated costs (including revenue projections), and operational strategies, such as pricing, timing restrictions, enforcement, technology, etc. to achieve the program objectives. The Plan should be flexible to allow for modifications post implementation and should establish a clear set of performance metrics that define success.

Downtown businesses, employers, residents, the Glenwood Police Department, and other stakeholders should be closely involved in setting the goals and objectives and providing input at key milestones during Plan development. In order for paid parking to be successful, a majority of the downtown community (i.e. over 50% of stakeholders) should be in support before it is implemented. If sufficient support for paid parking is lacking, other strategies, such as enforcement, time restrictions, etc. can be pursued near-term and paid parking evaluated again in the future.

*Key components of the Implementation Plan will include:*

- **Identify the Problem(s)** - The community should identify the parking related problems to be addressed (for example, convenient parking is hard to find, excessive illegal parking, not enough loading areas or short-term parking, lack of employee parking, traffic congestion from circling for parking, etc.). The problems would be based on both objective data (such as parking occupancy data, parking citation data, etc.) as well as subjective input (such as the issues most important to the community).
- **Define Objectives** - Define the objectives of the parking program, and associated metrics of success, based on the identified problems (examples could include: achieve 85% occupancy on every block, increase downtown business activity, enhance availability of convenient parking, mitigate traffic growth downtown, grow transit ridership, reduce illegal parking, etc.).
- **Timeline of Actions** - Develop a clearly defined timeline for implementation with near-term, mid-term, and long-term actions with associated costs.
- **Allocate Expenses** - Define how revenue will be utilized towards a parking program that is solvent and achieves the stated objectives. For example, revenue should be used to cover the cost of enforcement, maintenance, and administration of the parking program and could also be used for strategic investments in technology, transit, bike share, a new parking garage, or other improvements to advance the goals of the parking program.
- **Get Input from Community** - Coordinate with downtown businesses, employers, and residents (listen to concerns and incorporate feedback into program elements). The Plan should be community driven.
- **Additional Data Collection** - Conduct a parking duration study to better set pricing and time restrictions by block and parking facility. This would include collecting data on parking turnover in 30 minutes increments on the most utilized blocks downtown as well as off-street public parking facilities. We recommend conducting a parking turnover analysis early in the process so that data can be presented to the community and stakeholders as part of identifying the issues and objectives within the Implementation Plan.

- **Preferred Technology** - Identify the preferred parking management technology (central parking management software, meters, kiosks, gates for parking facilities, merchant validation system, enforcement technology, etc.).
- **Operations Plan -** Define initial pricing scheme and restrictions for each block and the four public parking facilities.
- **Equity/Alternative Options** - Address equity concerns and expand mobility options especially for residents, visitors, and commuters that would be most impacted due to dependency on free parking. This should include alternative parking options, such as free or reduced-priced parking options, for short-term parking, in lower demand locations, or for carpoolers, and/or better access to transit (i.e., employer-provided bus passes, free local bus, more frequent service, etc.). It is recommended that the parking program be part of a holistic transportation program, including quality access to multiple modes for employees, residents, customers, and visitors travelling to or from downtown.

## Step 2: Actions Prior to Implementing Paid Parking

Converting from free to paid parking will be a significant change to the City. It will impact how the City manages parking, including administration and enforcement, as well as user expectations. Addressing the public's concerns and providing an abundance of communication in terms of the rollout process, setting expectations, and relaying the anticipated benefits will be key to its success. Parking is always controversial, especially paid parking, and staying on top of the messaging will be essential to success. Additionally, it will take time to select a vendor and rollout the program and there several other small changes the City can make to wayfinding signage and curbspace regulations leading up to implementation.

*Key steps for the City to take one year prior to rolling out the paid parking plan:*

- Consider hiring an expert to solicit and evaluate vendor proposals and help with other aspects of program setup.
- Contract a parking vendor (to install and manage software and equipment).
- Establish a centralized parking management system (this is a software to manage permitting, dynamic pricing, data monitoring of both on-street and off-street parking).
- Budget for a permanent parking manager as well as other first year costs (salary and other costs of the parking program will eventually come out of revenue generated).
- Communicate changes to the public and inform on intended outcomes and benefits based on the Implementation Plan objectives.
- Educate the public and answer questions about how to use the system (when and where to park, how to use the technology interface, changes to permitting and enforcement, and alternative options for getting downtown). Focus should be given to downtown businesses, employers, and residents.

- Update parking wayfinding signage, and information to reflect planned changes and realign the community's expectations for parking in downtown.
- Consider starting with adjustments to residential parking permits and time restrictions prior to converting to paid parking. Examples could include reducing the area where residents with permits are exempt from time restrictions, eliminating overnight parking in some or all of the off-street parking facilities, converting the Cooper Street lot to 4 hour parking, and eliminating the exemptions to parking restrictions at the 7th & Colorado lot and strictly enforcing the 4 hour time restriction. More detail is provided in the Preliminary Recommendations section below.

## Step 3: Actions During First Year of Paid Parking

The key theme for the first year of paid parking should be flexibility. An Implementation Plan based on data, with clearly defined community-supported objectives and performance metrics will have anticipated and mitigated many issues as part of the initial program design. However, following implementation there will inevitably be some tweaks needed. It is impossible to predict all the ways in which people will respond to the changes. Therefore, it will be important to closely monitor performance of the system and allow flexibility to adjust during and following the first year of rollout. The tweaks could include adjusting pricing, time restrictions, geography, permitting, enforcement, etc. It will also be important to allow time for people to adjust and keep lines of communication open. This may include offering a hotline where people can ask questions and provide comments, regularly meeting with the parking enforcement team, providing opportunity for feedback, and closely monitoring data.

*Key actions during the first year of rollout include:*

- Allow a 4-6 months of grace period before full enforcement:
    - Phase 1: Educate on new expectations (prior to and during the first year).
    - Phase 2: Issue warnings for paid parking violations (months 2-4).
    - Phase 3: Clearly identify when full enforcement will begin.
    - Phase 4: Begin full enforcement (4-6 months in).
- Keep communication lines open (hotline, host events, conduct surveys, document and analyze feedback, and communicate adjustments).
- Closely monitor performance measures.
- Make minor adjustments as needed.

### Step 4: Program Maturation (Year 2+)

Following the first year of implementation, the City will know more about staffing needs, revenue, stakeholder comfort with changes, and generally what worked and did not work. Certain aspects of the parking program may need to be adjusted to improve operations to meet program objectives. This may include adjusting pricing, time restrictions, and location by hour, day, or season. Additional mid-term strategies can also be implemented to improve performance and operations. This may include expanding the geography, introducing additional technology, better addressing residential or commuter needs, improving transit service, or providing incentives (such as free bus passes, carpooling discounts, etc.). Strategies should generally follow the timeline identified in the Parking Management Implementation Plan. Long-term, the City may consider additional large-scale investments in the parking program such as a new parking garage, additional enhancements to transit service, or adjustments when the BRT is extended into downtown.

*Recommended actions in years 2+ include:*

- Second year refresher to the system: adjust pricing, geography, enforcement etc. based on data and feedback to better align outcomes with objectives.
- Communicate outcomes of the first year to stakeholders and collect feedback through a formal survey.
- Make adjustments to respond to changing travel behaviors post-COVID.
- Monitor evolution of technology and consider incorporating.
- Make additional improvements and investments as revenue grows.
- Make adjustments when BRT is extended into downtown.

## Preliminary Recommendations

The Parking Management Implementation Plan will define exactly how Glenwood Springs will implement paid parking. However, we can offer several preliminary recommendations to get the City started. This includes high-level recommendations for the City to consider regarding when, where, and how much to price parking, what technology to consider, potential enforcement strategies, staffing, garage maintenance cost estimates, and resident parking management strategies particularly in regard to managing spillover parking that may result from paid parking in the commercial core.

### Where and When

In general, we recommend paid parking to be implemented where and when parking demand is at, near, or exceeding capacity. This would include both on-street and off-street locations.

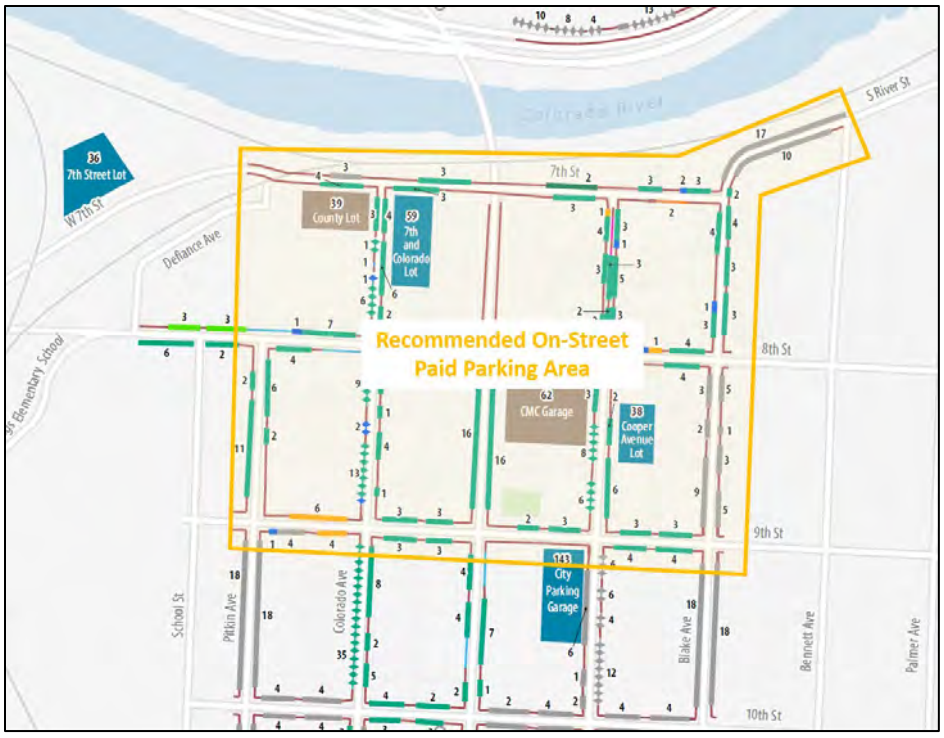
Dynamic pricing can be used to adjust pricing at different times of day and year to match demand and promote efficient use of the parking supply.

### *Where*

**On-Street**

Data collected in this study demonstrated roughly an eight-block area where demand is high and paid parking appears most suitable. This includes the area from Pitkin Avenue to Blake Avenue and from 7th Street to 9th Street, see **Figure 1**. Demand was also high along 7th Street east of Blake Avenue during the day and evening (but not overnight). The City should consider extending the 2-hour time restrictions to this block and potentially converting to paid parking as well.

*Figure 1. Recommended On-Street Paid Parking Area.*




### *6th Street*

6th Street was also included as part of the downtown inventory and parking occupancy analysis conducted as part of the MOVE Grand Avenue project and interest has been expressed for converting portions of this street to paid parking. However, given the influence of hotels on parking along this street combined with the relatively low occupancy rates observed in the winter in the 2-hour time restricted segments, we recommend collecting additional data before moving forward with paid parking.

The portion of 6th Street east of Pine Street is unrestricted and heavily influenced by demand for hotel parking. This segment was well occupied during the winter observation period and any changes to parking on this block should be closely coordinated with the hotels.

The two blocks west of Pine Street are signed for 2-hour parking on the north side. These blocks had low occupancy during the day, and moderate parking in the evening (most likely from spillover parking from the hotel after time restrictions expire). Given businesses along this street have expressed interest in paid parking to better manage demand, we would recommend that as part of the Parking Management Implementation Plan the City should collect summer occupancy data on weekdays and weekends and solicit input from the hotels and businesses on this block to see what issues they experience. If data shows this block is consistently full in the summer (and/or on weekends), and there is support from the adjacent businesses, then paid parking may be appropriate. Based on the winter weekday data alone, paid parking is not recommended along 6th Street west of Pine Street given the low rates of parking occupancy, but could always be added at a later date.

**Off-Street**

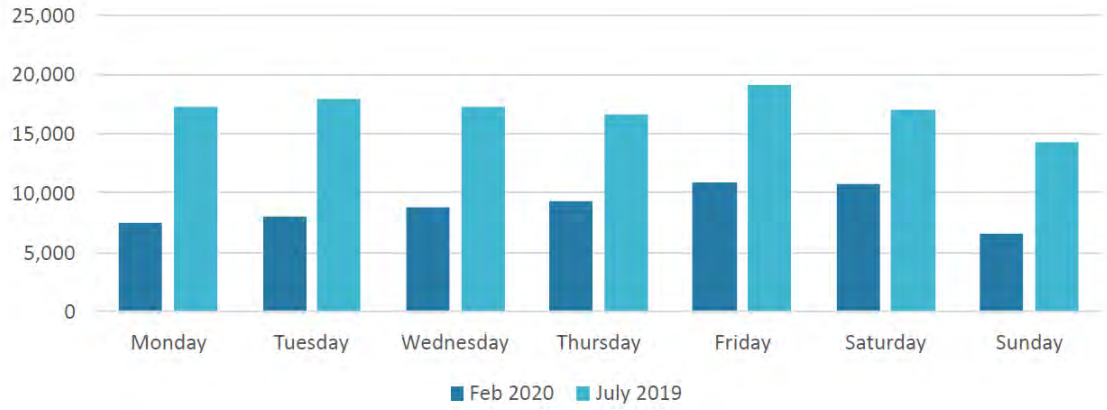
Parking occupancy data indicate parking demand is at or exceeding capacity in the summer at all four public off-street parking facilities (only two in the winter: the 7th & Colorado and Cooper Street parking lots). Therefore, paid parking is also recommended for all off-street parking facilities, although some may only be needed seasonally.

### *When*

**On-Street**

Parking occupancy data shows that parking demand is moderate to high within the eight-block area identified above during the day on weekdays, and on most blocks in the evening as well. While field observations were not collected on the weekend due to COVID-19, StreetLight data, illustrated in **Figure 2**, suggests that demand may be just as high on Saturday. Based on this data it is recommended that paid parking be implemented on-street Monday through Saturday from 9 AM to 8 PM. StreetLIght data suggests parking demand may be lower on Sunday, but additional data is needed to determine whether paid parking should also be implemented on Sunday. Winter data shows parking demand drops in the evening west of Colorado Avenue, which may mean parking can continue to be free in the evening on these block faces.

*Figure 2. Average Daily Trip Ends 7th Street to 9th Street in Glenwood Springs (collected from StreetLight)*




**Off-Street**

Winter parking occupancy data indicates that the Cooper Street Lot and 7th and Colorado Lot are at 100% occupancy between 9 AM and 4 PM on weekdays and at or near capacity in the evening. Based on this, we suggest both parking lots be converted to paid parking to increase availability of parking. Additionally, the City Parking Garage and 7th Street parking lot were observed to be below 80% occupied in the winter, but the same facilities were 100% occupied midday in the summers. This data suggests the City should consider converting these parking facilities to paid parking during business hours (9 AM to 5 PM), at least in the summer.

Similar to the on-street recommendations, its likely that the Cooper Street and 7th and Colorado parking lots could also be priced on Saturday (and maybe Sunday). Additionally, the City Parking Garage and 7th Street parking lots may also warrant pricing on the weekend in the summer as well to manage demand. However, due to COVID-19, weekend occupancy data was not collected specific to the off-street parking facilities. Thus, as part of the Parking Management Implementation Plan, we recommended collecting parking occupancy data for the off-street parking facilities on Saturday and Sunday in the summer to determine which off-street facilities should also be priced on weekends.

It should be noted that overnight parking was observed to be 10%-40% occupied at all four off-street parking facilities in the winter, see **Table 1**.

**Table 1. Off-Street Parking 5 AM Winter Occupancy Rates**

| Public Parking Lot | Non-Disability Public Spaces | 5 AM Winter Occupancy |
|---|---|---|
| **City Parking Garage** | 143 | 15% - 20% |
| **Cooper Avenue Lot** | 38 | 35% - 40% |
| **7th & Colorado Lot** | 59 | 20% - 25% |
| **7th Street Lot** | 36 | 10% - 20% |
| **Combined** | **276** | **20% - 25%** |

Parking occupancy at 5:00 AM is typically associated with residential demand. If residents are parking their vehicles overnight in these facilities, it is likely they are also storing their cars in the same parking facilities during the day. This consumes valuable parking that could otherwise be used by people trying to access businesses in downtown during the day. A more detailed parking duration and turnover study (as suggested earlier) would shed more light on how people are using these off-street parking facilities. If the same people are parking their vehicles overnight as well as during the day (essentially using these facilities as long-term storage), a first step prior to implementing paid parking would be to eliminate overnight parking in these off-street parking facilities. This strategy alone is likely to free up space for people to park in these facilities during the day and evening.

*Dynamic Pricing*

Dynamic pricing simply means that the cost of parking is more demand responsive and can be different for different times of the day, days of the week, times of the year and by location. Dynamic pricing is recommended to achieve efficient use of the parking supply, such as an 85% occupancy level. The City should use occupancy data from this study as well as additional data collected prior to implementing paid parking to set initial pricing. However, to achieve the optimal balance such that parking supply is not underutilized or overutilized, the City will need to monitor parking occupancy during the first year of implementation and make adjustments.

We recommend the following pricing strategies:

- Set the prices ahead of time so users know what to expect. When the City wants to change prices to better optimize occupancy rates, the changes should be communicated to the public in advance. We do not recommend that prices change in real-time.
- Set prices higher when and where demand is highest and minimal or free parking where demand is lower. As a management strategy, the City can use pricing to encourage greater use of less desirable spaces. As an example, off-street parking facilities further from the commercial core, such as the City Parking Garage and 7$^{th}$ Street Lot should be priced lower than the 7$^{th}$ & Colorado Lot, where demand is highest.

- Consider progressive pricing whereby the first hour is less expensive and successive hours get more expensive. This allows flexibility, providing an option for people to park longer, but also incentivizes higher turnover rate.
- Consider allowing free parking during the first 30 minutes (or maybe 60 minutes) once per day per vehicle. This would increase equity in the pricing structure, incentivize turnover, and increase business activity.

### *Time Restrictions*

**On-Street**

Currently, most on-street spaces in the downtown core are time restricted, typically with a two-hour maximum during the day. Notable exceptions that were observed to have high parking occupancy include 7th Street, east of Blake Avenue and Blake Avenue south 8th Street, where parking is currently unrestricted. Additionally, there are a handful of single stalls restricted to 15 minutes as well as a few loading zones in the downtown core. Additional changes to the time restrictions should be informed by a more detailed parking turnover study which is recommended to be part of the Parking Management Implementation Plan. Time restrictions should be modified to best meet the demand and to achieve the City's larger parking objectives. If data from the turnover study shows demand is high for short-term parking, the City could consider converting additional spaces to 30-minute or 1-hour restrictions. Additionally, implementing paid parking provides more flexibility through the use of progressive pricing. For example, converting all the 2-hour time restricted spaces downtown to 4-hour, while using pricing to continue to incentivize short-term use could better achieve the same objectives as free time-restricted parking.

**Off-Street**

The existing time restrictions vary for each of the four off-street parking facilities. The 7th & Colorado parking lot is restricted to 4-hour parking. The 7th Street and Cooper Street parking lots are restricted to 24-hour parking and the City Parking Garage is restricted to 72-hour parking. Additionally, residents with permits can park in any of these facilities for up to 72 hours. Many of the spaces in these facilities are also used for all-day parking by downtown employees. In general, off-street parking facilities should provide longer-term parking than most commercial-fronting on-street spaces, which should generally be priced for higher turnover. However, the observed high use of these parking facilities suggests that the current time restrictions need additional adjustment so that some spaces are still available during the day. In particular, the 7th & Colorado and Cooper Street parking lots are in the heart of the downtown commercial area and are typically full during the day, even in the winter. Adjusting the time restrictions, eliminating exceptions to residents, and pricing these locations higher will provide more parking options to people trying to access downtown businesses and services. Additional turnover data collected as

part of the Parking Management Implementation Plan will reveal how long people are parking in these off-street facilities and better inform what additional adjustments to make.

Some preliminary recommendations on time restrictions to increase availability for public parking off-street, particularly for those trying to access downtown businesses and services, include:

- Implement no overnight parking (for example, No Parking 2 AM to 5 AM).
- Eliminate resident permit parking and employee parking exceptions at the 7th & Colorado parking lot, Cooper Street parking lot, and lower level of the City Parking Garage.
- Convert the Cooper Street parking lot from 24-hour to 4-hour maximum during the day
- Allow businesses to purchase monthly employee parking spaces in the 7th Street Lot and upper level of the City Parking Garage.

**Table 2. Existing and Recommended Time Restrictions at Off-Street Parking Lots**

| Public Parking Lot | Existing Time Restrictions | Recommended Time Restrictions | Existing Exceptions | Recommended Exceptions |
|---|---|---|---|---|
| **City Parking Garage** | 72 hour | All day (no overnight) | N/A | Could allow free resident with permits and employee reserved on upper level |
| **Cooper Avenue Lot** | 24 hour | 4 hour (no overnight) | Resident permits | None |
| **7th & Colorado Lot** | 4 hour | 4 hour (no overnight) | Resident permits and certain employees | None |
| **7th Street Lot** | 24 hour | All day (no overnight) | Resident permits | Consider resident permits |

*Equity in Pricing*

We also recommend that the issue of equity be considered as part of the Parking Management Implementation Plan and incorporated into the objectives that emerge from that plan. Without a well-crafted plan, simply charging for parking can have the negative effect of only serving people who can afford to pay for parking. Providing alternative options for those who need to access downtown but have fewer resources to pay for parking will be important. It will be critical to work with downtown employers to better understand their employees commuting needs when crafting the Implementation Plan.

There are several strategies for the City to consider such that implementing paid parking leads to a more equitable transportation system in downtown:

- Provide free short-term parking. For example, allow the first 30 or 60 minutes free once every 24 hours – similar to Aspen's progressive pricing scheme.
- Use part of the revenue to invest in non-automobile modes, particularly transit. Revenue generated from paid parking can be reinvested to make transit service more convenient. Transit tends to be disproportionally used by lower-income portions of the population, so investments in transit will provide direct benefits. Some examples include: provide more frequent transit service, convert local transit service to fare-free, provide free bus passes to downtown employees, offer free or discounted on-demand shuttle services.
- Invest in extending the VelociRFTA BRT to downtown Glenwood Springs and the West Glenwood Park & Ride and use the West Glenwood Park & Ride as an intercept lot. This would give employees a fast, frequent, and reliable non-driving option to get downtown. Parking revenue could also be used to make the service within Glenwood Springs free, which would allow the downtown employees (many of which come from the west) to park at the West Glenwood Park & Ride and take the bus for free into downtown.
- Dedicate free or reduced-fare parking to downtown employees in lower demand locations through a permit program.
- Offer free parking spaces to commuters who carpool.

## Technology

The technology related to paid parking has advance significantly in the last decade and continues to evolve. Technology has made it more convenient and efficient for people to find and pay for parking, it has improved the efficiency of enforcement, and allows for better data management and flexible pricing, such as dynamic and progressive parking pricing.

There are many different types of technology for the City to consider when converting to paid parking. Based on the context of downtown Glenwood Springs and our experience in other communities, we recommend the City consider the following technologies when soliciting a parking vendor:

- **Invest in a centralized parking management system** - This is a software system that can be used to manage permitting, provide dynamic pricing, collect and analyze occupancy data, and provide wayfinding to customers for both on-street and off-street parking.
- **Use kiosks instead of individual meters** – Kiosks are generally more affordable to install and maintain than individual meters as only one or two are needed per block face instead

on one per parking space. They also take up less sidewalk space and have a better user interface. Kiosks can be used for both on-street and off-street parking.

- **Allow payment through mobile apps** – Most vendors today provide mobile apps that allow customers to pay for parking with their smartphone. This will improve convenience, especially for repeat users whose information will all be saved on the app. Some communities, including Aspen, have or are considering switching entirely to mobile payments.
- **Try to use the same mobile apps as nearby communities** – Using an app that many people in the region are already familiar with will make it more convenient for residents and visitors to find and pay for parking.
- **Use license plate recognition (LPR) technology for enforcement** – LPR technology will allow parking enforcement officers to more efficiently identify offenders and issue tickets. This technology will be necessary as part converting to payment through mobile devices. The improvement in efficiency from LPR technology will help augment its cost.

## Staffing

As part of converting to paid parking downtown, we anticipate that Glenwood Springs will need 1.5 to 2 additional full-time positions to manage and enforce paid parking at least to start. Additional staff may be needed in the future if the program and geography expands. Both positions would be funded from revenue generated by the parking program. New positions include:

- A parking manager – To manage the parking program including contracting with the parking vendor, overseeing the permit program, analyzing parking data, planning, and managing other aspects of the parking program.
- Additional parking enforcement officer – Glenwood Springs currently employs one full time parking enforcement officer downtown. Use of LPR technology will increase the efficiency of parking enforcement, but expanding enforcement to evenings and Saturdays will require at least one additional part-time or full-time enforcement officer.

## Costs

Detailed costs and revenue projections will be developed as part of the Parking Management Implementation Plan. The City should anticipate costs for developing that plan as well as startup costs during the first year of implementation to line up a vendor and make initial improvements. These initial costs will depend on the scope of the Plan and scale of changes the City is interested in pursuing. Once paid parking is in place, all the costs of managing the parking program, including enforcement, administration, and maintenance of parking facilities will be covered by revenue generated from paid parking, parking tickets, and parking permits.

*Maintenance Cost*

Maintenance of the City's off-street parking facilities as well as the curbspace should be considered as part of the cost of the overall parking program. One of the most significant annual maintenance costs will be for the City Parking Garage. The 143-space, two-level parking garage at 9th Street and Cooper Avenue represented both a significant investment by the City when constructed in 2013 and is a valuable long-term asset to downtown parking. Research shows that the typical cost for maintaining a parking structure ranges from about $325 per space/year to $425 per space/year (adjusted for 2021 dollars), and the cost will increase each year the structure ages.[1] These typical costs would equate to about $45,000 to $60,000 per year (in 2021 dollars) on average to maintain the City Parking Garage (Note: these are typical costs and a more detailed analysis is needed to understand maintenance costs specific to this garage). Implementing paid parking would provide a revenue source for the City to cover the cost of maintenance while improving access to downtown.

## Resident Parking and Managing Spillover

As part of implementing paid parking downtown the City should also reevaluate its resident permit program and regulations on residential streets adjacent to the commercial core of downtown to align with the program's objectives. The two primary issues for the City to consider when implementing paid parking are:

- The structure of the residential permit program (which currently exempts residents with a permit from time restrictions downtown on most streets)
- Management of spillover parking on residential streets from people trying to avoid paying for parking downtown

Recommendations for addressing both these topics are addressed below.

*Modifying the Resident Permit Program*

We recommend the City consider the following changes to the resident permit program as part of converting to paid parking:

- Exemption that allows residents with a permit to park in 2-hour time restricted parking spaces for up to 72 hours north of 9th Street should be removed with the exception of Blake Avenue south of 8th Avenue. Winter parking data collected at 5:00 AM illustrates resident parking demand north of 9th Avenue is primarily concentrated on Blake Avenue.

[1]Chrest, Anthony P., et. al. *Parking Structures, Third Edition, Planning, Design, Construction, Maintenance & Repair*. Springer, 2001.
Gupta, Pawan R. and Shiu, K. Nam. *Effective Repair and Maintenance Strategies for Parking Structure*. Concrete Repair Bulletin, July/August 2014.

- Overnight parking should not be allowed in the off-street parking facilities. As mentioned earlier, all off-street parking facilities were observed to be utilized to some extent overnight. Many of these vehicles are likely residents using these facilities for long-term parking. By not permitting overnight parking more spaces will be available during the day for people who want to park and access businesses downtown.
- Residents should not be allowed to park for free with parking permits in the off-street parking facilities. If there is demand the City could issue monthly parking permits for a reasonable cost to park in the upper level of the City Parking Garage.

### *Managing Spillover Parking*

As mentioned earlier in this document, implementing paid parking in the downtown core could result in more people parking in the residential areas south of 9th Street to avoid paying, which may make it more difficult for residents to find parking near their home. Residential parking intrusion is a common side-effect in communities with paid parking. A few strategies are recommended to mitigate this occurrence:

- Convert all the on-street spaces between 9th Street and 10th Street to 2-hour free parking, but allow exceptions for residents with permits.
- Alternatively, if this strategy does not work, the City could convert this one-block buffer around the paid parking area to resident parking-only using a permit program.
- Lastly, it will be important to monitor spillover impacts during the first year of paid parking and adjust regulations and the geography accordingly to mitigate issues.

## Summary

Findings from the parking and curb space analysis conducted as part of the MOVE Grand Avenue projecty demonstrate that there is sufficient demand for parking downtown to justify implementing paid parking so long as there is sufficient community support. Paid parking is a tool the City could use to better manage parking downtown when and where demand is high.

Some of the benefits of implementing paid parking include:

- Increasing the availability of convenient parking;
- Reducing congestion caused by circling for parking;
- Increasing parking turnover to generate additional business activity;
- Generating a reliable revenue to source to fund the parking program (including maintenance, administration, and enforcement); and

- Generating funds that can be used to improve multimodal transportation access to downtown in alignment with the community's goals (such as improved transit, free transit, bike share, other TDM strategies, an additional parking garage, etc.).

To advance paid parking downtown, we recommend the City develop a Comprehensive Parking Management Implementation Plan, which would define the objectives and provide a detailed implementation strategy. The Plan would cover three main topics: policy, finance, and operations. We also provide several preliminary recommendations for how the paid parking program could be implemented based on data collected as part of the MOVE Grand Avenue study.


# Appendix F – VISSIM Technical Report and Traffic implementation Plan

# Grand Avenue Alternative Analysis
# VISSIM Technical Report

Project Manager: Steven Marfitano, PE

Apex Design Reference No. 190376

April 19, 2021

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# INTRODUCTION

## PURPOSE

This report documents the VISSIM evaluation completed for the Grand Avenue Alternative Analysis Study. Microsimulation completed for the study included calibration of an existing model, and development of a 2040 No Build and two 2040 Alternative Models. The goal for the evaluation was to explore operational improvements along the Grand Avenue and 8th Street corridors to determine the ability to improve vehicular and bus operations along the corridors. Three modeling periods were evaluated to understand the summer operational characteristics of the corridor during the Weekday AM Peak Hour, Weekday PM Peak Hour, and Saturday Midday Peak Hour.

The alternatives development process included an exploration of potential solutions and included VISSIM evaluation of two alternative configurations of the road network:

- 2040 Alternative 1: Business Access and Transit (BAT) Lanes – This alternative would convert existing Grand Avenue on-street parking to BAT lanes designed to provide buses an exclusive lane (8th Street to 13th Street) and include transit signal priority (at 8th Street and 9th Street).

- 2040 Alternative 2: 8th and 9th Street Couplet – This alternative would convert existing portions of the roadway network to a pair of one-way couplets, construct a roundabout at 8th Street/Pitkin Avenue, and reroute VelociRFTA trips to the Rio Grande Corridor.

Following review of each alternative's operations, the study findings and recommendations were developed, as discussed in the final section of this report.

## PROCESS

The traffic analysis was performed using VISSIM micro-simulation software. VISSIM was chosen for the analysis because it allows for accurate modeling of both vehicular and transit operations within an entire network. This is useful for analysis of closely spaced intersections where queues impact adjacent intersections, such as those along 8th Street and Grand Avenue.

## ANALYSIS AREA

The analysis area consisted of Grand Avenue from north of the 8th Street intersection to south of the 14th Street intersection and along 8th Street between Midland Avenue and Grand Avenue. The intersections analyzed included the following, as shown in **Figure 1**.

- 8th Street and Grand Avenue
- 9th Street and Grand Avenue
- 14th Street and Grand Avenue
- 8th Street and Midland Avenue
- 8th Street and Colorado Avenue
- 8th Street and Pitkin Avenue


**Figure 1: Grand Avenue VISSIM Study Area Map**

# EXISTING CONDITIONS MODEL

## MODEL CALIBRATION

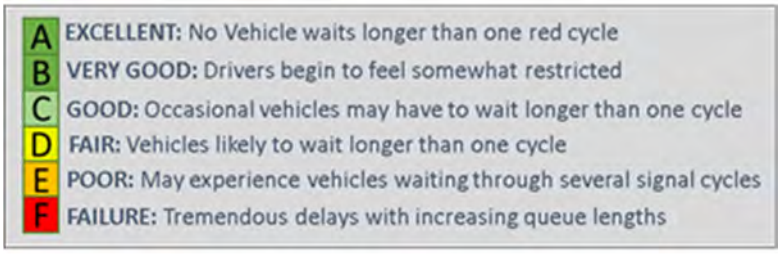
The first steps in the VISSIM modeling methodology involved coding and then calibrating the Existing Conditions Models. For this study, the Existing Conditions Models reflect the current lane geometry within the study area. **Table 1** outlines the data used to code and calibrate the Existing Conditions Models.

**Table 1: Existing Conditions Data Summary**

| Data Category | Data Source |
|---|---|
| Turning Movement Counts | • Turning movements were used as provided by Parsons. The traffic counts used for the evaluation have been documented in the *Intersection Analysis Assumptions Memo (Revised)* and were used for the Existing Conditions Models development.<br>• Pedestrian count data was mined from past traffic counts documented in the *Glenwood Springs Signal Retiming SH 82 Final Report* and incorporated at each intersection. |
| Travel Times | • Travel times along Grand Avenue are documented in the *Glenwood Springs Signal Retiming SH 82 Final Report*. Available information includes pre signal timing change travel time runs from Wed, September 12; Thurs, September 13; and Sat, September 15, 2018. During calibration it was noted that the available travel time information was not valid and given the impacts of COVID-19 to traffic patterns no additional information could be collected. As a result, the model travel times were not calibrated.<br>• Additionally, existing transit route timetables and transit dwell times were acquired from RFTA and incorporated into the model calibration process. |
| Queue Length Observations | • New queue lengths along the corridor cannot be collected due the on-going impacts of COVID-19. Local knowledge of the corridor by individual consultant team members and project team partners has been used to validate the accuracy of VISSIM model outputs. |
| Transit Routes | • Existing transit routes and stops were coded into the models based on current posted summer schedules. Services available along the corridors include:<br>o Ride Glenwood Springs<br>o VelociRFTA BRT<br>o Roaring Fork Valley Local<br>o Rifle/Grand Hogback |
| Signal Timing | • Existing signal timing along Grand Avenue were used from the Revised Signal Timing Plans for Summer Cycle Lengths developed in the *Glenwood Springs Signal Retiming SH 82 Final Report*.<br>• Signal timing at the 8th Street/Midland Avenue intersection was provided by the City of Glenwood Springs. |

Once the initial coding of the Existing Conditions Models was complete, measures of effectiveness (MOEs) were extracted and compared to the available existing field data to determine if they were within acceptable levels. The MOEs reviewed during the calibration process included intersection turning movement volumes and queue lengths at intersections. To account for variability in the model and obtain more statistically accurate results, a total of 15 model runs were performed for each simulation model and averaged. When large discrepancies were found, the model parameters were adjusted through an iterative process to obtain acceptable results. This calibration step was critical to ensure that the VISSIM models reflect field conditions in the study area and provide accurate results of the proposed changes.

## EXISTING OPERATIONAL ANALYSIS RESULTS




Traffic operations were evaluated using Level of Service (LOS) techniques documented in the *Highway Capacity Manual (HCM) 6th Edition*, Transportation Research Board (TRB), 2016. LOS is a qualitative measure of traffic operational conditions based on roadway capacity and vehicle delay. LOS is described by a letter designation ranging from A to F, with LOS A representing the best possible operating conditions and LOS F representing over-capacity or congested conditions. Vehicle delays calculated by VISSIM were used within the HCM framework to calculate LOS at each intersection.

**Table 2** shows a summary of the overall intersection level of service (LOS) at each of the six study intersections. More detailed information about individual movement delay, queuing, and LOS can be found in **Appendix A**. The signalized intersections along Grand Avenue and at 8th Street / Midland Avenue operate at LOS D or better during the three peak hours. The all-way stop controlled intersection of 8th Street / Pitkin Avenue operates at LOS E/F during the peak hours. The all-way stop controlled intersection of 8th Street / Colorado Avenue operates at LOS C during the AM peak hour and LOS E during the PM and Saturday midday peak hours. The LOS E and LOS F at these intersections are related to increased demand experienced as vehicles travel southbound along Midland Avenue onto eastbound 8th Street through the intersections at Pitkin Avenue and Colorado Avenue.

**Table 2: Existing Conditions Intersection LOS**

**Grand Avenue**
Existing Conditions - LOS Summary[1]

| | Weekday AM Peak-Hour | | Weekday PM Peak-Hour | | Saturday Midday Peak-Hour | |
|---|---|---|---|---|---|---|
| Intersection | Delay (sec.) | Level of Service | Delay (sec.) | Level of Service | Delay (sec.) | Level of Service |
| 8th St / Midland Ave | 35.6 | D | 24.2 | C | 24.1 | C |
| 8th St / Pitkin Ave | 59.9 | F | 46.6 | E | 51.3 | F |
| 8th St / Colorado Ave | 15.3 | C | 36.7 | E | 45.7 | E |
| 8th St / Grand Ave | 20.2 | C | 18.6 | B | 25.5 | C |
| Grand Ave / 9th St | 4.8 | A | 15.1 | B | 9.4 | A |
| Grand Ave / 14th St | 9.9 | A | 11.7 | B | 10.1 | B |

Notes:
(1) Data based on the average of 15 VISSIM micro-simulation models.

**Table 3** shows the results of the modeled vehicular travel time compared to the transit travel time for selected segments throughout the study area. Given the impacts of COVID-19 and the inability to field verify the model results, this MOE relies on the calibrated model, which used project team verification of queuing to ensure reasonable travel time operations. General travel trends including a significant southbound flow during the AM peak period and northbound flow during the PM peak period attributable to commuting flows have been confirmed in the model queue simulation and travel times.

It was noted that the transit travel time from north Midland Avenue to south Grand Avenue is less than the vehicular travel time during the AM peak hour. When reporting travel times, VISSIM tracks all vehicles completing the movement and averages the travel time for every run. The vehicular travel time for this route has vehicles traveling this route throughout the entire peak hour and will be averaged with all the congestion that occurs throughout the hour. There is only one bus route (Roaring Fork Local) that makes this route during the AM peak hour (7:30-8:30), at 7:38 AM and 8:08 AM. The 7:38 AM bus is at the beginning of the peak hour so the transit travel time is going to be faster than the vehicular travel time due to less congestion. Details of existing model delay and queue lengths for each intersection are included in **Appendix A**.

## Table 3: Existing Conditions Travel Times

**Grand Avenue**

**Existing Conditions - Average Travel Time Summary[(1)]**

| | Vehicle Travel Time (minutes) | | | Transit Travel Time (minutes) * | | |
|---|---|---|---|---|---|---|
| | Summer Weekday AM Peak Hour | Summer Weekday PM Peak Hour | Summer Weekend Midday Peak Hour | Summer Weekday AM Peak Hour | Summer Weekday PM Peak Hour | Summer Weekend Midday Peak Hour |
| SB Midland Ave (approaching 8th St) to SB Grand Ave (south of 14th St) | 9.8 | 6.5 | 8.2 | 8.7 | 7.2 | 9.6 |
| SB Grand Ave (approaching 8th St) to SB Grand Ave (south of 14th St) | 2.5 | 2.5 | 2.6 | 3.4 | 3.2 | 3.3 |
| NB Grand Ave (approaching 14th St) to NB Midland Ave (north of 8th St) | 5.1 | 4.7 | 5.2 | 5.2 | 5.5 | 5.4 |
| NB Grand Ave (approaching 14th St) to NB Grand Ave (north of 8th St) | 2.3 | 2.6 | 2.6 | 3.0 | 3.4 | 3.5 |
| EB 8th St thru Downtown (east of Midland Ave to east of Grand Ave) | 6.1 | 4.4 | 5.9 | N/A | N/A | N/A |
| WB 8th St thru Downtown (east of Grand Ave to east of Midland Ave) | 2.7 | 3.1 | 3.3 | N/A | N/A | N/A |

Notes:
(1) Data based on the average of 15 VISSIM micro-simulation models.

*Two buses traveling through the intersections during this period.

# 2040 NO BUILD MODEL

## MODEL DEVELOPMENT PROCESS

Once the VISSIM existing models were calibrated and the results vetted by the study team, the models were modified to create the 2040 No Build Models. These models included the existing roadway geometry, increases to transit headways, increased vehicular and pedestrian volumes, and optimization of the signal timings at signalized intersections.

Transit growth in the study area has included a doubling of headways along Ride Glenwood Springs and Roaring Fork Valley Local routes (from 30- to 15-minute headways). Future operations of the VelociRFTA BRT are expected to be adjusted so that all buses proceed past the 27th Street Station South Glenwood through the project study area all the way to the West Glenwood Park and Ride and also include an increase in AM and PM peak headways of 15%. With the change to BRT operations, the Rifle/Grand Hogback route is expected to terminate at West Glenwood Park and Ride and not proceed to the 27th Street Station South Glenwood removing all buses from the study corridor.

Transit routing changes have been assumed for northbound vehicles traveling Grand Avenue via 8th Street to the West Glenwood Park and Ride. Instead of turning left at 8th Street, these vehicles will instead turn left at the 9th Street intersection and return to 8th Street via Colorado Avenue. This re-routing will avoid significant congestion but will also mean that buses will discontinue use of the Grand Avenue stop immediately south of 9th Street.

Traffic forecast growth has been documented in the May 18, 2020, *Traffic Forecasting Assumptions Memo* completed by Parsons. This memo concluded that a 1.9% annual compounded growth rate is appropriate along the corridors, which was used to grow the 2020 existing counts to 2040 levels. All movements at each intersection utilized the same growth rate, as did the pedestrian counts incorporated into the VISSIM modeling. The traffic signal cycle lengths and timings were optimized using the 2040 turning movement volumes in Synchro, input into the VISSIM model, and verified for operations via visual confirmation.

## OPERATIONAL ANALYSIS RESULTS

Using the same MOE procedures documented for the existing models, outputs from the 2040 No Build models have been summarized. **Table 4** shows a summary of the overall intersection level of service (LOS) at each of these intersections. More detailed information about individual movement delay, queuing, and LOS can be found in **Appendix B**. With the increase in volume caused by 20 years of growth, operations at the intersections are expected to decline. By 2040, it is expected that the traffic operations will degrade below LOS C at all intersections during various time periods. In particular, the unsignalized intersections of 8th Street / Pitkin Avenue and 8th Avenue / Colorado Avenue will continue to decline in operations as consistent queues build during nearly all of the peak hours evaluated. The signalized intersections also experience decreased traffic operations, but in general, maintain LOS D or LOS E during nearly all of the time periods.

**Table 4: 2040 No Build Intersection LOS**

**Grand Avenue**
2040 No Build - LOS Summary[1]

| | Weekday AM Peak-Hour | | Weekday PM Peak-Hour | | Saturday Midday Peak-Hour | |
|---|---|---|---|---|---|---|
| Intersection | Delay (sec.) | Level of Service | Delay (sec.) | Level of Service | Delay (sec.) | Level of Service |
| 8th St / Midland Ave | 75.1 | E | 56.8 | E | 49.9 | D |
| 8th St / Pitkin Ave | 71.3 | F | 115.0 | F | 65.5 | F |
| 8th St / Colorado Ave | 32.8 | D | 126.5 | F | 112.1 | F |
| 8th St / Grand Ave | 42.3 | D | 49.5 | D | 102.1 | F |
| Grand Ave / 9th St | 5.5 | A | 41.3 | D | 53.1 | D |
| Grand Ave / 14th St | 15.2 | B | 35.7 | D | 40.4 | D |

Notes:
(1) Data based on the average of 15 VISSIM micro-simulation models.

Illustrating a key benefit of using the VISSIM software, this evaluation yields different LOS results than using Highway Capacity Manual procedures as it captures the impacts of the intense signal metering and queuing occurring along Grand Avenue and 8th Street throughout the study area. The VISSIM model estimates significant unserved vehicle demand will occur in the future, as vehicles are unable to travel through the corridor because of limited roadway capacity. This unserved demand is related to vehicles unable to clear the system due to congestion along the 8th Street corridor. The unserved demand represents the number of vehicles that are queued outside of the network due to traffic congestion and are waiting to enter the network at the end of the peak period. Averaging the result of the 15 model runs results in a total of 652, 671, and 708 unserved vehicles during the 2040 No Build Weekday AM, Weekday PM, and Saturday Midday periods, respectively. Lack of corridor progression is also a contributing factor in the unserved demand along Grand Avenue and has been affected by the model only including three of the many intersections along the corridor resulting in a lack of simulated progression in the VISSIM analysis.

**Table 5** shows the modeled vehicular travel time compared to the modeled transit travel time for selected segments throughout the study area. Similar to the existing, particular transit travel times in this table also report less than their vehicle counterparts. For this model, this travel time decrease is caused by the rerouting of buses along 9th Street and Colorado Avenue bypassing considerable congestion occurring at the 8th Street and Grand Avenue intersection. Similar to the existing model run, it is still true that there are minimal buses (Roaring Fork Local) that makes this route from north Midland to south Grand during the AM peak hour (7:30-8:30), at 7:38 AM, 7:53 AM, 8:08 AM, and 8:23 AM.

**Table 5: 2040 No Build Travel Times**

**Grand Avenue**
**2040 No Build - Average Travel Time Summary[1]**

| | Vehicle Travel Time (minutes) | | | Transit Travel Time (minutes) | | |
|---|---|---|---|---|---|---|
| | Summer Weekday AM Peak Hour | Summer Weekday PM Peak Hour | Summer Weekend Midday Peak Hour | Summer Weekday AM Peak Hour | Summer Weekday PM Peak Hour | Summer Weekend Midday Peak Hour |
| SB Midland Ave (approaching 8th St) to SB Grand Ave (south of 14th St) | 14.4 | 13.7 | 13.6 | 16.2 | 14.4 | 14.3 |
| SB Grand Ave (approaching 8th St) to SB Grand Ave (south of 14th St) | 3.4 | 3.3 | 4.5 | 3.9 | 3.9 | 5.5 |
| NB Grand Ave (approaching 14th St) to NB Midland Ave (north of 8th St) | 5.8 | 12.2 | 12.9 | 5.8 | 11.2 | 9.9 |
| NB Grand Ave (approaching 14th St) to NB Grand Ave (north of 8th St) | 2.5 | 5.6 | 7.4 | 3.8 | 6.5 | 7.4 |
| EB 8th St thru Downtown (east of Midland Ave to east of Grand Ave) | 7.5 | 9.3 | 8.9 | N/A | N/A | N/A |
| WB 8th St thru Downtown (east of Grand Ave to east of Midland Ave) | 2.9 | 8.8 | 9.0 | N/A | N/A | N/A |

Notes:
(1) Data based on the average of 15 VISSIM micro-simulation models.

Vehicle queues at the study intersections continue to display southbound AM peak period and northbound PM peak period commuter flows, with increased congestion along southbound Midland Avenue and 8th Street. Details of the 2040 No Build model delay and queue lengths for each intersection are included in **Appendix B**.

## ALTERNATIVES DEVELOPMENT

Using the 2040 No Build model operations as the basis, the project team brainstormed various recommendations designed to improve operations at the study intersections and along the corridors. This effort focused on intersection and segment related improvements designed to provide enhanced transit operations and to alleviate future vehicular delay. The recommendations were combined to develop two alternative concepts for evaluation in VISSIM. **Table 6** displays the recommendations considered and the resulting Alternatives that moved forward into analysis.

**Table 6: Alternatives Development Process - Recommendations Considered**

| Recom-mendation | Description | Alternative 1 | Alternative 2 |
|---|---|---|---|
| A | 8th Street / Pitkin Avenue Roundabout | | Included |
| B | 8th Street and 9th Street 2-Lane One-way Couplets | | Included |
| C | Remove 8th Street parking between Colorado Avenue and Grand Avenue for additional travel lanes | Not carried forward | |
| D | Remove 8th Street parking between School Street and Grand Avenue for additional travel lanes | Not carried forward | |
| E | Remove north leg crosswalk at Grand Avenue and 8th Street (pedestrians would cross north under the Grand Avenue bridge) | | Included |
| F | Widen 8th Street to two lanes in both directions from Midland Avenue to Grand Avenue (in combination with Recommendations C and D) | Not carried forward | |
| G | Remove east-west stop-control at 8th Street and Colorado Avenue and reconfigure the north/south approaches for right-in/right-out movements. Restripe to provide center left-turn lane from Pitkin Avenue to Grand Avenue | | Included stop-control changes, maintain all movements |
| H | Signalize 8th Street / Colorado Avenue Intersection | Not carried forward | |
| I | Construct Business Access and Transit (BAT) Lanes in the northbound and southbound directions of Grand Avenue between 8th Street and 13th Street | Included | |
| J | Install Transit Signal Priority (TSP) along Grand Avenue at 8th Street and 9th Street (in combination with Recommendation I); include a northbound queue jump at 8th Street | Included | |
| K | Realign the BRT routes to utilize the Grand Avenue bridge destined for the West Glenwood Park and Ride | Included | |
| L | Realign the BRT routes to utilize the Rio Grande Corridor destined for the West Glenwood Park and Ride | | Included |
| M | 8th Street / Colorado Avenue Mini-Roundabout | Not carried forward | |

During stakeholder meetings each of the recommendations were discussed and several recommendations were not carried forward into the evaluation process, including Recommendations C, D, F, and H. During discussions about Recommendations G and H, the stakeholders asked about converting this intersection to a mini-roundabout (Recommendation M). An evaluation revealed too close of spacing between Colorado Avenue and Grand Avenue likely to result in vehicles backing onto Grand Avenue and degraded operations at the roundabout, so this alternative was not pursued.

# 2040 ALTERNATIVE 1 MODEL

## DESCRIPTION OF IMPROVEMENTS

Alternative 1 adjusts the Grand Avenue corridor by converting the current on-street parking lanes to Business Access and Transit (BAT) lanes. This new configuration would allow buses to travel freely in the northbound and southbound directions in a new outside travel lane, between 8th and 13th Streets. Other vehicles making right turns from Grand Avenue to side streets would also be allowed to use the BAT lanes. Additionally, Transit Signal Priority (TSP) would be included with two different methodologies. In the bus lanes, TSP would be designed to extend light cycle green times as buses approach to optimize travel at 8th and 9th Streets. In the northbound direction at 8th Street TSP would be used in conjunction with a queue jump signal to allow buses to get a short early green at the light promoting them to the start of the queue as the roadway re-narrows on the bridge. In order to optimize the benefits of this new configuration, BRT buses would no longer use 8th Street and would instead use a northern route (over the Grand Avenue bridge) to access the West Glenwood Park and Ride. This would also allow all buses to stop on northbound Grand Avenue south of 9th Street as currently occurs, but was prohibited in the No Build scenarios. **Figure 2** displays the new recommendations included in the 2040 Alternative 1 modeling. No improvements have been recommended at the Grand Avenue / 14th Street intersection.

The vehicular volumes and bus frequencies assumed during Alternative 1 are assumed to be the same as the No Build scenario.

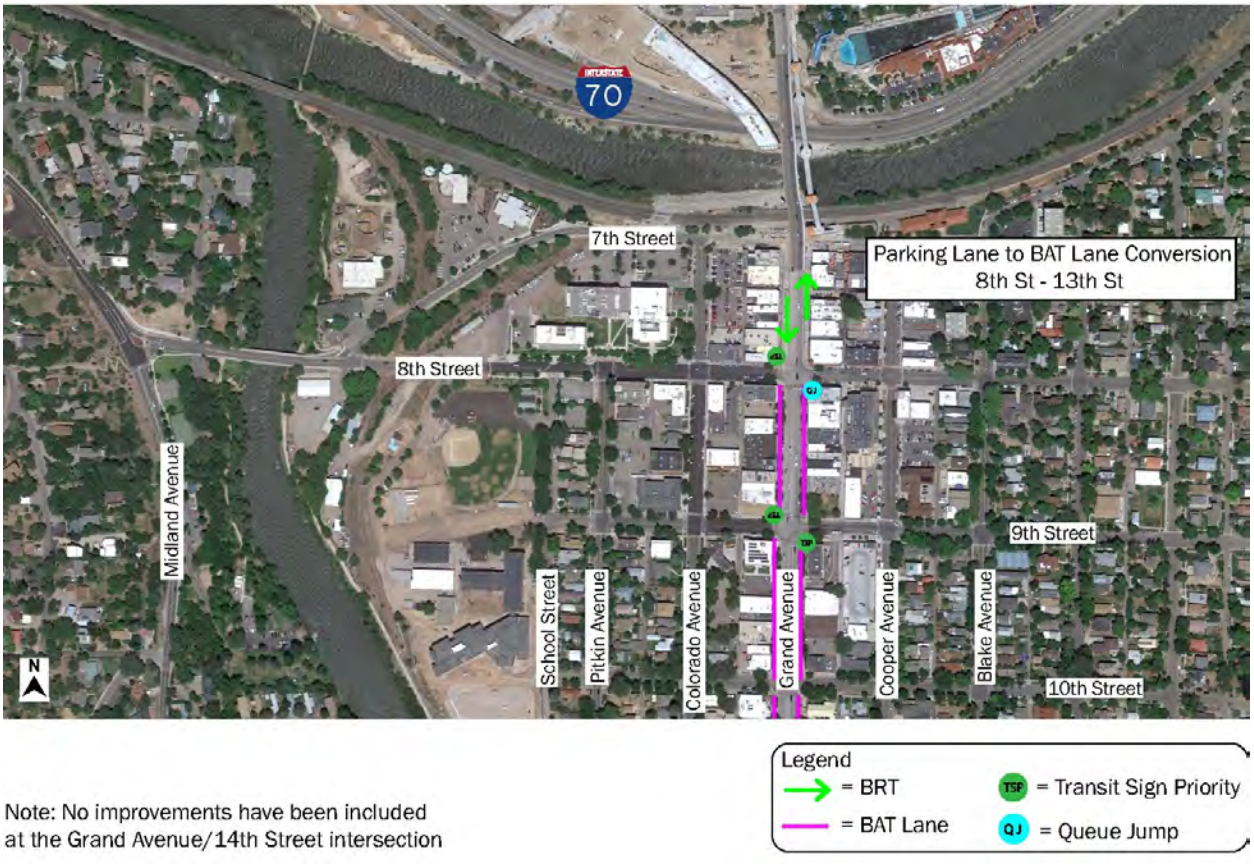



**Figure 2: Alternative 1 Improvements Map**

## OPERATIONAL ANALYSIS RESULTS

Given Alternative 1's focus on improving transit travel times through the creation of BAT lanes along the corridor, a comparative review of the 2040 Alternative 1 results and the 2040 No Build reveals improvement to bus travel times along the Grand Avenue corridor.

Using the same MOE procedures documented for the existing models, outputs from 2040 Alternative 1 models have been summarized. **Table 7** shows a summary of the overall intersection level of service (LOS) at each of these intersections. More detailed information about individual movement delay, queuing, and LOS can be found in **Appendix C**. Similar to the 2040 No Build model, the increase in volume caused by 20 years of growth degrades operations at the intersections. Since no significant general traffic-based improvements are planned in this alternative, the performance of the intersections is similar to the No Build. By 2040, it is expected that the traffic operations will degrade below LOS C at all intersections during various time periods. The signalized intersections continue to experience decreased traffic operations, but in general, maintain LOS D during nearly all of the time periods.

**Table 7: 2040 Alternative 1 Intersection LOS**

**Grand Avenue**
2040 Alternative 1 - LOS Summary(1)

| | Weekday AM Peak-Hour | | Weekday PM Peak-Hour | | Saturday Midday Peak-Hour | |
|---|---|---|---|---|---|---|
| Intersection | Delay (sec.) | Level of Service | Delay (sec.) | Level of Service | Delay (sec.) | Level of Service |
| 8th St / Midland Ave | 75.9 | E | 54.0 | D | 51.5 | D |
| 8th St / Pitkin Ave | 69.1 | F | 112.0 | F | 66.7 | F |
| 8th St / Colorado Ave | 30.4 | D | 115.4 | F | 111.2 | F |
| 8th St / Grand Ave | 46.3 | D | 52.4 | D | 101.7 | F |
| Grand Ave / 9th St | 5.9 | A | 38.2 | D | 40.7 | D |
| Grand Ave / 14th St | 15.3 | B | 33.5 | C | 40.9 | D |

Notes:
(1) Data based on the average of 15 VISSIM micro-simulation models.

The VISSIM model estimates unserved vehicle demand that will occur in the future. The improvements studied in Alternative 1 are BRT focused and do not provide meaningful capacity increases to the transportation network resulting in a negligible change in the number of vehicles that are unable to travel through the corridor because of limited roadway capacity compared to the No Build. Averaging the result of the 15 model runs results in a total of 661, 457, and 581 unserved vehicles during the 2040 Alternative 1 Weekday AM, Weekday PM, and Saturday Midday periods, respectively.

**Table 8** shows the modeled vehicular travel time compared to the modeled transit travel time for selected segments throughout the study area. These results demonstrate the benefits of the new BAT lane in the transit travel times along Grand Avenue. In particular, NB transit travel times in this table report up to 15% travel time savings as buses jump long queues around 8th and 9th Streets. It should be noted, that this scenario does include the stop along Grand Avenue south of 9th Street, unlike the No Build model, meaning that the travel time along the corridor in Alternative 1 includes additional bus access and stop delay, resulting in occasional negligible increases in the travel time along the corridor. This modeling effort does confirm that buses will

benefit from the inclusion of BAT lanes along the corridor and could be a viable recommendation to facilitate enhanced travel times and speeds.

**Table 8: 2040 Alternative 1 Travel Times**

**Grand Avenue**
**2040 Alternative 1 - Average Travel Time Summary[(1)]**

| | Vehicle Travel Time (minutes) | | | Transit Travel Time (minutes) | | |
|---|---|---|---|---|---|---|
| | Summer Weekday AM Peak Hour | Summer Weekday PM Peak Hour | Summer Weekend Midday Peak Hour | Summer Weekday AM Peak Hour | Summer Weekday PM Peak Hour | Summer Weekend Midday Peak Hour |
| SB Midland Ave (approaching 8th St) to SB Grand Ave (south of 14th St) | 14.0 | 12.7 | 14.0 | N/A | N/A | N/A |
| SB Grand Ave (approaching 8th St) to SB Grand Ave (south of 14th St) | 3.4 | 3.5 | 4.4 | 4.1 | 4.3 | 5.4 |
| NB Grand Ave (approaching 14th St) to NB Midland Ave (north of 8th St) | 6.1 | 12.0 | 16.3 | N/A | N/A | N/A |
| NB Grand Ave (approaching 14th St) to NB Grand Ave (north of 8th St) | 2.5 | 5.3 | 7.2 | 3.4 | 5.4 | 6.3 |
| EB 8th St thru Downtown (east of Midland Ave to east of Grand Ave) | 7.6 | 8.7 | 9.4 | N/A | N/A | N/A |
| WB 8th St thru Downtown (east of Grand Ave to east of Midland Ave) | 2.8 | 8.9 | 9.8 | N/A | N/A | N/A |

Notes:
(1) Data based on the average of 15 VISSIM micro-simulation models.

Details of the 2040 Alternative 1 model delay and queue lengths for each intersection are included in **Appendix C**.

# 2040 ALTERNATIVE 2 MODEL

## DESCRIPTION OF IMPROVEMENTS

Alternative 2 includes relocation of the VelociRFTA BRT to the proposed Rio Grande Corridor and a reconfiguration of the downtown core. Relocation of VelociRFTA BRT will move buses off of Grand Avenue through the study area to the proposed Rio Grande Corridor improving transit speed and reliability through downtown. Present two-way sections of 8th and 9th Streets would be converted to a one-way couplet. This conversion would occur between Colorado and Cooper Avenues, which includes the intersections with Grand Avenue. Presently, the intersections of 8th and 9th Streets with Grand Avenue are very tight, with significant pedestrian use. This new configuration would limit the side street movements to one direction greatly simplifying interactions and allowing more green time to be given to the major movements. This conversion would include a two-lane westbound approach at 8th Street (a left-thru and a right) and a three-lane eastbound approach at 9th Street (a left, a thru, and a right). This reconfiguration would result in re-routing of vehicles and buses, especially eastbound 8th Street traffic which would be re-routed south along Colorado Avenue to the 9th Street intersection. To facilitate easier movements along 8th Street, the alternative includes conversion of the 8th Street / Pitkin Avenue all-way stop controlled intersection to a roundabout and alteration of the 9th Street / Colorado Avenue all-way stop controlled intersection to a two-way stop-controlled intersection (where only the northbound and southbound directions would be stop controlled, although all pedestrian crossings will still be marked and permitted). Also, at the 8th Street / Grand Avenue intersection, current pedestrian crossings on the north leg would be eliminated and encouraged to cross under the Grand Avenue bridge further north of the intersection. Finally, the alternative includes realignment of the VelociRFTA BRT route to the proposed Rio Grande Corridor facilitating faster movements through downtown (since this is outside of the limits of the VISSIM model, this route has been removed from the modeling). **Figure 3** displays the new recommendations included in the 2040 Alternative 2 modeling. No improvements have been recommended at the Grand Avenue / 14th Street intersection.

The overall vehicular volumes and bus frequencies for Alternative 2 were assumed to be the same as for the No Build scenario. More information about the vehicular volumes using each approach in the new couplet can be found in **Appendix D**. In general, vehicular movements were moved between the couplet pair, unless a shorter route to Grand Avenue was possible using the 10th Street intersections.


**Figure 3: Alternative 2 Improvements Map**

## OPERATIONAL ANALYSIS RESULTS

Given Alternative 2's focus on improving vehicular movements through the creation of the couplet and changes to intersections along 8th Street, a comparative review of the 2040 Alternative 2 results and the 2040 No Build reveals significant improvement to vehicle LOS along the Grand Avenue and 8th Street corridors.

Using the same MOE procedures documented for the existing models, outputs from 2040 Alternative 2 models have been summarized. **Table 9** shows a summary of the overall intersection level of service (LOS) at each of these intersections. More detailed information about individual movement delay, queuing, and LOS can be found in **Appendix D**. These results show significant vehicular LOS improvements compared to the No Build model. With improvements along Grand Avenue and 8th Street, a LOS D or better is achieved at all intersections during all periods except at 8th Street and Colorado Avenue. Despite poor LOS at 8th Street / Colorado Avenue this alternative still reduced the average delay the intersection by half demonstrating the strong operational benefits of the recommendations. During the Weekday AM and Saturday Midday periods, the couplets perform very well, however, with increased vehicular volumes during the Weekday PM less benefit is shown. The inclusion of the roundabout at 8th Street and Pitkin Avenue also significantly improves operations along the entirety of 8th Street as more volume is served by the intersection reducing delays and queuing.

An area of concern is the intersection at 9th Street and Colorado Avenue which will experience many new trips resulting from the new couplet configuration. This intersection was not included in the VISSIM analysis, so there is not much known about the operations other than the indication that many more trips will be using the southbound left at this intersection which will cause new congestion related problems. If this alternative moves forward, additional evaluation should be done to understand the operations at the 9th Street and Colorado Avenue intersection to mitigate any impacts/concerns.

**Table 9: 2040 Alternative 2 Intersection LOS**

**Grand Avenue**
2040 Alternative 2 - LOS Summary(1)

| | Weekday AM Peak-Hour | | Weekday PM Peak-Hour | | Saturday Midday Peak-Hour | |
|---|---|---|---|---|---|---|
| Intersection | Delay (sec.) | Level of Service | Delay (sec.) | Level of Service | Delay (sec.) | Level of Service |
| 8th St / Midland Ave | 27.3 | C | 43.3 | D | 27.6 | C |
| 8th St / Pitkin Ave | 22.3 | C | 15.7 | C | 12.3 | B |
| 8th St / Colorado Ave | 15.4 | C | 60.1 | F | 46.5 | E |
| 8th St / Grand Ave | 19.9 | B | 10.5 | B | 15.3 | B |
| Grand Ave / 9th St | 10.7 | B | 34.3 | C | 18.0 | B |
| Grand Ave / 14th St | 19.5 | B | 35.4 | D | 20.6 | C |

Notes:
(1) Data based on the average of 15 VISSIM micro-simulation models.

The VISSIM model estimates unserved vehicle demand that will occur in the future. The improvements studied in Alternative 2 greatly improve the capacity of the transportation network resulting in a minimal number of vehicles that are unable to travel through the corridor because of limited roadway capacity. Averaging the result of the 15 model runs results in a total of 0, 261, and 51 unserved vehicles during the 2040 Alternative 2 Weekday AM, Weekday PM, and Saturday Midday periods, respectively.

**Table 10** shows the modeled vehicular travel time compared to the modeled transit travel time for selected segments throughout the study area. Only local buses included in the scenario model run have been included in the travel time comparison. The VelociRFTA BRT has been moved to the Rio Grande Corridor and not included in this evaluation. Improvements to the general roadway system improve travel times for buses also using the system, as will the use of the Rio Grande Corridor for VelociRFTA BRT which completely removes the bus from Grand Avenue within downtown. Similar to the existing model run, it is still true that there are minimal buses (Roaring Fork Local) that makes this route from north Midland to south Grand during the AM peak hour (7:30-8:30), at 7:38 AM, 7:53 AM, 8:08 AM, and 8:23 AM.

**Table 10: 2040 Alternative 2 Travel Times**

**Grand Avenue**
**2040 Alternative 2 - Average Travel Time Summary[1]**

| | Vehicle Travel Time (minutes) | | | Transit Travel Time (minutes) * | | |
|---|---|---|---|---|---|---|
| | Summer Weekday AM Peak Hour | Summer Weekday PM Peak Hour | Summer Weekend Midday Peak Hour | Summer Weekday AM Peak Hour | Summer Weekday PM Peak Hour | Summer Weekend Midday Peak Hour |
| SB Midland Ave (approaching 8th St) to SB Grand Ave (south of 14th St) | 7.5 | 7.2 | 6.4 | 7.5 | 7.2 | 6.4 |
| SB Grand Ave (approaching 8th St) to SB Grand Ave (south of 14th St) | 2.8 | 2.7 | 2.7 | 3.5 | 2.8 | 3.7 |
| NB Grand Ave (approaching 14th St) to NB Midland Ave (north of 8th St) | 6.4 | 10.8 | 5.4 | 6.4 | 12.1 | 6.6 |
| NB Grand Ave (approaching 14th St) to NB Grand Ave (north of 8th St) | 2.5 | 5.7 | 2.8 | 3.0 | 6.5 | 3.7 |
| WB 8th St thru Downtown (east of Grand Ave to east of Midland Ave) | 2.5 | 4.6 | 2.3 | N/A | N/A | N/A |

Notes:
(1) Data based on the average of 15 VISSIM micro-simulation models.

* Transit travel times is for local buses only

Details of the 2040 Alternative 2 model delay and queue lengths for each intersection are included in **Appendix D**.

# FINDINGS AND RECOMMENDATIONS

## FINDINGS

The two alternatives developed during this analysis reflect visions for how the transportation network could change in the future. These scenarios seek to enhance mobility for all users by offering solutions for VelociRFTA BRT delay anticipated to occur along Grand Avenue. The final alternatives include:

- 2040 Alternative 1: Business Access and Transit (BAT) Lanes – This alternative would convert existing Grand Avenue on-street parking to BAT lanes designed to provide buses an exclusive lane (8th Street to 13th Street) and include transit signal priority (at 8th Street and 9th Street).

- 2040 Alternative 2: 8th and 9th Street Couplet – This alternative would convert existing portions of the roadway network to a pair of one-way couplets, construct a roundabout at 8th Street/Pitkin Avenue, and reroute VelociRFTA trips to the Rio Grande Corridor.

Alternative 1 provides infrastructure enhancements targeting enhanced BRT operations along Grand Avenue. This alternative successfully maintains the existing stops and placement of the buses through downtown by repurposing street right-of-way.

Alternative 2 targets changes to the roadway network designed to provide more capacity for all vehicles traveling in downtown. This scenario dramatically reconfigures portions of 8th and 9th Streets and results in improved operations at the Grand intersections. The roundabout recommendation at 8th Street and Pitkin Avenue significantly improves operations along the 8th Street corridor by increasing capacity while still supporting other multimodal movements along the corridor. This roundabout concept could be applied as a standalone project and carry many of the same benefits shown in this evaluation.

## RECOMMENDATIONS

Overall, these alternatives provide a variety of successful recommendations targeting different users of the system and the selection and implementation of individual concepts will be predicated by the desired outcomes. **Table 11** lists each of the recommendations carried forward into either Alternative and provides a summary about the ability for the concept to improve mobility. Supporting documentation from the modeling effort is also included, such as demonstration of reductions to queuing where applicable. The summary discussions include the positives and negatives of each recommendation along with phasing or pairing considerations.

**Table 11: Summary of Recommendations**

| Recom-mendation | Description | Summary |
|---|---|---|
| A | 8th Street / Pitkin Avenue Roundabout | This recommendation greatly improves operations at the intersection and along 8th Street by removing the most significant bottleneck along the 8th Street corridor. This recommendation also improves the LOS to C or better during all of the planning periods. No significant drawbacks have been identified for this recommendation. This recommendation can be implemented as a standalone project or as part of a package. |
| No Build Weekday PM Average Queuing:   Recommendation Weekday PM Average Queuing:   | | |
| B | 8th Street and 9th Street 2-Lane One-way Couplets | This recommendation was first developed during the *Glenwood Springs Circulation Report* (February 2015), and refined during this study. Overall, this analysis indicates that the recommendation results in significant improvement to the operations through downtown, especially at the 8th and 9th Street intersections with Grand Avenue. Specifically, this recommendation improves the LOS to C or better during all of the planning periods. Also, queuing is significantly reduced at the approaches to Grand Avenue and along Grand Avenue. Drawbacks to this recommendation include additional travel time for detoured movements along the couplet and additional traffic using Colorado Avenue and the 9th Street / Colorado Avenue intersection. This recommendation can be implemented as a standalone project or as part of a package. |
| No Build Weekday PM Average Queuing:   Recommendation Weekday PM Average Queuing:   | | |

| Recom-mendation | Description | Summary |
|---|---|---|
| E | Remove north leg crosswalk at Grand Avenue and 8th Street (pedestrians would cross north under the Grand Avenue bridge) | This recommendation successfully relocated pedestrian movements north under the Grand Avenue bridge. The result is an improvement in safety as pedestrians no longer interact with vehicles on this leg. Also, this recommendation eliminates necessary pedestrian signal green times and movements from the intersection, allowing more efficient traffic flow through the intersection. No significant drawbacks have been identified for this recommendation. This recommendation can be implemented as a stand-alone project or as part of a package. |
| G | Remove east-west stop-control at 8th Street and Colorado Avenue | This recommendation improves operations along 8th Street by removing the stop control. This improvement creates additional delay for Colorado Avenue side street movements which must now wait for 8th Street to clear. This recommendation performs especially well with Recommendation B where the 8th Street movements are simplified, and a dedicated left turn lane is possible for the eastbound and westbound directions. This recommendation would still allow crossing movements across all leg of the intersections increasing exposure for north-south pedestrians using the intersection. |
| I | Construct Business Access and Transit (BAT) Lanes in the northbound and southbound directions of Grand Avenue between 8th Street and 13th Street | This recommendation greatly improves bus speed and reliability along the corridor. In particular, northbound transit travel times could be expected to increase by up to 15% as buses jump long queues around 8th and 9th Streets. For full effectiveness, this recommendation is best combined with Recommendation K to provide BRT buses the greatest length of BAT lane use through downtown. Drawbacks to this recommendation include the elimination of on-street parking through downtown. |
| J | Install Transit Signal Priority (TSP) along Grand Avenue at 8th Street and 9th Street (in combination with Recommendation I); include a northbound queue jump at 8th Street | This recommendation builds upon Recommendation I in providing even greater speed and reliability to buses along the corridor. For full effectiveness, this recommendation is best combined with Recommendation K to provide BRT buses the greatest length of BAT lane use with TSP through downtown. The inclusion of the northbound queue jump provides additional enhancement as buses rejoin the vehicles over the Grand Avenue bridge. |
| K | Realign the BRT routes to utilize the Grand Avenue bridge destined for the West Glenwood Park and Ride | This evaluation did not model the impacts of this recommendation on BRT operations. Additional detail about this recommendation is provided in the “Alternative Analysis Report”. |
| L | Realign the BRT routes to utilize the Rio Grande Corridor destined for the West Glenwood Park and Ride | This evaluation did not model the impacts of this recommendation on BRT operations. Additional detail about this recommendation is provided in the “Alternative Analysis Report”. |

# APPENDIX A EXISTING MODEL SUMMARIES

**Attachment A**
**Grand Avenue**
**Existing Conditions - Operational Summary**[1]

| Intersection / Movement | Weekday AM Peak-Hour | | | | | | | Weekday PM Peak-Hour | | | | | | | Saturday Midday Peak-Hour | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Proj. Volume (veh.) | Model Volume (veh.) | Volume Target Met | Delay (sec.) | Level of Service | Model Maxium Queue (ft.) | Model Avg Queue (ft.) | Proj. Volume (veh.) | Model Volume (veh.) | Volume Target Met | Delay (sec.) | Level of Service | Model Maxium Queue (ft.) | Model Average Queue (ft.) | Proj. Volume (veh.) | Model Volume (veh.) | Volume Target Met | Delay (sec.) | Level of Service | Model Maxium Queue (ft.) | Model Average Queue (ft.) |
| **8th St / Midland Ave** | | | | | | | | | | | | | | | | | | | | | |
| Westbound Left-Turn | 54 | 54 | YES | 31 | C | 83 | 8 | 92 | 89 | YES | 33.2 | C | 264 | 17 | 87 | 86 | YES | 31.0 | C | 137 | 14 |
| Westbound Right-Turn | 224 | 228 | YES | 3 | A | 119 | 2 | 570 | 553 | YES | 15.5 | B | 383 | 52 | 285 | 280 | YES | 3.7 | A | 153 | 4 |
| Northbound Through | 335 | 324 | YES | 23 | C | 385 | 46 | 622 | 604 | YES | 29.9 | C | 799 | 162 | 392 | 376 | YES | 23.4 | C | 390 | 55 |
| Northbound Right-Turn | 213 | 206 | YES | 12 | B | 154 | 8 | 124 | 121 | YES | 13.3 | B | 53 | 1 | 101 | 98 | YES | 7.8 | A | 57 | 1 |
| Southbound Left-Turn | 404 | 329 | YES | 90 | F | 1,662 | 727 | 329 | 322 | YES | 47.4 | D | 949 | 145 | 422 | 393 | YES | 48.5 | D | 1,269 | 311 |
| Southbound Through | 381 | 321 | YES | 32 | C | 1,084 | 245 | 510 | 502 | YES | 13.1 | B | 508 | 28 | 413 | 393 | YES | 17.3 | B | 685 | 102 |
| ***Intersection Total*** | **1,611** | **1,462** | **100%** | **35.6** | **D** | | | **2,247** | **2,191** | **100%** | **24.2** | **C** | | | **1,700** | **1,626** | **100%** | **24.1** | **C** | | |
| **8th St / Pitkin Ave** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Through | 311 | 244 | YES | 102 | F | 1,483 | 991 | 208 | 197 | YES | 60.2 | F | 669 | 215 | 329 | 288 | YES | 93.0 | F | 1,305 | 638 |
| Eastbound Right-Turn | 230 | 183 | YES | 99 | F | 1,482 | 990 | 187 | 171 | YES | 55.3 | F | 669 | 214 | 137 | 113 | YES | 86.9 | F | 1,305 | 638 |
| Westbound Left-Turn | 65 | 66 | YES | 12 | B | 105 | 10 | 48 | 53 | YES | 14.2 | B | 141 | 19 | 63 | 67 | YES | 11.1 | B | 128 | 15 |
| Westbound Through | 122 | 126 | YES | 8 | A | 106 | 9 | 273 | 267 | YES | 9.1 | A | 141 | 18 | 236 | 233 | YES | 8.2 | A | 128 | 15 |
| Northbound Left-Turn | 134 | 135 | YES | 19 | C | 147 | 16 | 195 | 186 | YES | 78.9 | F | 413 | 126 | 73 | 72 | YES | 15.7 | C | 85 | 6 |
| Northbound Right-Turn | 45 | 45 | YES | 15 | C | 147 | 16 | 49 | 50 | YES | 77.0 | F | 413 | 126 | 19 | 19 | YES | 12.9 | B | 86 | 6 |
| ***Intersection Total*** | **907** | **799** | **100%** | **59.9** | **F** | | | **960** | **924** | **100%** | **46.6** | **E** | | | **857** | **792** | **100%** | **51.3** | **F** | | |
| **8th St / Colorado Ave** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Left-Turn | 89 | 69 | YES | 15 | C | 158 | 24 | 39 | 35 | YES | 37.4 | E | 233 | 52 | 87 | 68 | YES | 50.4 | F | 272 | 97 |
| Eastbound Through | 143 | 120 | YES | 17 | C | 158 | 24 | 167 | 161 | YES | 36.5 | E | 234 | 53 | 174 | 161 | YES | 49.9 | E | 272 | 98 |
| Eastbound Right-Turn | 124 | 98 | YES | 14 | B | 157 | 23 | 51 | 48 | YES | 30.5 | D | 233 | 52 | 87 | 73 | YES | 46.0 | E | 271 | 97 |
| Westbound Left-Turn | 41 | 44 | YES | 18 | C | 171 | 20 | 31 | 30 | YES | 29.4 | D | 232 | 33 | 52 | 48 | YES | 50.1 | F | 298 | 91 |
| Westbound Through | 103 | 106 | YES | 19 | C | 171 | 20 | 124 | 127 | YES | 29.1 | D | 232 | 33 | 168 | 166 | YES | 51.0 | F | 298 | 91 |
| Westbound Right-Turn | 61 | 61 | YES | 15 | B | 171 | 20 | 52 | 53 | YES | 23.8 | C | 232 | 33 | 39 | 49 | YES | 44.1 | E | 298 | 91 |
| Northbound Left-Turn | 34 | 37 | YES | 14 | B | 84 | 4 | 73 | 74 | YES | 32.0 | D | 160 | 21 | 51 | 54 | YES | 25.9 | D | 120 | 11 |
| Northbound Through | 17 | 16 | YES | 12 | B | 84 | 4 | 40 | 40 | YES | 26.9 | D | 160 | 21 | 19 | 18 | YES | 20.8 | C | 120 | 10 |
| Northbound Right-Turn | 16 | 16 | YES | 8 | A | 84 | 4 | 20 | 20 | YES | 20.5 | C | 160 | 21 | 22 | 22 | YES | 17.2 | C | 120 | 10 |
| Southbound Left-Turn | 19 | 18 | YES | 14 | B | 87 | 6 | 49 | 46 | YES | 49.6 | E | 319 | 78 | 50 | 50 | YES | 45.1 | E | 286 | 59 |
| Southbound Through | 56 | 55 | YES | 14 | B | 87 | 6 | 74 | 73 | YES | 53.6 | F | 319 | 78 | 84 | 82 | YES | 49.8 | E | 286 | 60 |
| Southbound Right-Turn | 50 | 50 | YES | 10 | B | 87 | 6 | 124 | 120 | YES | 48.4 | E | 319 | 78 | 80 | 80 | YES | 43.0 | E | 286 | 59 |
| ***Intersection Total*** | **753** | **690** | **100%** | **15.3** | **C** | | | **844** | **827** | **100%** | **36.7** | **E** | | | **913** | **871** | **100%** | **45.7** | **E** | | |
| **8th St / Grand Ave** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Left-Turn | 47 | 56 | YES | 71 | E | 158 | 21 | 114 | 105 | YES | 76.0 | E | 236 | 51 | 93 | 93 | YES | 59.6 | E | 214 | 31 |
| Eastbound Through | 44 | 38 | YES | 73 | E | 192 | 28 | 37 | 36 | YES | 85.2 | F | 229 | 41 | 35 | 29 | YES | 78.6 | E | 230 | 39 |
| Eastbound Right-Turn | 87 | 58 | YES | 38 | D | 194 | 29 | 85 | 87 | YES | 44.6 | D | 230 | 42 | 118 | 106 | YES | 37.8 | D | 231 | 40 |
| Westbound Left-Turn | 16 | 16 | YES | 71 | E | 59 | 6 | 25 | 25 | YES | 65.5 | E | 81 | 8 | 34 | 36 | YES | 56.2 | E | 100 | 10 |
| Westbound Through | 13 | 13 | YES | 68 | E | 103 | 9 | 20 | 21 | YES | 81.4 | F | 191 | 27 | 35 | 37 | YES | 72.1 | E | 214 | 29 |
| Westbound Right-Turn | 45 | 45 | YES | 19 | B | 107 | 10 | 97 | 98 | YES | 36.7 | D | 195 | 31 | 83 | 80 | YES | 35.1 | D | 219 | 32 |
| Northbound Left-Turn | 86 | 99 | YES | 68 | E | 168 | 31 | 89 | 81 | YES | 20.3 | C | 80 | 5 | 118 | 124 | YES | 53.8 | D | 278 | 37 |
| Northbound Through | 550 | 530 | YES | 5 | A | 159 | 9 | 1,581 | 1,538 | YES | 8.9 | A | 501 | 55 | 902 | 880 | YES | 12.9 | B | 311 | 40 |
| Northbound Right-Turn | 24 | 23 | YES | 3 | A | 164 | 10 | 28 | 27 | YES | 9.0 | A | 507 | 57 | 51 | 48 | YES | 13.1 | B | 317 | 42 |
| Southbound Left-Turn | 76 | 76 | YES | 22 | C | 342 | 8 | 82 | 80 | YES | 63.7 | E | 298 | 29 | 98 | 96 | YES | 39.1 | D | 317 | 23 |
| Southbound Through | 1,555 | 1,540 | YES | 18 | B | 867 | 137 | 695 | 676 | YES | 13.8 | B | 320 | 38 | 735 | 723 | YES | 21.3 | C | 402 | 67 |
| Southbound Right-Turn | 106 | 100 | YES | 18 | B | 866 | 137 | 98 | 109 | YES | 15.0 | B | 319 | 38 | 106 | 109 | YES | 27.8 | C | 401 | 66 |
| ***Intersection Total*** | **2,649** | **2,594** | **100%** | **20.2** | **C** | | | **2,951** | **2,883** | **100%** | **18.6** | **B** | | | **2,408** | **2,361** | **100%** | **25.5** | **C** | | |
| **Grand Ave / 9th St** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Left-Turn | 16 | 17 | YES | 75 | E | 58 | 6 | 48 | 49 | YES | 74.4 | E | 131 | 19 | 25 | 24 | YES | 62.5 | E | 70 | 8 |
| Eastbound Through | 4 | 4 | YES | 83 | F | 80 | 5 | 18 | 18 | YES | 78.0 | E | 156 | 15 | 11 | 9 | YES | 61.4 | E | 94 | 6 |
| Eastbound Right-Turn | 49 | 47 | YES | 17 | B | 80 | 5 | 60 | 57 | YES | 24.5 | C | 157 | 16 | 50 | 49 | YES | 13.5 | B | 95 | 6 |
| Westbound Left-Turn | 10 | 9 | YES | 74 | E | 42 | 3 | 36 | 38 | YES | 64.7 | E | 90 | 13 | 35 | 36 | YES | 52.9 | D | 86 | 10 |
| Westbound Through | 5 | 5 | YES | 66 | E | 50 | 2 | 17 | 19 | YES | 87.9 | F | 180 | 32 | 18 | 19 | YES | 64.9 | E | 137 | 16 |
| Westbound Right-Turn | 23 | 24 | YES | 11 | B | 51 | 3 | 77 | 75 | YES | 54.9 | D | 181 | 33 | 70 | 70 | YES | 27.2 | C | 138 | 17 |
| Northbound Left-Turn | 43 | 48 | YES | 31 | C | 86 | 3 | 58 | 57 | YES | 16.6 | B | 63 | 2 | 57 | 62 | YES | 19.4 | B | 91 | 3 |
| Northbound Through | 621 | 612 | YES | 5 | A | 205 | 9 | 1,573 | 1,541 | YES | 12.7 | B | 751 | 80 | 976 | 961 | YES | 7.8 | A | 317 | 24 |
| Northbound Right-Turn | 15 | 14 | YES | 4 | A | 211 | 10 | 19 | 18 | YES | 10.9 | B | 758 | 83 | 48 | 47 | YES | 7.1 | A | 323 | 26 |
| Southbound Left-Turn | 17 | 16 | YES | 7 | A | 15 | 0 | 24 | 24 | YES | 48.9 | D | 49 | 3 | 33 | 31 | YES | 18.6 | B | 49 | 1 |
| Southbound Through | 1,616 | 1,568 | YES | 2 | A | 395 | 9 | 750 | 730 | YES | 4.7 | A | 158 | 12 | 826 | 808 | YES | 3.2 | A | 224 | 9 |
| Southbound Right-Turn | 25 | 27 | YES | 2 | A | 397 | 10 | 31 | 29 | YES | 4.0 | A | 159 | 12 | 28 | 26 | YES | 1.8 | A | 225 | 9 |
| ***Intersection Total*** | **2,444** | **2,391** | **100%** | **4.8** | **A** | | | **2,711** | **2,655** | **100%** | **15.1** | **B** | | | **2,177** | **2,142** | **100%** | **9.4** | **A** | | |
| **Grand Ave / 14th St** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Left-Turn | 32 | 31 | YES | 68 | E | 78 | 10 | 33 | 33 | YES | 75.3 | E | 87 | 13 | 30 | 31 | YES | 63.5 | E | 76 | 10 |
| Eastbound Through | 34 | 36 | YES | 68 | E | 225 | 38 | 36 | 36 | YES | 64.5 | E | 158 | 21 | 19 | 21 | YES | 60.0 | E | 121 | 13 |
| Eastbound Right-Turn | 102 | 98 | YES | 49 | D | 231 | 43 | 55 | 53 | YES | 33.0 | C | 163 | 24 | 70 | 68 | YES | 21.6 | C | 127 | 15 |
| Westbound Left-Turn | 21 | 21 | YES | 29 | C | 151 | 25 | 28 | 27 | YES | 31.5 | C | 198 | 38 | 39 | 40 | YES | 18.2 | B | 171 | 24 |
| Westbound Through | 34 | 32 | YES | 64 | E | 133 | 18 | 27 | 22 | YES | 64.8 | E | 180 | 27 | 21 | 19 | YES | 61.0 | E | 154 | 17 |
| Westbound Right-Turn | 28 | 29 | YES | 29 | C | 134 | 18 | 80 | 80 | YES | 36.8 | D | 181 | 29 | 69 | 68 | YES | 22.4 | C | 154 | 18 |
| Northbound Left-Turn | 75 | 73 | YES | 29 | C | 95 | 6 | 45 | 48 | YES | 12.5 | B | 44 | 1 | 43 | 42 | YES | 11.2 | B | 48 | 1 |
| Northbound Through | 697 | 693 | YES | 5 | A | 177 | 14 | 1,457 | 1,442 | YES | 7.4 | A | 497 | 44 | 946 | 935 | YES | 6.2 | A | 276 | 24 |
| Northbound Right-Turn | 3 | 3 | YES | 5 | A | 178 | 12 | 19 | 17 | YES | 8.7 | A | 499 | 42 | 21 | 24 | YES | 6.7 | A | 278 | 22 |
| Southbound Left-Turn | 91 | 81 | YES | 11 | B | 70 | 2 | 88 | 85 | YES | 39.1 | D | 105 | 11 | 88 | 86 | YES | 17.5 | B | 84 | 4 |
| Southbound Through | 1,471 | 1,397 | YES | 4 | A | 667 | 28 | 856 | 829 | YES | 5.6 | A | 330 | 16 | 858 | 823 | YES | 7.1 | A | 381 | 20 |
| Southbound Right-Turn | 86 | 80 | YES | 5 | A | 670 | 29 | 18 | 16 | YES | 5.6 | A | 333 | 16 | 19 | 17 | YES | 6.6 | A | 384 | 21 |
| ***Intersection Total*** | **2,674** | **2,574** | **100%** | **9.9** | **A** | | | **2,742** | **2,688** | **100%** | **11.7** | **B** | | | **2,223** | **2,174** | **100%** | **10.1** | **B** | | |
| ***Network Total*** | **11,038** | **10,510** | | | | | | **12,455** | **12,168** | | | | | | **10,278** | **9,966** | | | | | |

Notes:
(1) Data based on the average of 15 VISSIM micro-simulation models.

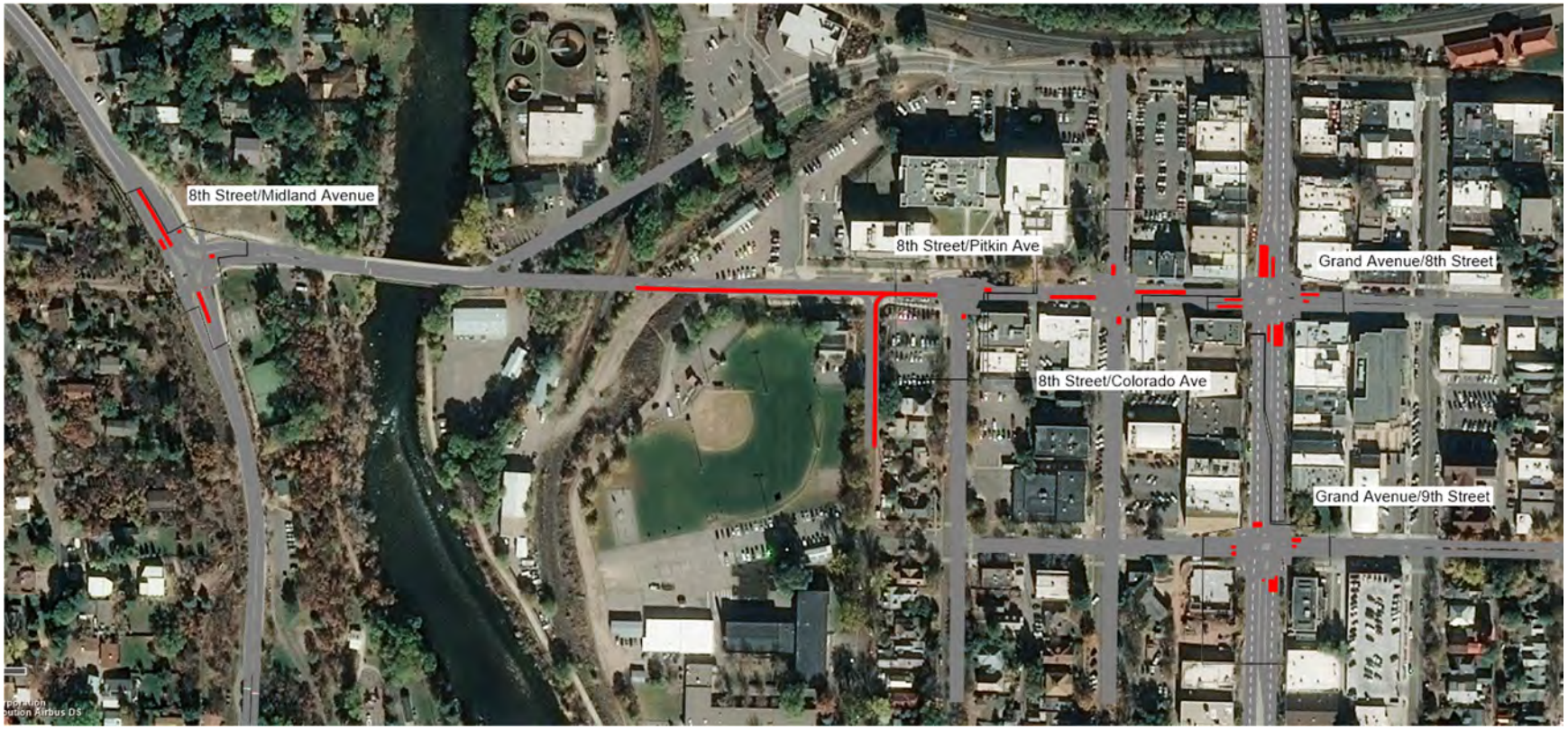
Weekday AM Existing Average Queue

Weekday AM Existing Average Queue

Weekday PM Existing Average Queue

Weekday PM Existing Average Queue

Saturday Midday Existing Average Queue



Saturday Midday Existing Average Queue

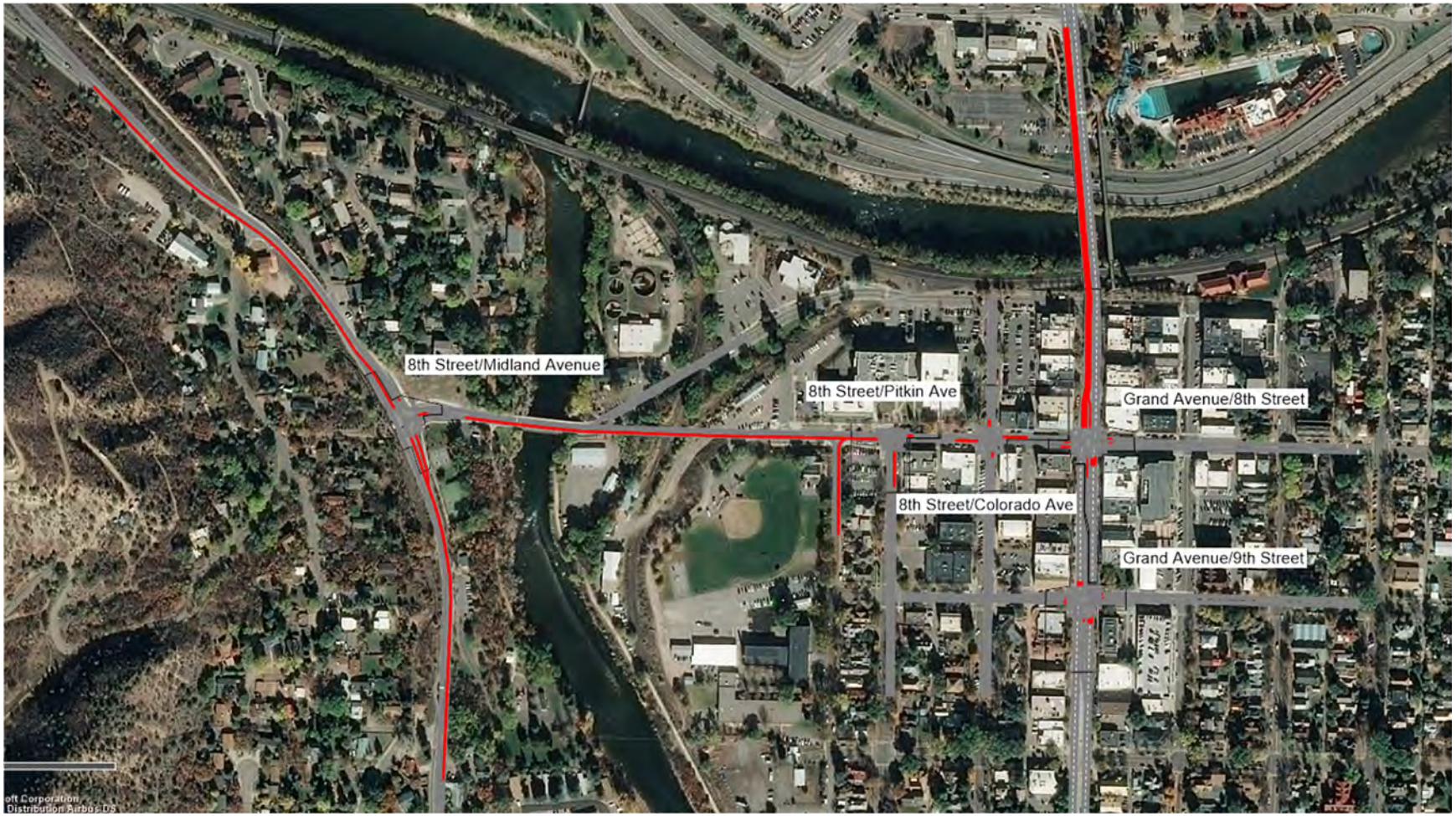
# APPENDIX B 2040 NO BUILD SUMMARIES

**Attachment B**
**Grand Avenue**
**2040 No Build - Operational Summary**[1]

| Intersection / Movement | Weekday AM Peak-Hour | | | | | | | Weekday PM Peak-Hour | | | | | | | Saturday Midday Peak-Hour | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Proj. Volume (veh.) | Model Volume (veh.) | Volume Target Met | Delay (sec.) | Level of Service | Model Maxium Queue (ft.) | Model Avg Queue (ft.) | Proj. Volume (veh.) | Model Volume (veh.) | Volume Target Met | Delay (sec.) | Level of Service | Model Maxium Queue (ft.) | Model Average Queue (ft.) | Proj. Volume (veh.) | Model Volume (veh.) | Volume Target Met | Delay (sec.) | Level of Service | Model Maxium Queue (ft.) | Model Average Queue (ft.) |
| **8th St / Midland Ave** | | | | | | | | | | | | | | | | | | | | | |
| Westbound Left-Turn | 80 | 77 | YES | 69 | E | 240 | 30 | 135 | 93 | YES | 125.8 | F | 1,103 | 893 | 140 | 120 | YES | 73.6 | E | 547 | 80 |
| Westbound Right-Turn | 325 | 316 | YES | 6 | A | 186 | 8 | 830 | 557 | NO | 70.1 | E | 1,176 | 976 | 475 | 413 | YES | 10.8 | B | 473 | 37 |
| Northbound Through | 490 | 397 | YES | 72 | E | 1,661 | 1,048 | 905 | 788 | YES | 33.8 | C | 1,657 | 890 | 570 | 551 | YES | 37.5 | D | 1,102 | 237 |
| Northbound Right-Turn | 310 | 250 | YES | 80 | E | 1,661 | 981 | 180 | 155 | YES | 34.4 | C | 1,033 | 267 | 145 | 139 | YES | 36.6 | D | 578 | 57 |
| Southbound Left-Turn | 585 | 232 | NO | 187 | F | 1,678 | 1,338 | 475 | 273 | NO | 125.5 | F | 1,669 | 1,259 | 615 | 307 | NO | 129.1 | F | 1,668 | 1,288 |
| Southbound Through | 555 | 227 | NO | 60 | E | 129 | 1 | 745 | 429 | NO | 31.5 | C | 136 | 1 | 600 | 306 | NO | 42.1 | D | 325 | 69 |
| ***Intersection Total*** | **2,345** | **1,499** | **67%** | **75.1** | **E** | | | **3,270** | **2,295** | **50%** | **56.8** | **E** | | | **2,545** | **1,836** | **67%** | **49.9** | **D** | | |
| **8th St / Pitkin Ave** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Through | 450 | 213 | NO | 123 | F | 1,486 | 1,243 | 305 | 177 | NO | 138.4 | F | 1,485 | 1,013 | 480 | 258 | NO | 134.1 | F | 1,483 | 1,153 |
| Eastbound Right-Turn | 335 | 174 | NO | 119 | F | 1,485 | 1,242 | 270 | 156 | NO | 130.7 | F | 1,484 | 1,013 | 200 | 97 | NO | 130.8 | F | 1,483 | 1,153 |
| Westbound Left-Turn | 95 | 78 | YES | 15 | B | 141 | 18 | 70 | 67 | YES | 16.2 | C | 181 | 27 | 90 | 75 | YES | 11.2 | B | 142 | 19 |
| Westbound Through | 180 | 201 | YES | 10 | B | 142 | 17 | 395 | 302 | YES | 11.0 | B | 182 | 27 | 345 | 266 | YES | 8.7 | A | 143 | 19 |
| Northbound Left-Turn | 195 | 166 | YES | 62 | F | 363 | 107 | 285 | 192 | YES | 247.8 | F | 767 | 610 | 105 | 109 | YES | 27.8 | D | 160 | 19 |
| Northbound Right-Turn | 65 | 86 | YES | 58 | F | 363 | 107 | 70 | 46 | YES | 244.2 | F | 767 | 610 | 25 | 20 | YES | 29.7 | D | 161 | 19 |
| ***Intersection Total*** | **1,320** | **918** | **67%** | **71.3** | **F** | | | **1,395** | **940** | **67%** | **115.0** | **F** | | | **1,245** | **825** | **67%** | **65.5** | **F** | | |
| **8th St / Colorado Ave** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Left-Turn | 130 | 81 | YES | 38 | E | 260 | 67 | 55 | 28 | YES | 86.6 | F | 284 | 119 | 125 | 56 | YES | 84.2 | F | 281 | 146 |
| Eastbound Through | 205 | 122 | YES | 36 | E | 261 | 67 | 245 | 144 | NO | 85.3 | F | 284 | 120 | 255 | 137 | NO | 82.3 | F | 281 | 146 |
| Eastbound Right-Turn | 180 | 94 | YES | 32 | D | 260 | 67 | 75 | 45 | YES | 69.4 | F | 283 | 118 | 125 | 79 | YES | 74.8 | F | 280 | 146 |
| Westbound Left-Turn | 60 | 47 | YES | 39 | E | 286 | 74 | 45 | 41 | YES | 86.5 | F | 298 | 151 | 75 | 46 | YES | 101.0 | F | 310 | 184 |
| Westbound Through | 150 | 146 | YES | 43 | E | 287 | 74 | 180 | 148 | YES | 85.1 | F | 298 | 151 | 245 | 168 | YES | 99.6 | F | 310 | 184 |
| Westbound Right-Turn | 90 | 74 | YES | 36 | E | 286 | 74 | 80 | 75 | YES | 78.6 | F | 298 | 150 | 55 | 41 | YES | 89.7 | F | 310 | 184 |
| Northbound Left-Turn | 50 | 59 | YES | 25 | D | 137 | 12 | 105 | 112 | YES | 133.8 | F | 484 | 183 | 75 | 83 | YES | 54.1 | F | 214 | 42 |
| Northbound Through | 25 | 25 | YES | 18 | C | 137 | 12 | 60 | 57 | YES | 124.4 | F | 484 | 183 | 25 | 23 | YES | 43.3 | E | 214 | 42 |
| Northbound Right-Turn | 25 | 25 | YES | 15 | C | 137 | 12 | 30 | 24 | YES | 125.4 | F | 484 | 183 | 35 | 30 | YES | 41.9 | E | 214 | 42 |
| Southbound Left-Turn | 25 | 25 | YES | 25 | C | 180 | 21 | 70 | 42 | YES | 233.4 | F | 426 | 349 | 75 | 47 | YES | 213.1 | F | 425 | 338 |
| Southbound Through | 80 | 77 | YES | 26 | D | 181 | 22 | 110 | 64 | YES | 229.1 | F | 427 | 349 | 125 | 83 | YES | 216.5 | F | 425 | 338 |
| Southbound Right-Turn | 75 | 74 | YES | 21 | C | 180 | 21 | 180 | 100 | YES | 219.5 | F | 426 | 349 | 115 | 82 | YES | 199.5 | F | 425 | 338 |
| ***Intersection Total*** | **1,095** | **849** | **100%** | **32.8** | **D** | | | **1,235** | **880** | **92%** | **126.5** | **F** | | | **1,330** | **875** | **92%** | **112.1** | **F** | | |
| **8th St / Grand Ave** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Left-Turn | 65 | 60 | YES | 64 | E | 167 | 21 | 165 | 109 | YES | 89.6 | F | 257 | 67 | 140 | 95 | YES | 68.1 | E | 224 | 39 |
| Eastbound Through | 60 | 43 | YES | 66 | E | 194 | 30 | 50 | 30 | YES | 115.4 | F | 251 | 49 | 55 | 33 | YES | 99.6 | F | 248 | 53 |
| Eastbound Right-Turn | 130 | 68 | YES | 38 | D | 195 | 31 | 130 | 72 | YES | 62.2 | E | 252 | 50 | 170 | 89 | YES | 54.3 | D | 249 | 54 |
| Westbound Left-Turn | 25 | 27 | YES | 55 | E | 62 | 7 | 30 | 25 | YES | 206.7 | F | 492 | 154 | 50 | 43 | YES | 206.9 | F | 788 | 313 |
| Westbound Through | 20 | 20 | YES | 60 | E | 130 | 12 | 30 | 29 | YES | 281.6 | F | 658 | 330 | 50 | 41 | YES | 307.1 | F | 788 | 431 |
| Westbound Right-Turn | 65 | 63 | YES | 20 | B | 135 | 14 | 140 | 124 | YES | 220.3 | F | 664 | 335 | 120 | 95 | YES | 246.2 | F | 793 | 436 |
| Northbound Left-Turn | 125 | 123 | YES | 95 | F | 258 | 61 | 130 | 98 | YES | 222.5 | F | 505 | 157 | 170 | 91 | YES | 436.3 | F | 510 | 306 |
| Northbound Through | 800 | 775 | YES | 9 | A | 227 | 23 | 2,305 | 1,768 | NO | 13.2 | B | 507 | 121 | 1,310 | 899 | NO | 24.0 | C | 508 | 237 |
| Northbound Right-Turn | 35 | 36 | YES | 9 | A | 233 | 25 | 50 | 39 | YES | 9.3 | A | 512 | 123 | 75 | 47 | YES | 24.5 | C | 513 | 241 |
| Southbound Left-Turn | 110 | 90 | YES | 65 | E | 1,669 | 807 | 120 | 112 | YES | 124.6 | F | 1,135 | 307 | 145 | 123 | YES | 127.9 | F | 1,674 | 1,077 |
| Southbound Through | 2,265 | 1,749 | NO | 51 | D | 1,670 | 1,209 | 995 | 949 | YES | 47.9 | D | 1,139 | 307 | 1,075 | 894 | NO | 117.5 | F | 1,673 | 1,105 |
| Southbound Right-Turn | 155 | 128 | YES | 54 | D | 1,670 | 1,209 | 145 | 145 | YES | 69.5 | E | 1,138 | 306 | 155 | 131 | YES | 158.9 | F | 1,674 | 1,105 |
| ***Intersection Total*** | **3,855** | **3,182** | **92%** | **42.3** | **D** | | | **4,290** | **3,500** | **92%** | **49.5** | **D** | | | **3,515** | **2,581** | **83%** | **102.1** | **F** | | |
| **Grand Ave / 9th St** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Left-Turn | 20 | 15 | YES | 77 | E | 56 | 6 | 75 | 70 | YES | 131.4 | F | 326 | 64 | 35 | 36 | YES | 94.2 | F | 123 | 16 |
| Eastbound Through | 5 | 5 | YES | 71 | E | 101 | 8 | 25 | 24 | YES | 88.8 | F | 301 | 37 | 15 | 13 | YES | 67.8 | E | 130 | 10 |
| Eastbound Right-Turn | 70 | 73 | YES | 21 | C | 101 | 9 | 85 | 86 | YES | 44.0 | D | 301 | 38 | 75 | 73 | YES | 17.6 | B | 130 | 11 |
| Westbound Left-Turn | 15 | 20 | YES | 58 | E | 67 | 6 | 50 | 50 | YES | 180.3 | F | 533 | 136 | 50 | 48 | YES | 129.4 | F | 364 | 51 |
| Westbound Through | 5 | 4 | YES | 62 | E | 54 | 3 | 25 | 27 | YES | 266.5 | F | 630 | 282 | 25 | 23 | YES | 211.7 | F | 568 | 193 |
| Westbound Right-Turn | 35 | 31 | YES | 13 | B | 55 | 3 | 120 | 102 | YES | 214.3 | F | 630 | 282 | 100 | 87 | YES | 179.1 | F | 568 | 194 |
| Northbound Left-Turn | 65 | 66 | YES | 44 | D | 120 | 10 | 85 | 61 | YES | 60.0 | E | 127 | 13 | 85 | 64 | YES | 94.7 | F | 453 | 170 |
| Northbound Through | 905 | 898 | YES | 5 | A | 317 | 14 | 2,290 | 1,752 | NO | 38.5 | D | 1,671 | 1,220 | 1,420 | 948 | NO | 85.5 | F | 1,673 | 1,007 |
| Northbound Right-Turn | 20 | 20 | YES | 3 | A | 316 | 15 | 30 | 26 | YES | 33.5 | C | 1,672 | 1,220 | 70 | 46 | YES | 50.5 | D | 1,674 | 1,009 |
| Southbound Left-Turn | 25 | 16 | YES | 12 | B | 21 | 0 | 40 | 28 | YES | 82.3 | F | 88 | 13 | 50 | 37 | YES | 27.9 | C | 66 | 3 |
| Southbound Through | 2,365 | 1,783 | NO | 2 | A | 459 | 13 | 1,070 | 957 | YES | 6.3 | A | 167 | 21 | 1,205 | 955 | NO | 2.8 | A | 180 | 9 |
| Southbound Right-Turn | 30 | 34 | YES | 2 | A | 460 | 14 | 45 | 58 | YES | 5.4 | A | 168 | 21 | 40 | 33 | YES | 1.2 | A | 181 | 9 |
| ***Intersection Total*** | **3,560** | **2,965** | **92%** | **5.5** | **A** | | | **3,940** | **3,241** | **92%** | **41.3** | **D** | | | **3,170** | **2,363** | **83%** | **53.1** | **D** | | |
| **Grand Ave / 14th St** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Left-Turn | 45 | 41 | YES | 73 | E | 132 | 14 | 50 | 49 | YES | 82.8 | F | 111 | 19 | 45 | 42 | YES | 82.5 | F | 96 | 14 |
| Eastbound Through | 50 | 51 | YES | 90 | F | 379 | 93 | 50 | 50 | YES | 64.4 | E | 209 | 34 | 30 | 31 | YES | 50.8 | D | 181 | 21 |
| Eastbound Right-Turn | 150 | 140 | YES | 77 | E | 385 | 98 | 80 | 75 | YES | 43.0 | D | 215 | 38 | 100 | 95 | YES | 29.0 | C | 186 | 25 |
| Westbound Left-Turn | 30 | 31 | YES | 93 | F | 214 | 45 | 40 | 37 | YES | 96.8 | F | 352 | 91 | 55 | 53 | YES | 84.8 | F | 366 | 76 |
| Westbound Through | 50 | 45 | YES | 73 | E | 214 | 45 | 40 | 37 | YES | 89.1 | F | 351 | 90 | 30 | 26 | YES | 70.2 | E | 365 | 76 |
| Westbound Right-Turn | 40 | 39 | YES | 52 | D | 214 | 45 | 115 | 114 | YES | 83.2 | F | 352 | 91 | 100 | 95 | YES | 77.4 | E | 366 | 77 |
| Northbound Left-Turn | 110 | 107 | YES | 35 | C | 149 | 13 | 65 | 55 | YES | 31.0 | C | 63 | 2 | 65 | 50 | YES | 48.7 | D | 79 | 4 |
| Northbound Through | 1,015 | 1,020 | YES | 7 | A | 319 | 34 | 2,125 | 1,736 | NO | 41.0 | D | 1,673 | 1,054 | 1,380 | 1,040 | NO | 69.2 | E | 1,670 | 687 |
| Northbound Right-Turn | 5 | 4 | YES | 7 | A | 322 | 29 | 30 | 22 | YES | 35.3 | D | 1,672 | 1,053 | 30 | 26 | YES | 51.6 | D | 1,671 | 687 |
| Southbound Left-Turn | 135 | 91 | YES | 23 | C | 103 | 5 | 130 | 112 | YES | 63.3 | E | 455 | 39 | 130 | 102 | YES | 34.5 | C | 142 | 14 |
| Southbound Through | 2,145 | 1,664 | NO | 6 | A | 1,016 | 85 | 1,245 | 1,146 | YES | 13.4 | B | 728 | 74 | 1,250 | 1,011 | NO | 4.0 | A | 303 | 12 |
| Southbound Right-Turn | 125 | 95 | YES | 7 | A | 1,019 | 86 | 25 | 22 | YES | 14.8 | B | 731 | 75 | 30 | 23 | YES | 2.1 | A | 306 | 13 |
| ***Intersection Total*** | **3,900** | **3,328** | **92%** | **15.2** | **B** | | | **3,995** | **3,455** | **92%** | **35.7** | **D** | | | **3,245** | **2,594** | **83%** | **40.4** | **D** | | |
| ***Network Total*** | **16,075** | **12,741** | | | | | | **18,125** | **14,311** | | | | | | **15,050** | **11,074** | | | | | |

Notes:
(1) Data based on the average of 15 VISSIM micro-simulation models.

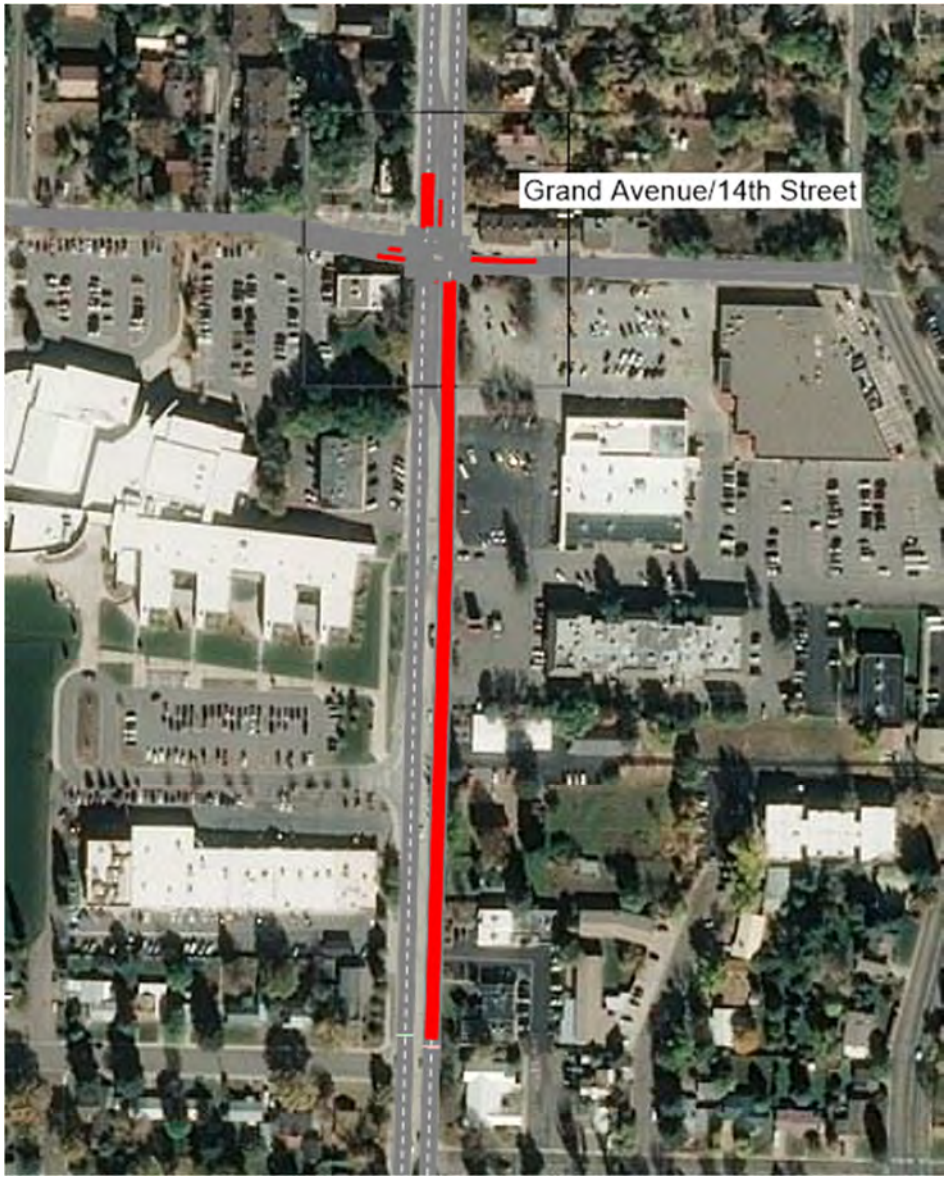
Weekday AM 2040 No Build Average Queue



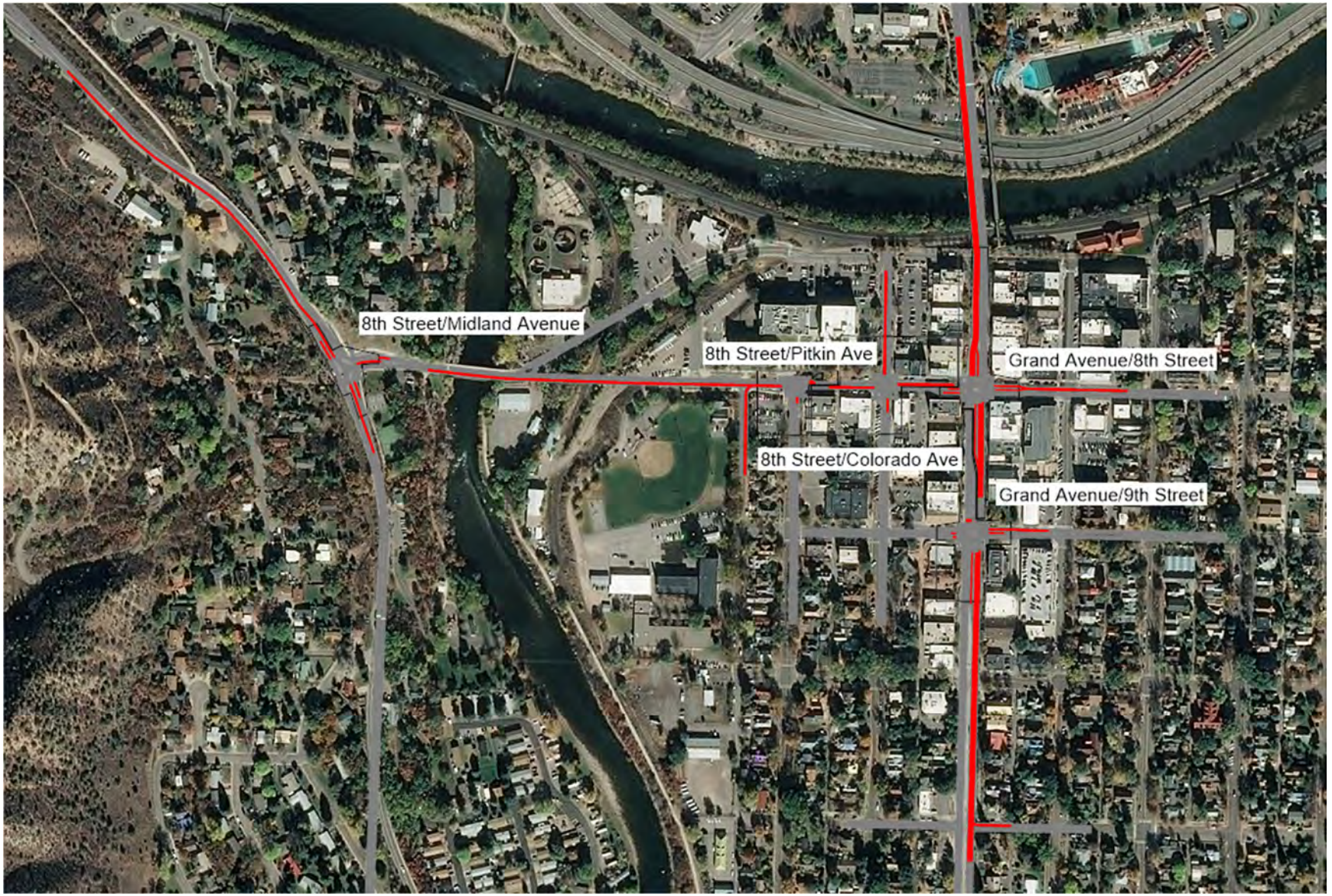
Weekday AM 2040 No Build Average Queue

Weekday PM 2040 No Build Average Queues

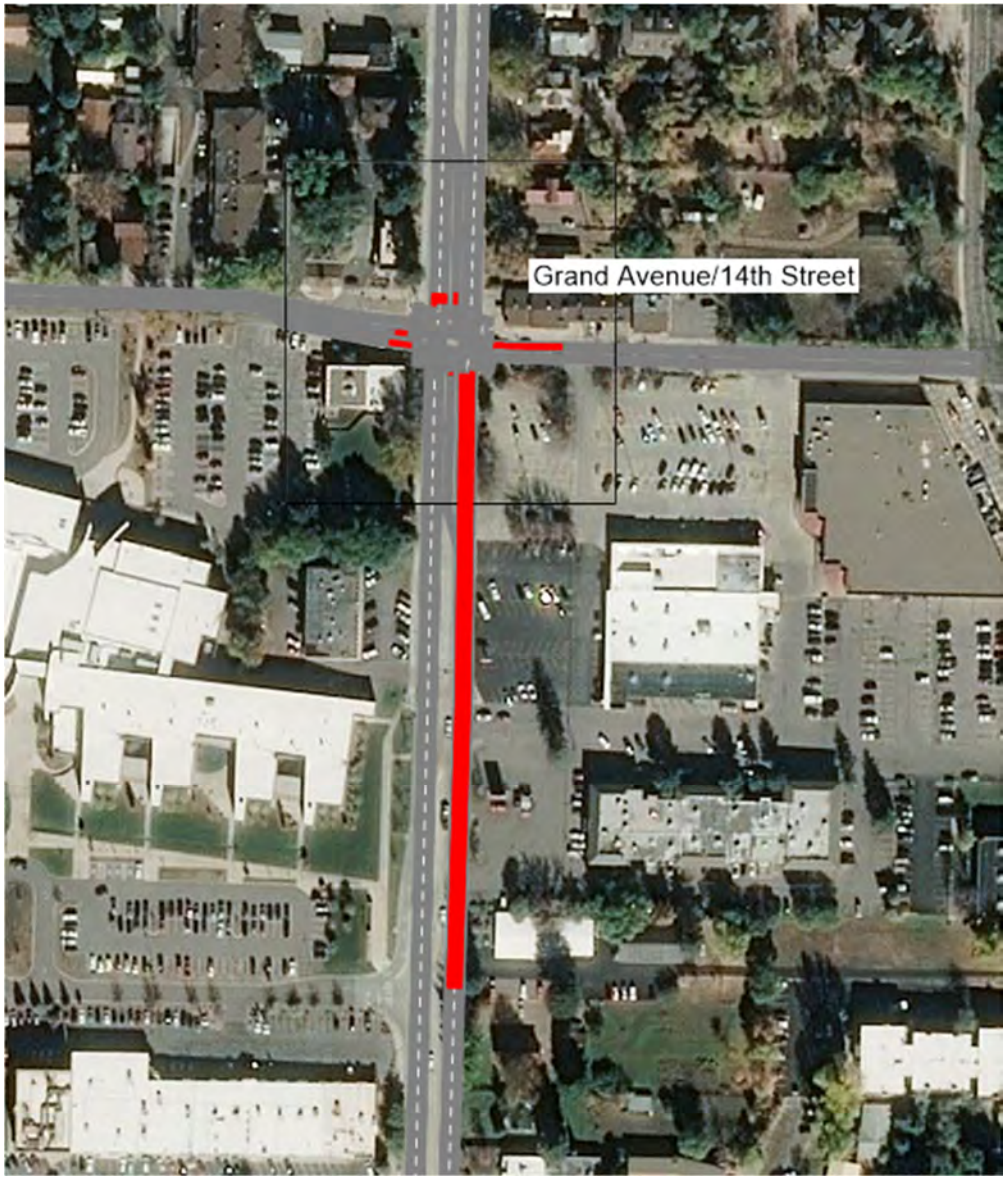
Weekday PM 2040 No Build Average Queues



Saturday Midday 2040 No Build Average Queue



Saturday Midday 2040 No Build Average Queue



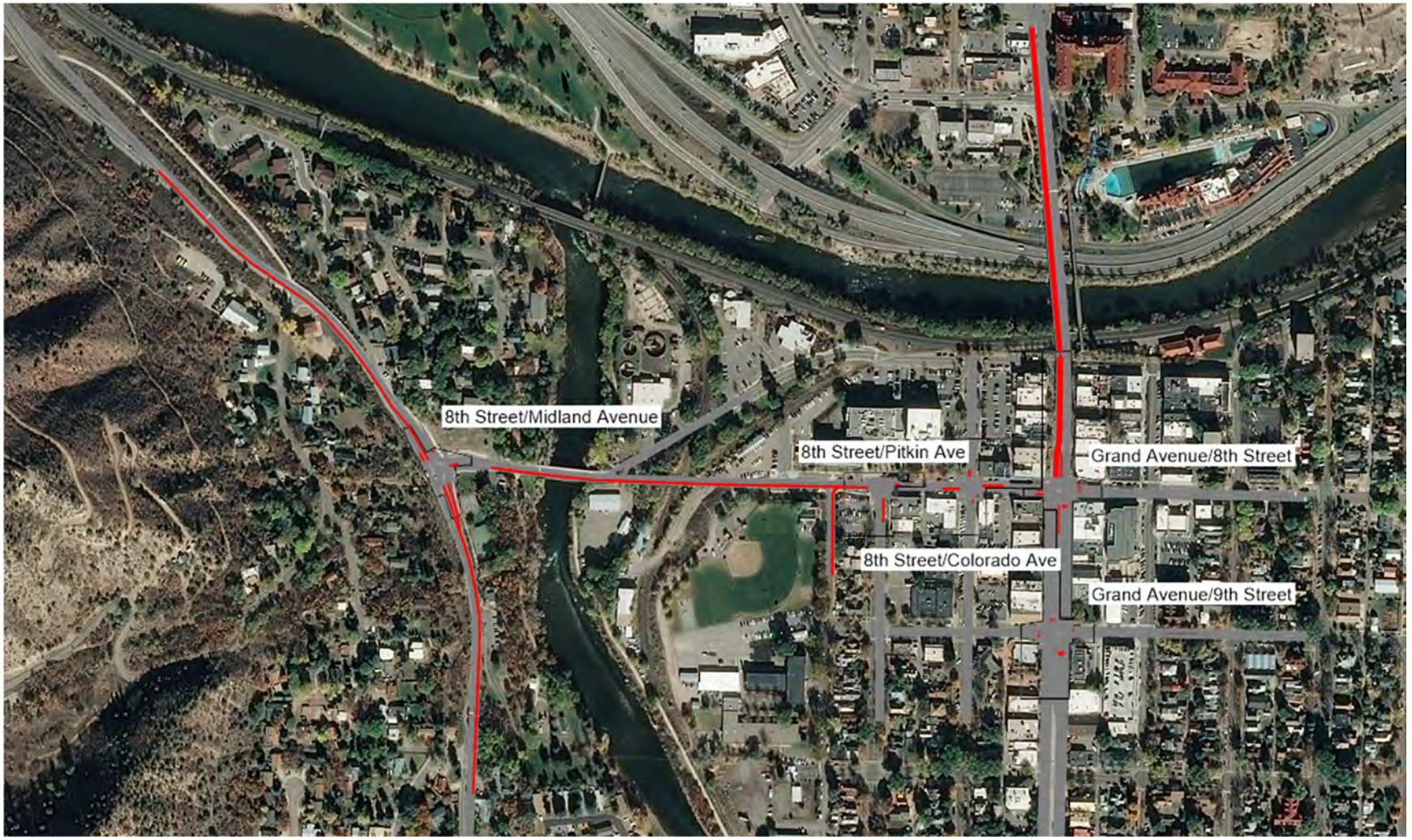
# APPENDIX C 2040 ALTERNATIVE 1 SUMMARIES

**Attachment C**
**Grand Avenue**
**2040 Alternative 1 - Operational Summary**[1]

| Intersection / Movement | Weekday AM Peak-Hour | | | | | | | Weekday PM Peak-Hour | | | | | | | Saturday Midday Peak-Hour | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Proj. Volume (veh.) | Model Volume (veh.) | Volume Target Met | Delay (sec.) | Level of Service | Model Maxium Queue (ft.) | Model Avg Queue (ft.) | Proj. Volume (veh.) | Model Volume (veh.) | Volume Target Met | Delay (sec.) | Level of Service | Model Maxium Queue (ft.) | Model Average Queue (ft.) | Proj. Volume (veh.) | Model Volume (veh.) | Volume Target Met | Delay (sec.) | Level of Service | Model Maxium Queue (ft.) | Model Average Queue (ft.) |
| **8th St / Midland Ave** | | | | | | | | | | | | | | | | | | | | | |
| Westbound Left-Turn | 80 | 76 | YES | 67 | E | 207 | 30 | 135 | 92 | YES | 128.2 | F | 1,098 | 886 | 140 | 119 | YES | 74.1 | E | 540 | 80 |
| Westbound Right-Turn | 325 | 308 | YES | 5 | A | 167 | 8 | 830 | 553 | NO | 72.3 | E | 1,171 | 976 | 475 | 405 | YES | 15.6 | B | 433 | 40 |
| Northbound Through | 490 | 399 | YES | 71 | E | 1,665 | 1,038 | 905 | 800 | YES | 32.3 | C | 1,656 | 832 | 570 | 548 | YES | 37.0 | D | 1,153 | 254 |
| Northbound Right-Turn | 310 | 250 | YES | 84 | F | 1,666 | 900 | 180 | 158 | YES | 28.4 | C | 716 | 152 | 145 | 139 | YES | 36.8 | D | 607 | 62 |
| Southbound Left-Turn | 585 | 236 | NO | 188 | F | 1,670 | 1,321 | 475 | 300 | NO | 112.6 | F | 1,661 | 1,219 | 615 | 305 | NO | 133.2 | F | 1,664 | 1,268 |
| Southbound Through | 555 | 238 | NO | 58 | E | 314 | 33 | 745 | 481 | NO | 26.7 | C | 304 | 64 | 600 | 313 | NO | 42.0 | D | 506 | 73 |
| ***Intersection Total*** | **2,345** | **1,507** | **67%** | **75.9** | **E** | | | **3,270** | **2,384** | **50%** | **54.0** | **D** | | | **2,545** | **1,829** | **67%** | **51.5** | **D** | | |
| **8th St / Pitkin Ave** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Through | 450 | 213 | NO | 125 | F | 1,483 | 1,248 | 305 | 188 | NO | 129.6 | F | 1,483 | 978 | 480 | 255 | NO | 138.8 | F | 1,483 | 1,158 |
| Eastbound Right-Turn | 335 | 175 | NO | 122 | F | 1,483 | 1,247 | 270 | 169 | NO | 122.6 | F | 1,483 | 978 | 200 | 98 | NO | 133.3 | F | 1,483 | 1,158 |
| Westbound Left-Turn | 95 | 77 | YES | 14 | B | 118 | 15 | 70 | 67 | YES | 15.8 | C | 173 | 26 | 90 | 75 | YES | 11.0 | B | 112 | 17 |
| Westbound Through | 180 | 192 | YES | 9 | A | 119 | 14 | 395 | 297 | YES | 10.2 | B | 174 | 25 | 345 | 258 | YES | 8.0 | A | 113 | 17 |
| Northbound Left-Turn | 195 | 167 | YES | 49 | E | 317 | 79 | 285 | 192 | YES | 244.3 | F | 766 | 613 | 105 | 109 | YES | 23.9 | C | 143 | 16 |
| Northbound Right-Turn | 65 | 86 | YES | 47 | E | 317 | 79 | 70 | 46 | YES | 245.7 | F | 767 | 613 | 25 | 21 | YES | 23.4 | C | 143 | 16 |
| ***Intersection Total*** | **1,320** | **910** | **67%** | **69.1** | **F** | | | **1,395** | **959** | **67%** | **112.0** | **F** | | | **1,245** | **816** | **67%** | **66.7** | **F** | | |
| **8th St / Colorado Ave** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Left-Turn | 130 | 82 | YES | 33 | D | 247 | 54 | 55 | 31 | YES | 80.2 | F | 280 | 105 | 125 | 56 | YES | 86.4 | F | 274 | 144 |
| Eastbound Through | 205 | 119 | YES | 32 | D | 248 | 55 | 245 | 150 | YES | 75.4 | F | 281 | 106 | 255 | 134 | NO | 85.9 | F | 275 | 145 |
| Eastbound Right-Turn | 180 | 95 | YES | 27 | D | 247 | 54 | 75 | 49 | YES | 61.2 | F | 280 | 105 | 125 | 79 | YES | 76.3 | F | 274 | 144 |
| Westbound Left-Turn | 60 | 46 | YES | 39 | E | 276 | 70 | 45 | 40 | YES | 83.4 | F | 308 | 150 | 75 | 46 | YES | 100.9 | F | 305 | 186 |
| Westbound Through | 150 | 147 | YES | 42 | E | 277 | 70 | 180 | 148 | YES | 82.7 | F | 308 | 150 | 245 | 166 | YES | 99.7 | F | 305 | 187 |
| Westbound Right-Turn | 90 | 73 | YES | 37 | E | 276 | 70 | 80 | 75 | YES | 76.0 | F | 308 | 150 | 55 | 42 | YES | 87.6 | F | 305 | 186 |
| Northbound Left-Turn | 50 | 48 | YES | 22 | C | 94 | 8 | 105 | 104 | YES | 108.3 | F | 388 | 130 | 75 | 78 | YES | 45.7 | E | 170 | 30 |
| Northbound Through | 25 | 25 | YES | 16 | C | 94 | 8 | 60 | 57 | YES | 97.1 | F | 388 | 130 | 25 | 24 | YES | 32.8 | D | 170 | 30 |
| Northbound Right-Turn | 25 | 25 | YES | 13 | B | 94 | 8 | 30 | 24 | YES | 97.0 | F | 388 | 130 | 35 | 31 | YES | 32.6 | D | 170 | 30 |
| Southbound Left-Turn | 25 | 25 | YES | 23 | C | 173 | 20 | 70 | 43 | YES | 216.2 | F | 425 | 345 | 75 | 46 | YES | 213.7 | F | 427 | 331 |
| Southbound Through | 80 | 78 | YES | 26 | D | 173 | 21 | 110 | 65 | YES | 220.4 | F | 425 | 345 | 125 | 81 | YES | 217.3 | F | 427 | 331 |
| Southbound Right-Turn | 75 | 74 | YES | 20 | C | 173 | 20 | 180 | 103 | YES | 211.7 | F | 425 | 345 | 115 | 80 | YES | 198.9 | F | 427 | 331 |
| ***Intersection Total*** | **1,095** | **837** | **100%** | **30.4** | **D** | | | **1,235** | **889** | **100%** | **115.4** | **F** | | | **1,330** | **863** | **92%** | **111.2** | **F** | | |
| **8th St / Grand Ave** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Left-Turn | 65 | 60 | YES | 65 | E | 179 | 22 | 165 | 114 | YES | 87.8 | F | 258 | 66 | 140 | 94 | YES | 70.0 | E | 222 | 41 |
| Eastbound Through | 60 | 47 | YES | 68 | E | 110 | 15 | 50 | 50 | YES | 97.5 | F | 136 | 25 | 55 | 80 | YES | 89.4 | F | 123 | 30 |
| Eastbound Right-Turn | 130 | 65 | YES | 37 | D | 206 | 29 | 130 | 74 | YES | 61.2 | E | 258 | 48 | 170 | 85 | YES | 61.8 | E | 232 | 58 |
| Westbound Left-Turn | 25 | 27 | YES | 55 | E | 62 | 7 | 30 | 25 | YES | 212.3 | F | 503 | 115 | 50 | 42 | YES | 225.5 | F | 761 | 331 |
| Westbound Through | 20 | 20 | YES | 61 | E | 130 | 11 | 30 | 29 | YES | 284.6 | F | 688 | 318 | 50 | 40 | YES | 338.9 | F | 765 | 458 |
| Westbound Right-Turn | 65 | 63 | YES | 17 | B | 135 | 13 | 140 | 125 | YES | 209.5 | F | 693 | 322 | 120 | 91 | YES | 266.3 | F | 770 | 463 |
| Northbound Left-Turn | 125 | 127 | YES | 129 | F | 330 | 97 | 130 | 97 | YES | 199.3 | F | 485 | 152 | 170 | 93 | YES | 439.3 | F | 510 | 314 |
| Northbound Through | 800 | 788 | YES | 10 | B | 146 | 7 | 2,305 | 1,816 | NO | 12.1 | B | 288 | 44 | 1,310 | 933 | NO | 16.8 | B | 283 | 76 |
| Northbound Right-Turn | 35 | 37 | YES | 3 | A | 73 | 3 | 50 | 40 | YES | 4.6 | A | 146 | 16 | 75 | 50 | YES | 8.0 | A | 145 | 38 |
| Southbound Left-Turn | 110 | 85 | YES | 66 | E | 1,562 | 732 | 120 | 112 | YES | 132.8 | F | 1,255 | 413 | 145 | 121 | YES | 130.6 | F | 1,673 | 1,022 |
| Southbound Through | 2,265 | 1,693 | NO | 56 | E | 1,593 | 1,154 | 995 | 954 | YES | 64.1 | E | 1,063 | 299 | 1,075 | 887 | NO | 124.6 | F | 1,591 | 924 |
| Southbound Right-Turn | 155 | 123 | YES | 57 | E | 1,670 | 1,233 | 145 | 143 | YES | 77.1 | E | 1,256 | 415 | 155 | 129 | YES | 151.8 | F | 1,673 | 1,041 |
| ***Intersection Total*** | **3,855** | **3,135** | **92%** | **46.3** | **D** | | | **4,290** | **3,579** | **92%** | **52.4** | **D** | | | **3,515** | **2,645** | **83%** | **101.7** | **F** | | |
| **Grand Ave / 9th St** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Left-Turn | 20 | 15 | YES | 77 | E | 55 | 6 | 75 | 72 | YES | 87.0 | F | 237 | 35 | 35 | 36 | YES | 87.8 | F | 126 | 16 |
| Eastbound Through | 5 | 5 | YES | 72 | E | 103 | 8 | 25 | 24 | YES | 83.1 | F | 255 | 30 | 15 | 13 | YES | 69.2 | E | 129 | 10 |
| Eastbound Right-Turn | 70 | 73 | YES | 20 | B | 103 | 9 | 85 | 87 | YES | 34.2 | C | 255 | 30 | 75 | 73 | YES | 16.9 | B | 129 | 11 |
| Westbound Left-Turn | 15 | 20 | YES | 57 | E | 67 | 6 | 50 | 46 | YES | 238.6 | F | 645 | 233 | 50 | 46 | YES | 157.7 | F | 410 | 92 |
| Westbound Through | 5 | 4 | YES | 62 | E | 54 | 2 | 25 | 24 | YES | 347.5 | F | 744 | 418 | 25 | 22 | YES | 253.2 | F | 641 | 246 |
| Westbound Right-Turn | 35 | 31 | YES | 10 | B | 30 | 1 | 120 | 90 | YES | 311.9 | F | 709 | 385 | 100 | 82 | YES | 223.0 | F | 605 | 219 |
| Northbound Left-Turn | 65 | 55 | YES | 36 | D | 75 | 4 | 85 | 53 | YES | 52.3 | D | 92 | 6 | 85 | 60 | YES | 86.2 | F | 103 | 8 |
| Northbound Through | 905 | 916 | YES | 9 | A | 212 | 8 | 2,290 | 1,815 | NO | 31.2 | C | 908 | 578 | 1,420 | 994 | NO | 51.2 | D | 913 | 500 |
| Northbound Right-Turn | 20 | 20 | YES | 3 | A | 28 | 0 | 30 | 27 | YES | 12.6 | B | 110 | 3 | 70 | 50 | YES | 15.8 | B | 97 | 1 |
| Southbound Left-Turn | 25 | 15 | YES | 12 | B | 27 | 0 | 40 | 30 | YES | 58.2 | E | 67 | 5 | 50 | 37 | YES | 30.8 | C | 58 | 3 |
| Southbound Through | 2,365 | 1,724 | NO | 1 | A | 177 | 2 | 1,070 | 962 | YES | 5.5 | A | 80 | 6 | 1,205 | 944 | NO | 2.9 | A | 65 | 2 |
| Southbound Right-Turn | 30 | 33 | YES | 1 | A | 81 | 0 | 45 | 57 | YES | 2.0 | A | 42 | 1 | 40 | 33 | YES | 1.2 | A | 29 | 0 |
| ***Intersection Total*** | **3,560** | **2,911** | **92%** | **5.9** | **A** | | | **3,940** | **3,287** | **92%** | **38.2** | **D** | | | **3,170** | **2,390** | **83%** | **40.7** | **D** | | |
| **Grand Ave / 14th St** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Left-Turn | 45 | 41 | YES | 77 | E | 139 | 15 | 50 | 48 | YES | 79.6 | E | 120 | 19 | 45 | 43 | YES | 80.9 | F | 95 | 15 |
| Eastbound Through | 50 | 51 | YES | 92 | F | 402 | 96 | 50 | 50 | YES | 64.8 | E | 211 | 35 | 30 | 32 | YES | 50.6 | D | 185 | 21 |
| Eastbound Right-Turn | 150 | 139 | YES | 80 | E | 407 | 101 | 80 | 75 | YES | 43.2 | D | 217 | 39 | 100 | 95 | YES | 28.7 | C | 190 | 25 |
| Westbound Left-Turn | 30 | 31 | YES | 92 | F | 213 | 45 | 40 | 37 | YES | 95.0 | F | 348 | 86 | 55 | 53 | YES | 89.8 | F | 403 | 98 |
| Westbound Through | 50 | 45 | YES | 74 | E | 213 | 45 | 40 | 37 | YES | 82.0 | F | 348 | 86 | 30 | 26 | YES | 72.8 | E | 267 | 28 |
| Westbound Right-Turn | 40 | 39 | YES | 52 | D | 213 | 45 | 115 | 114 | YES | 73.9 | E | 348 | 86 | 100 | 96 | YES | 99.8 | F | 403 | 98 |
| Northbound Left-Turn | 110 | 107 | YES | 33 | C | 148 | 13 | 65 | 56 | YES | 32.1 | C | 63 | 3 | 65 | 50 | YES | 48.5 | D | 79 | 3 |
| Northbound Through | 1,015 | 1,025 | YES | 7 | A | 320 | 34 | 2,125 | 1,789 | NO | 37.5 | D | 1,672 | 1,011 | 1,380 | 1,075 | NO | 66.1 | E | 1,672 | 681 |
| Northbound Right-Turn | 5 | 4 | YES | 6 | A | 323 | 29 | 30 | 23 | YES | 34.0 | C | 1,672 | 1,011 | 30 | 27 | YES | 51.8 | D | 1,672 | 680 |
| Southbound Left-Turn | 135 | 88 | YES | 23 | C | 103 | 5 | 130 | 114 | YES | 67.0 | E | 416 | 37 | 130 | 101 | YES | 34.9 | C | 140 | 14 |
| Southbound Through | 2,145 | 1,612 | NO | 6 | A | 969 | 67 | 1,245 | 1,147 | YES | 12.9 | B | 755 | 71 | 1,250 | 998 | NO | 4.5 | A | 369 | 15 |
| Southbound Right-Turn | 125 | 91 | YES | 6 | A | 972 | 68 | 25 | 22 | YES | 14.0 | B | 758 | 72 | 30 | 22 | YES | 3.1 | A | 372 | 15 |
| ***Intersection Total*** | **3,900** | **3,273** | **92%** | **15.3** | **B** | | | **3,995** | **3,512** | **92%** | **33.5** | **C** | | | **3,245** | **2,618** | **83%** | **40.9** | **D** | | |
| ***Network Total*** | **16,075** | **12,573** | | | | | | **18,125** | **14,610** | | | | | | **15,050** | **11,161** | | | | | |

Notes:
(1) Data based on the average of 15 VISSIM micro-simulation models.

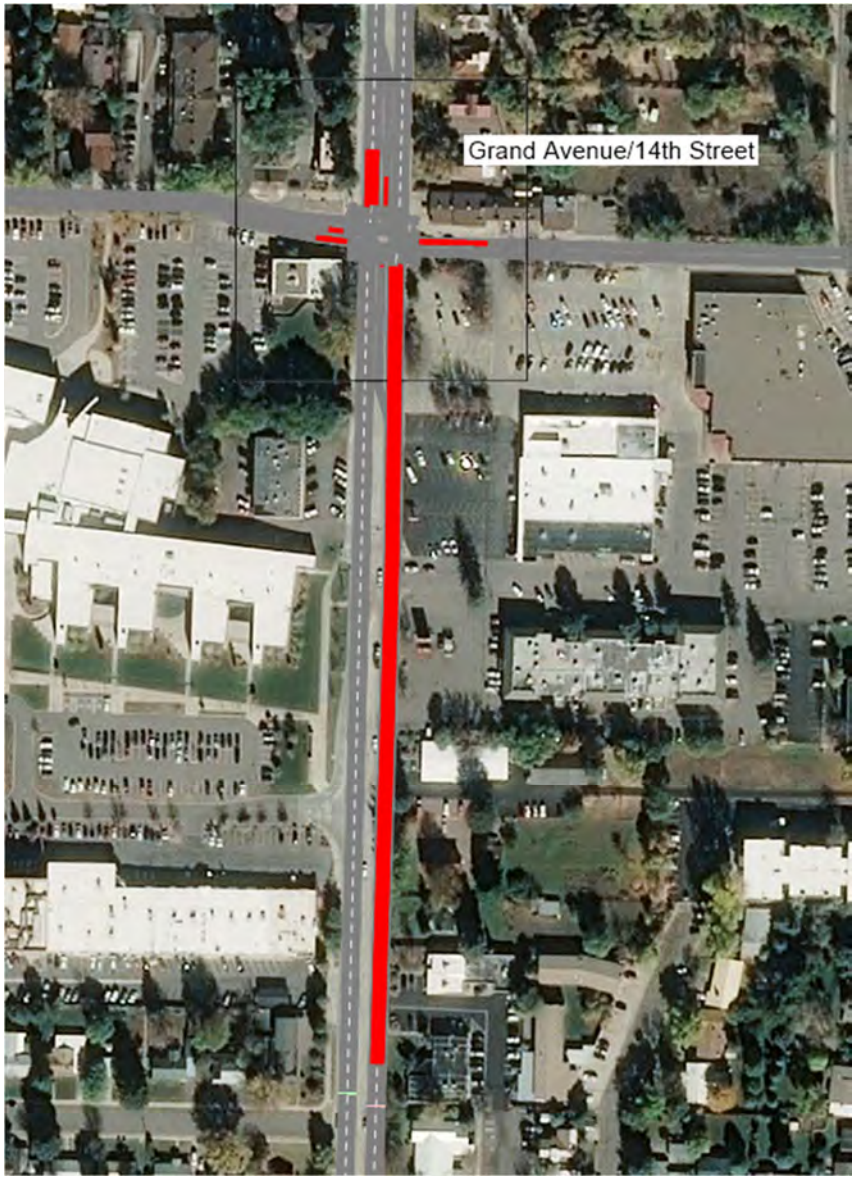
Weekday AM 2040 Alternative 1 Average Queue



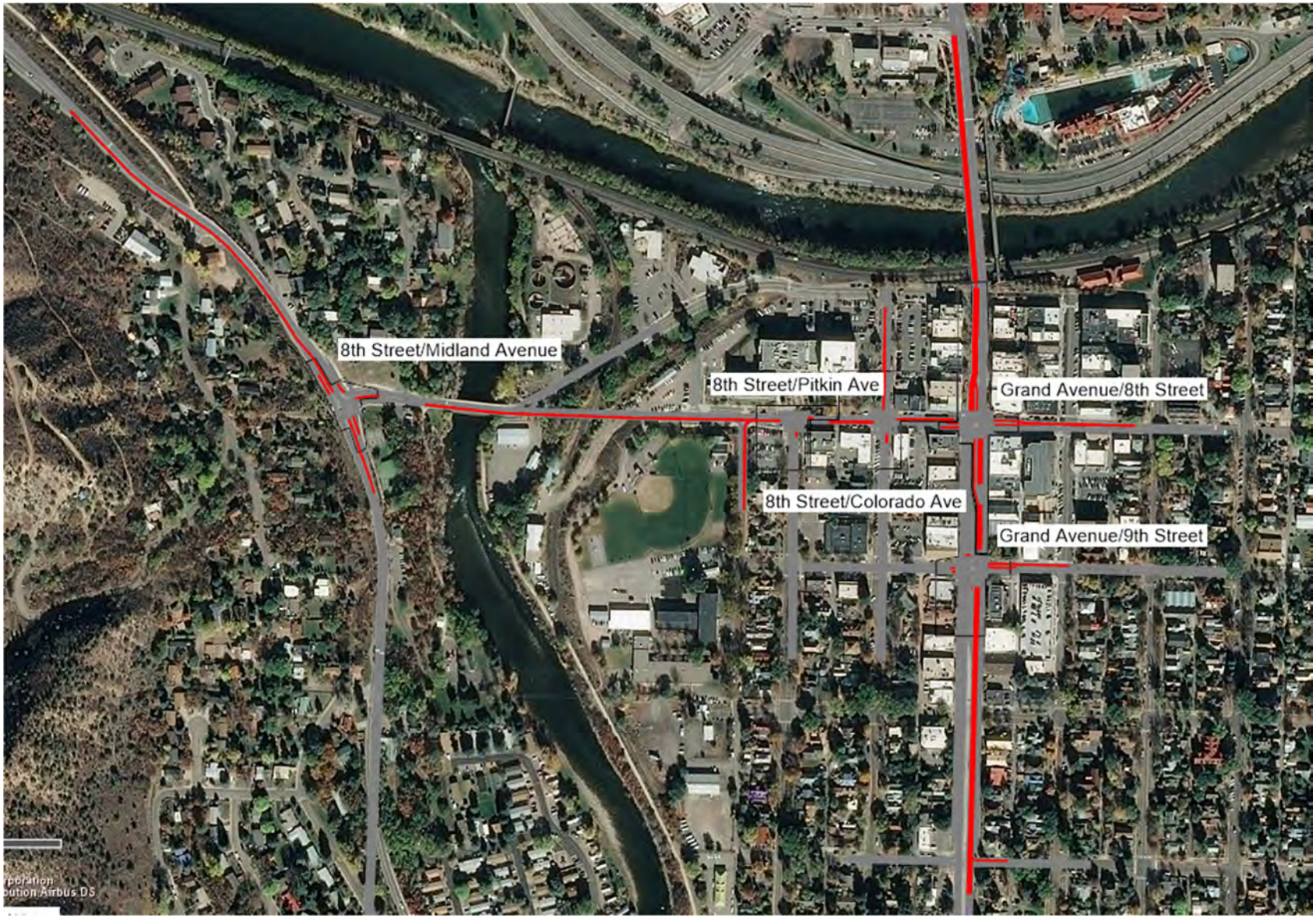
Weekday AM 2040 Alternative 1 Average Queue

Weekday PM 2040 Alternative 1 Average Queue

Weekday PM 2040 Alternative 1 Average Queue



Saturday Midday 2040 Alternative 1 Average Queue



Saturday Midday 2040 Alternative 1 Average Queue

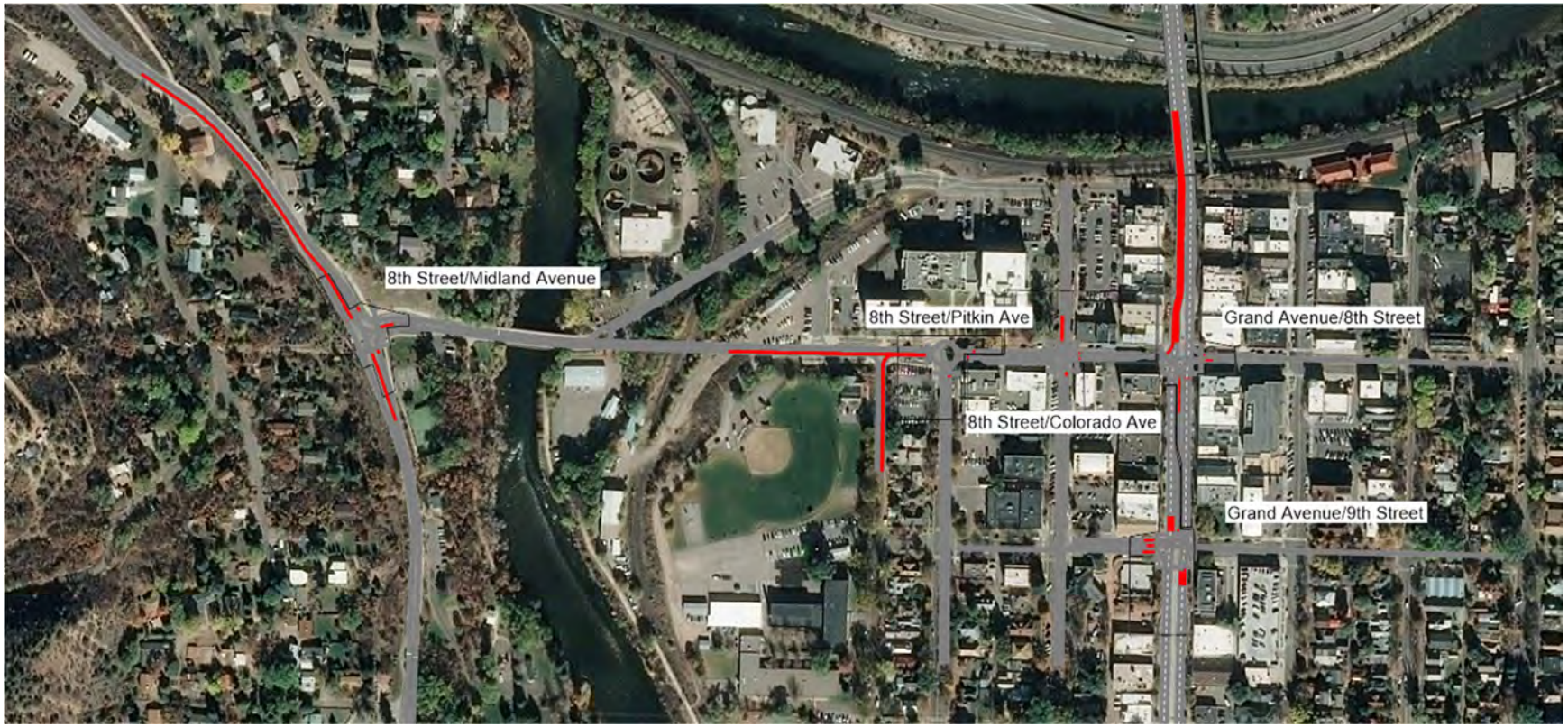
# APPENDIX D 2040 ALTERNATIVE 2 SUMMARIES

**Attachment D**
**Grand Avenue**
**2040 Alternative 2 - Operational Summary**[1]

| Intersection / Movement | Weekday AM Peak-Hour | | | | | | | Weekday PM Peak-Hour | | | | | | | Saturday Midday Peak-Hour | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Proj. Volume (veh.) | Model Volume (veh.) | Volume Target Met | Delay (sec.) | Level of Service | Model Maxium Queue (ft.) | Model Avg Queue (ft.) | Proj. Volume (veh.) | Model Volume (veh.) | Volume Target Met | Delay (sec.) | Level of Service | Model Maxium Queue (ft.) | Model Average Queue (ft.) | Proj. Volume (veh.) | Model Volume (veh.) | Volume Target Met | Delay (sec.) | Level of Service | Model Maxium Queue (ft.) | Model Average Queue (ft.) |
| **8th St / Midland Ave** | | | | | | | | | | | | | | | | | | | | | |
| Westbound Left-Turn | 80 | 82 | YES | 71 | E | 275 | 35 | 135 | 74 | YES | 130.5 | F | 1,620 | 982 | 140 | 119 | YES | 72.7 | E | 560 | 80 |
| Westbound Right-Turn | 325 | 321 | YES | 8 | A | 216 | 11 | 830 | 521 | NO | 85.3 | F | 1,636 | 1,081 | 475 | 431 | YES | 17.0 | B | 493 | 42 |
| Northbound Through | 490 | 477 | YES | 31 | C | 1,080 | 179 | 905 | 873 | YES | 23.2 | C | 1,589 | 570 | 570 | 567 | YES | 21.2 | C | 711 | 97 |
| Northbound Right-Turn | 310 | 301 | YES | 15 | B | 261 | 10 | 180 | 171 | YES | 13.4 | B | 60 | 1 | 145 | 129 | YES | 8.5 | A | 58 | 1 |
| Southbound Left-Turn | 585 | 534 | YES | 49 | D | 1,659 | 821 | 475 | 387 | YES | 71.1 | E | 1,663 | 1,125 | 615 | 541 | YES | 49.5 | D | 1,660 | 968 |
| Southbound Through | 555 | 511 | YES | 13 | B | 154 | 2 | 745 | 608 | NO | 16.3 | B | 265 | 25 | 600 | 532 | YES | 15.5 | B | 861 | 122 |
| ***Intersection Total*** | **2,345** | **2,226** | **100%** | **27.3** | **C** | | | **3,270** | **2,634** | **67%** | **43.3** | **D** | | | **2,545** | **2,319** | **100%** | **27.6** | **C** | | |
| **8th St / Pitkin Ave** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Through | 450 | 404 | YES | 35 | E | 1,318 | 495 | 305 | 258 | YES | 19.0 | C | 418 | 56 | 480 | 424 | YES | 19.2 | C | 604 | 86 |
| Eastbound Right-Turn | 335 | 307 | YES | 35 | D | 1,318 | 495 | 270 | 227 | YES | 16.8 | C | 418 | 56 | 200 | 165 | YES | 19.3 | C | 604 | 86 |
| Westbound Left-Turn | 95 | 84 | YES | 6 | A | 128 | 4 | 70 | 72 | YES | 16.6 | C | 248 | 45 | 90 | 105 | YES | 4.7 | A | 148 | 5 |
| Westbound Through | 180 | 208 | YES | 5 | A | 128 | 4 | 395 | 306 | YES | 18.2 | C | 248 | 45 | 345 | 284 | YES | 4.4 | A | 148 | 5 |
| Northbound Left-Turn | 195 | 169 | YES | 7 | A | 133 | 5 | 285 | 282 | YES | 10.7 | B | 197 | 12 | 105 | 109 | YES | 4.1 | A | 66 | 1 |
| Northbound Right-Turn | 65 | 87 | YES | 6 | A | 133 | 5 | 70 | 66 | YES | 8.0 | A | 197 | 12 | 25 | 21 | YES | 3.9 | A | 66 | 1 |
| ***Intersection Total*** | **1,320** | **1,259** | **100%** | **22.3** | **C** | | | **1,395** | **1,211** | **100%** | **15.7** | **C** | | | **1,245** | **1,108** | **100%** | **12.3** | **B** | | |
| **8th St / Colorado Ave** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Left-Turn | 130 | 124 | YES | 9 | A | 144 | 3 | 55 | 42 | YES | 7.9 | A | 264 | 9 | 125 | 98 | YES | 6.5 | A | 153 | 1 |
| Eastbound Right-Turn | 385 | 365 | YES | 4 | A | 144 | 3 | 320 | 282 | YES | 3.0 | A | 264 | 9 | 380 | 345 | YES | 2.8 | A | 153 | 1 |
| Westbound Left-Turn | 125 | 105 | YES | 9 | A | 111 | 3 | 130 | 98 | YES | 5.0 | A | 64 | 1 | 160 | 145 | YES | 7.6 | A | 114 | 4 |
| Westbound Through | 150 | 172 | YES | 4 | A | 143 | 3 | 180 | 170 | YES | 12.6 | B | 194 | 9 | 245 | 247 | YES | 2.6 | A | 97 | 1 |
| Westbound Right-Turn | 90 | 85 | YES | 3 | A | 142 | 3 | 80 | 82 | YES | 5.6 | A | 193 | 9 | 55 | 68 | YES | 1.7 | A | 97 | 1 |
| Northbound Left-Turn | 50 | 48 | YES | 27 | D | 92 | 8 | 105 | 100 | YES | 79.0 | F | 339 | 78 | 75 | 74 | YES | 32.0 | D | 116 | 15 |
| Northbound Through | 25 | 24 | YES | 23 | C | 91 | 8 | 60 | 54 | YES | 64.1 | F | 339 | 78 | 25 | 24 | YES | 28.1 | D | 115 | 15 |
| Southbound Through | 105 | 102 | YES | 66 | F | 285 | 64 | 180 | 107 | YES | 225.9 | F | 426 | 352 | 200 | 104 | YES | 292.5 | F | 426 | 356 |
| Southbound Right-Turn | 75 | 74 | YES | 53 | F | 285 | 63 | 180 | 101 | YES | 222.2 | F | 426 | 351 | 115 | 63 | YES | 276.1 | F | 426 | 356 |
| ***Intersection Total*** | **1,135** | **1,099** | **100%** | **15.4** | **C** | | | **1,290** | **1,036** | **100%** | **60.1** | **F** | | | **1,380** | **1,168** | **100%** | **46.5** | **E** | | |
| **8th St / Grand Ave** | | | | | | | | | | | | | | | | | | | | | |
| Westbound Left-Turn | 25 | 27 | YES | 70 | E | 110 | 17 | 30 | 32 | YES | 75.4 | E | 169 | 33 | 50 | 52 | YES | 66.9 | E | 190 | 40 |
| Westbound Through | 20 | 23 | YES | 68 | E | 110 | 17 | 30 | 55 | YES | 70.6 | E | 169 | 33 | 50 | 73 | YES | 56.8 | E | 190 | 40 |
| Westbound Right-Turn | 100 | 99 | YES | 9 | A | 83 | 4 | 260 | 231 | YES | 36.8 | D | 341 | 50 | 220 | 194 | YES | 16.8 | B | 150 | 17 |
| Northbound Left-Turn | 190 | 183 | YES | 88 | F | 356 | 87 | 215 | 146 | YES | 38.8 | D | 301 | 31 | 255 | 226 | YES | 45.0 | D | 368 | 59 |
| Northbound Through | 830 | 812 | YES | 1 | A | 87 | 2 | 2,350 | 1,875 | NO | 2.2 | A | 207 | 12 | 1,350 | 1,335 | YES | 5.6 | A | 309 | 25 |
| Southbound Through | 2,375 | 2,280 | YES | 20 | C | 1,661 | 582 | 1,115 | 1,069 | YES | 10.3 | B | 500 | 49 | 1,220 | 1,186 | YES | 15.4 | B | 571 | 79 |
| Southbound Right-Turn | 155 | 159 | YES | 21 | C | 1,664 | 598 | 145 | 153 | YES | 11.4 | B | 534 | 60 | 155 | 162 | YES | 15.9 | B | 605 | 94 |
| ***Intersection Total*** | **3,695** | **3,583** | **100%** | **19.9** | **B** | | | **4,145** | **3,561** | **86%** | **10.5** | **B** | | | **3,300** | **3,228** | **100%** | **15.3** | **B** | | |
| **Grand Ave / 9th St** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Left-Turn | 85 | 85 | YES | 60 | E | 152 | 26 | 240 | 235 | YES | 78.5 | E | 520 | 119 | 175 | 170 | YES | 68.4 | E | 334 | 64 |
| Eastbound Through | 65 | 68 | YES | 56 | E | 127 | 20 | 75 | 86 | YES | 64.0 | E | 218 | 30 | 70 | 84 | YES | 51.6 | D | 149 | 23 |
| Eastbound Right-Turn | 200 | 202 | YES | 28 | C | 235 | 31 | 215 | 208 | YES | 16.2 | B | 171 | 14 | 245 | 238 | YES | 15.2 | B | 188 | 19 |
| Northbound Through | 935 | 911 | YES | 10 | B | 383 | 35 | 2,325 | 1,795 | NO | 38.8 | D | 1,672 | 1,314 | 1,430 | 1,403 | YES | 16.2 | B | 844 | 118 |
| Northbound Right-Turn | 55 | 55 | YES | 9 | A | 390 | 37 | 80 | 66 | YES | 39.6 | D | 1,673 | 1,317 | 145 | 138 | YES | 14.0 | B | 849 | 116 |
| Southbound Left-Turn | 135 | 131 | YES | 15 | B | 113 | 7 | 160 | 145 | YES | 98.8 | F | 306 | 80 | 195 | 180 | YES | 70.5 | E | 337 | 70 |
| Southbound Through | 2,265 | 2,172 | YES | 6 | A | 354 | 39 | 985 | 948 | YES | 5.8 | A | 192 | 18 | 1,075 | 1,054 | YES | 1.7 | A | 137 | 5 |
| ***Intersection Total*** | **3,740** | **3,624** | **100%** | **10.7** | **B** | | | **4,080** | **3,483** | **86%** | **34.3** | **C** | | | **3,335** | **3,267** | **100%** | **18.0** | **B** | | |
| **Grand Ave / 14th St** | | | | | | | | | | | | | | | | | | | | | |
| Eastbound Left-Turn | 45 | 41 | YES | 84 | F | 130 | 15 | 50 | 49 | YES | 85.3 | F | 111 | 18 | 45 | 44 | YES | 55.7 | E | 88 | 12 |
| Eastbound Through | 50 | 51 | YES | 115 | F | 440 | 123 | 50 | 50 | YES | 65.3 | E | 211 | 35 | 30 | 32 | YES | 53.7 | D | 189 | 22 |
| Eastbound Right-Turn | 150 | 138 | YES | 98 | F | 445 | 128 | 80 | 75 | YES | 44.2 | D | 217 | 39 | 100 | 95 | YES | 29.9 | C | 194 | 26 |
| Westbound Left-Turn | 30 | 31 | YES | 111 | F | 257 | 58 | 40 | 37 | YES | 91.5 | F | 305 | 82 | 55 | 54 | YES | 65.9 | E | 284 | 53 |
| Westbound Through | 50 | 45 | YES | 91 | F | 257 | 57 | 40 | 37 | YES | 80.6 | F | 305 | 81 | 30 | 27 | YES | 59.5 | E | 284 | 52 |
| Westbound Right-Turn | 40 | 39 | YES | 69 | E | 257 | 58 | 115 | 115 | YES | 77.4 | E | 305 | 82 | 100 | 98 | YES | 44.8 | D | 284 | 53 |
| Northbound Left-Turn | 110 | 105 | YES | 88 | F | 219 | 45 | 65 | 56 | YES | 33.8 | C | 62 | 3 | 65 | 63 | YES | 22.8 | C | 80 | 3 |
| Northbound Through | 1,015 | 1,013 | YES | 9 | A | 318 | 36 | 2,125 | 1,767 | NO | 39.4 | D | 1,673 | 1,075 | 1,380 | 1,360 | YES | 16.3 | B | 655 | 100 |
| Northbound Right-Turn | 5 | 4 | YES | 10 | A | 320 | 32 | 30 | 23 | YES | 35.1 | D | 1,673 | 1,075 | 30 | 33 | YES | 16.5 | B | 658 | 100 |
| Southbound Left-Turn | 135 | 136 | YES | 24 | C | 255 | 12 | 130 | 133 | YES | 53.9 | D | 488 | 36 | 130 | 134 | YES | 48.6 | D | 303 | 29 |
| Southbound Through | 2,145 | 2,052 | YES | 9 | A | 1,268 | 184 | 1,245 | 1,195 | YES | 16.9 | B | 723 | 94 | 1,250 | 1,188 | YES | 14.5 | B | 634 | 80 |
| Southbound Right-Turn | 125 | 119 | YES | 9 | A | 1,271 | 185 | 25 | 26 | YES | 19.1 | B | 726 | 95 | 30 | 30 | YES | 15.3 | B | 637 | 81 |
| ***Intersection Total*** | **3,900** | **3,774** | **100%** | **19.5** | **B** | | | **3,995** | **3,563** | **92%** | **35.4** | **D** | | | **3,245** | **3,158** | **100%** | **20.6** | **C** | | |
| ***Network Total*** | **16,135** | **15,565** | | | | | | **18,175** | **15,488** | | | | | | **15,050** | **14,248** | | | | | |

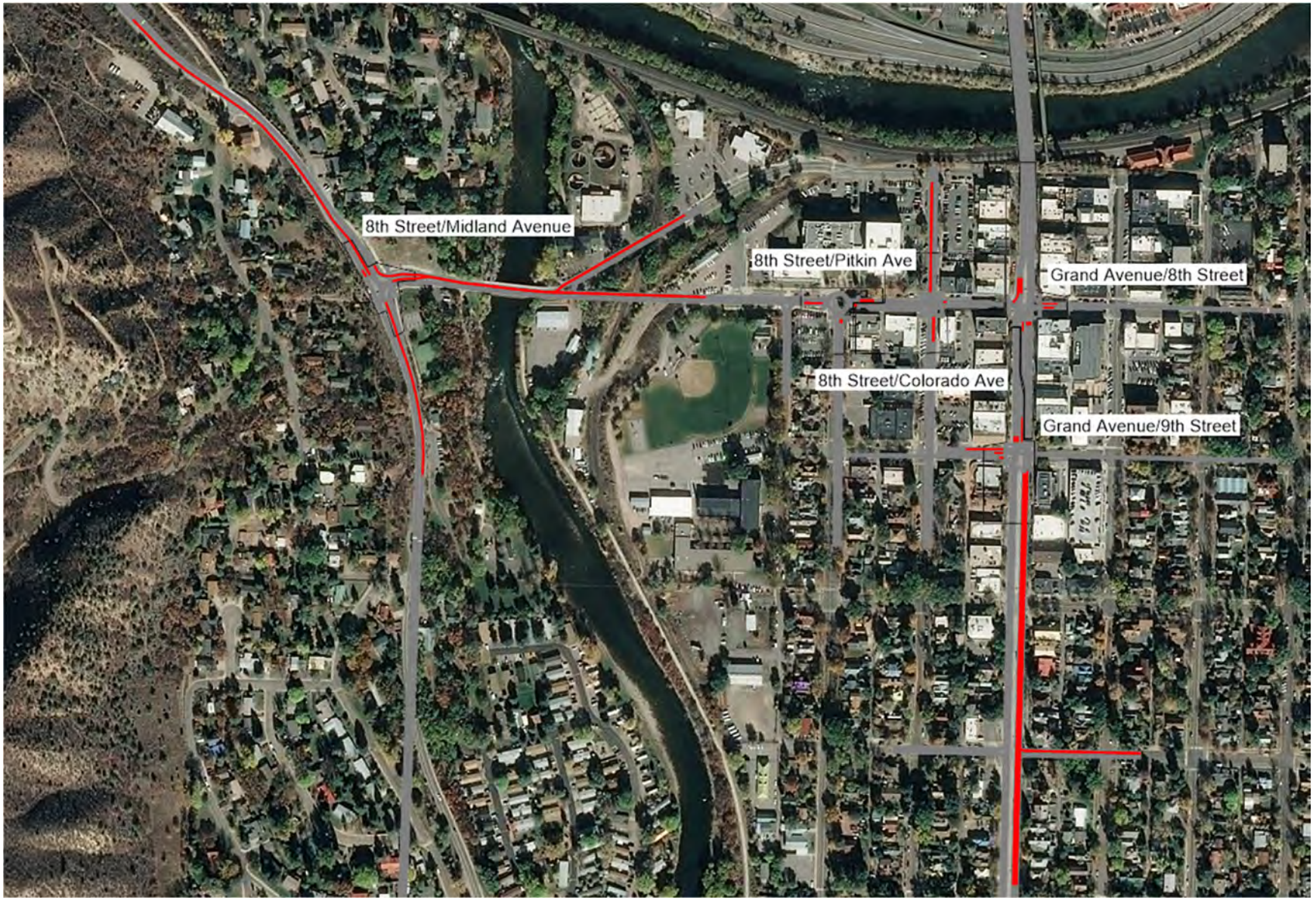
Notes:
(1) Data based on the average of 15 VISSIM micro-simulation models.

Weekday AM 2040 Alternative 2 Average Queue

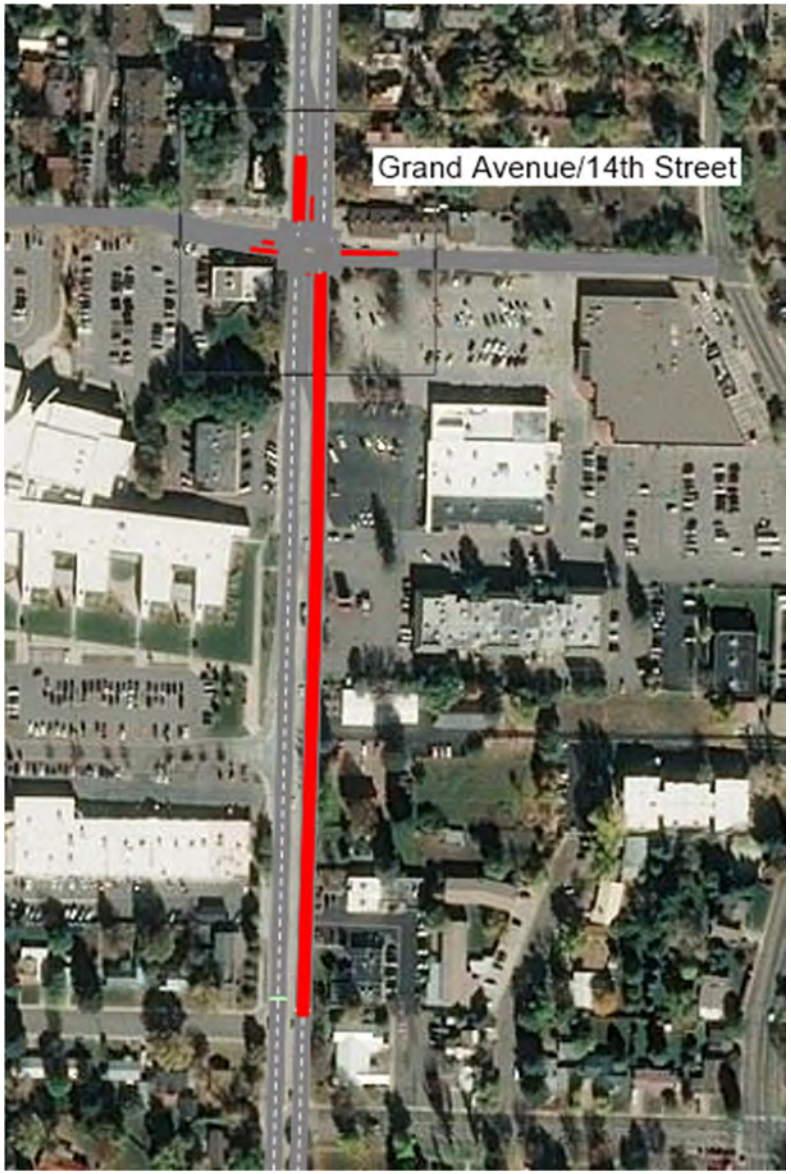


Weekday AM 2040 Alternative 2 Average Queue

Weekday PM 2040 Alternative 2 Average Queue



Weekday PM 2040 Alternative 2 Average Queue



Saturday Midday 2040 Alternative 2 Average Queue

Saturday Midday 2040 Alternative 2 Average Queue

# GLENWOOD SPRINGS MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY (MOVE)

## Traffic and Safety Implementation and Phasing Plan

May 2021

PARSONS

GLENWOOD SPRINGS COLORADO

RFTA

# Introduction

The Glenwood Springs MOVE project investigated various aspects of mobility for the City of Glenwood Springs including transit, parking, traffic, safety, and bicycle and pedestrian internal circulation. This report includes the implementation and phasing the traffic and safety recommendations. Parking, regional transit, bicycle, and pedestrian implementation, phasing, and funding are covered in their own technical documents as other appendices to the MOVE Final Report.

# Implementation and Phasing

The recommended improvements for each mode are categorized into three phases that are based on implementation timeframe and relationship to the primary BRT extension alternatives. The phases are described as followed:

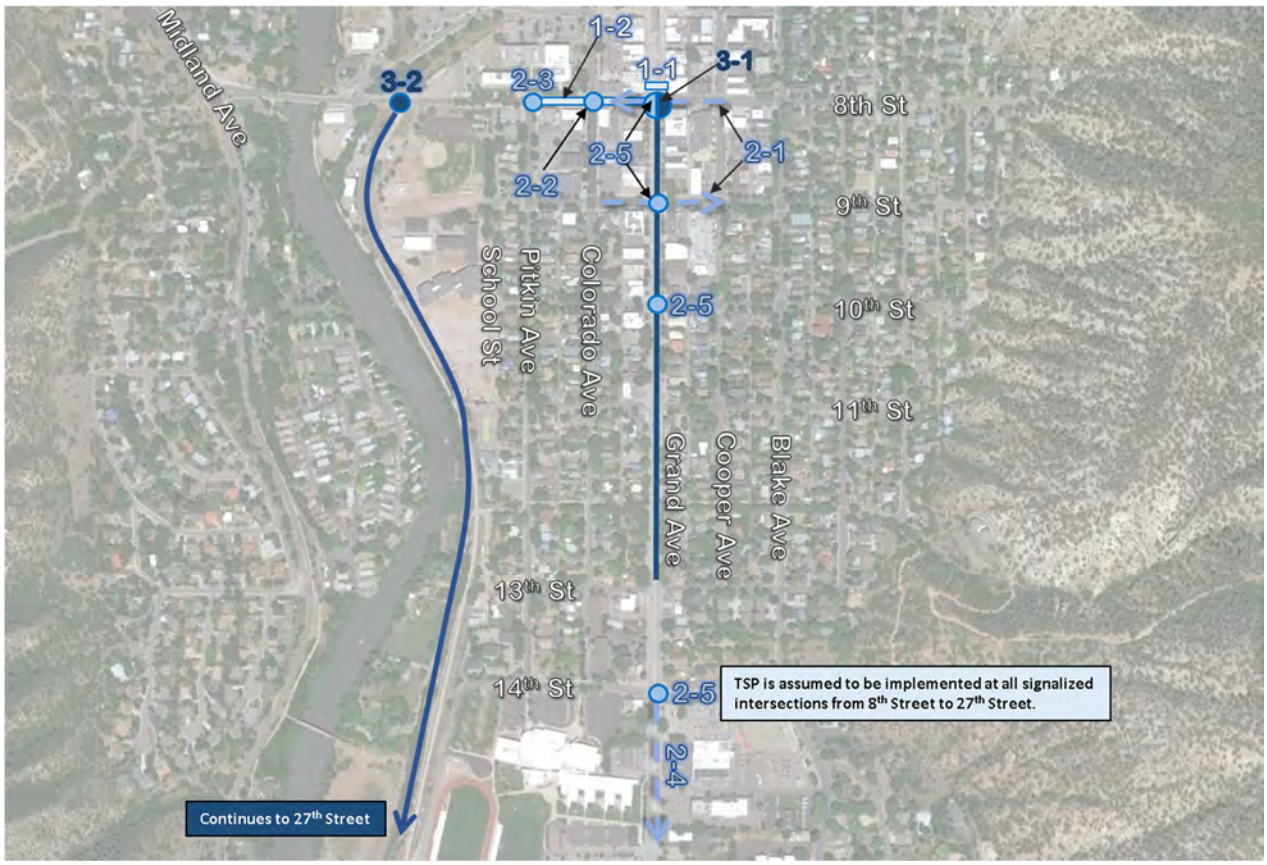
- **Phase 1 Improvements: Low/No Cost Immediate Recommendations:** These improvements are estimated to be lower in cost compared to the other recommendations and are also independent of the primary BRT alternatives, so easiest to implement in the near term.
- **Phase 2 Improvements: Higher Cost Recommendations:** Higher cost improvements that are independent of the BRT alignment alternatives. These improvements are implemented in the short and medium term.
- **Phase 3 Improvements: Recommendations Needed for BRT Extension:** These were developed to optimize the BRT alignment alternatives and are projects by mode that are best to be implemented with the proposed BRT extension improvements.
-

# Traffic and Safety

This section summarizes the recommended traffic and safety-based projects that can be incorporated with the Bus Rapid Transit (BRT) extension north of 27th Street or serve as stand-alone projects to improve mobility within the Glenwood Springs Downtown network. These include both network-wide improvements or spot improvements targeting specific intersections or traffic movements. Most of the improvements identified below were developed through the traffic analysis for this project, which is covered in a separate document (refer to Appendix). These recommended improvements vary in cost and all have a unique timeline for recommended implementation.

Each project within each phase described above is illustrated in **Figure 1** and described in greater detail in **Table 1**.

FIGURE 1 - POTENTIAL PROJECT IMPLEMENTATION




The timelines developed specifically for Phase 1 and Phase 2 improvements were estimated using the traffic analysis output results. These include improvements incorporated into the traffic simulation model. The modeled delays at the overall intersection level for both the Existing 2020 and 2040 No-Build were linearly interpolated. The average intersection delay target that was used to guide the trigger of an improvement was set at 55 seconds as shown in **Figure 2**. The selected target delay borders Highway Capacity Manual based LOS definitions for LOS D and LOS E.

FIGURE 2 - TIMELINE ESTIMATION THRESHOLD

| LOS | Signalized Intersection | Unsignalized Intersection |
|---|---|---|
| A | ≤10 sec | ≤10 sec |
| B | 10–20 sec | 10–15 sec |
| C | 20–35 sec | 15–25 sec |
| D | 35–55 sec | 25–35 sec |
| E | 55–80 sec | 35–50 sec |
| F | >80 sec | >50 sec |

Project Implementation Threshold

As an example of how some of the timelines were developed, the one-way couplet timeline was determined by evaluating the intersections impacted by the couplet which includes Grand Avenue &

8th Street, Grand Avenue & 9th Street, and 8th Street & Colorado Avenue. For the Grand Avenue intersections, side-street performance was evaluated to determine the implementation timeline.

Each recommended project is summarized in **Table 2**. Note that these recommended projects are described in more detail along with traffic analysis results in the *Grand Avenue Alternative Analysis VISSIM Technical Report*.

TABLE 2 – TRAFFIC AND SAFETY IMPROVEMENTS

| | IMPROVEMENT | DESCRIPTION & KEY IMPLEMENTATION STRATEGIES | ESTIMATED COST | RECOMMENDED IMPLEMENTATION TIMELINE | EXAMPLES OF POTENTIAL FUNDING SOURCES |
|---|---|---|---|---|---|
| **PHASE 1 IMPROVEMENTS – LOW/NO COST IMMEDIATE RECOMMENDATIONS** | | | | | |
| 1-1 | Remove North Leg Crosswalk at Grand Avenue and 8th Street | This improvement would provide pedestrian safety benefits by reducing vehicle-pedestrian conflicts as well as moderately improving vehicular traffic operations at the intersection by eliminating the required pedestrian green time for that crossing. The scope of the project requires removal of pavement marking and pedestrian signal at the crossing. Additional signage is recommended to guide pedestrians to the appropriate crossing. This improvement can be implemented immediately as a standalone project independent of the BRT alternatives. | $5,000 | Short-Term | Safe Routes to School (SRTS) Program; City general funds; Acquisitions and Improvements (A&I) Fund |
| 1-2 | Restripe 8th Street to provide center left-turn lane from Pitkin Avenue to Grand Avenue | There is adequate roadway width to accommodate the striping of a10' wide two-way center left-turn lane from Pitkin Avenue to Grand Avenue. Implementation of this improvement would improve safety and potentially reduce the delay for through vehicles that will not be blocked by left-turning vehicles onto Pitkin Avenue and Colorado Avenue, and the mid-block driveways. The project scope includes existing pavement marking removal and striping of the center left-turn two-way lane. This low-cost improvement can be independent of the BRT alternatives. | $30,000 | Short-Term | SRTS Program; City general funds; A&I Fund, |
| **PHASE 2 IMPROVEMENTS - HIGHER COST RECOMMENDATIONS** | | | | | |
| 2-1 | 8th Street and 9th Street 2-Lane One-Way Couplet | The conversion of the existing two-way traffic to a one-way couplet along 8th Street and 9th Street from Cooper Avenue to Colorado Avenue would increase network capacity as well as improve operations along Grand Avenue. With the additional roadway width, parking availability can be increased by reconfiguring to angled parking or buffered bicycle lanes can be included. The traffic analysis indicates a significant operational improvement and can serve as a project independent of the BRT alternatives but would require more planning, analyses, and public coordination before being implemented. The project scope includes existing pavement marking removal, signing, and striping. Based on the traffic analysis, this project is recommended to be implemented for the short-term due to side-street performance. | $100,000 | Mid-Term | Funding Advancements for Surface Transportation and Economic Recovery (FASTER) Program; Multimodal Options Fund (MMOF); City general funds |
| 2-2 | Remove east-west stop control at 8th Street and Colorado Ave | This lower-cost spot improvement is recommended to be implemented with the one-way couplet option as it was shown to optimize traffic movements along 8th Street. The overall project scope would include stop-sign removal and it is recommended to improve signage and advanced yield lines for the pedestrian crossings to increase driver awareness and compliance. | To be included with Project 2-1 | Mid-Term | FASTER Program; MMOF; City general funds |

| | IMPROVEMENT | DESCRIPTION & KEY IMPLEMENTATION STRATEGIES | ESTIMATED COST | RECOMMENDED IMPLEMENTATION TIMELINE | EXAMPLES OF POTENTIAL FUNDING SOURCES |
|---|---|---|---|---|---|
| 2-3 | Construct a Roundabout at8th Street / Pitkin Avenue | Based on the traffic operations analysis results, this project would provide significant benefits both in traffic operations and safety. Additional technical and feasibility analysis is recommended to evaluate specific design parameters. This project is recommended to be constructed in the short-term based on existing intersection performance; however, due to the higher implementation cost, this was included as a Phase 2 project. | $1,300,000 | Mid-Term | FASTER Program; SRTS Program; A&I Fund; City general funds |
| 2-4 | Provide Access Management Measures on SH-82 | This improvement is primarily intended to improve safety and provide more efficient business access south of 14th Street. Specific improvements can include the removal of existing underutilized access points or conversion to right-in/right-out. A detailed evaluation and recommendations are provided in the SH 82 Access Study. | $200,000 | Mid-Term | Highway Safety Improvement Program (HSIP); City general funds |
| 2-5 | Implement SH-82 Transit Signal Priority (TSP) | Not only would this improvement best support the primary BRT alternatives, but it is also recommended that TSP be implemented for general transit service as well along SH-82. The estimated cost varies and is dependent on what technology is used. Overall project scope would include installation of communication equipment for both the intersection and transit vehicles. Assumed to be implemented at all signalized intersections between 8th Street and 27th Street. | $135,000 | Mid-Term | FASTER Program; MMOF; City general funds, Parking revenues |
| **PHASE 3 IMPROVEMENTS - RECOMMENDATIONS NEEDED FOR BRT EXTENSION (Grand Avenue BRT Extension Alignment)** | | | | | |
| 3-1 | Install Queue Jump Lanes Signal Operations along SH-82 | This improvement would best support the proposed dedicated transit lanes along Grand Avenue, Alternative 1. The project scope could involve installation of separate transit specific signal heads at the northbound terminal of the BAT lane at Grand Avenue & 8th Street. | Cost included in BRT Extension cost estimate | Long-Term | FASTER Program; MMOF; City general funds; Destination 2040 |
| **PHASE 3 IMPROVEMENTS - RECOMMENDATIONS NEEDED FOR BRT EXTENSION (Rio Grande Corridor BRT Extension Alignment)** | | | | | |
| 3-2 | 8th Avenue Traffic Signal for Rio Grande Corridor BRT Extension | Recommended to maximize BRT operations when entering/exiting the proposed Rio Grande Trail alignment. Further analysis is recommended to evaluate 8th Street peak-hour impacts and coordination with traffic signal at Midland/8th (only 1/8-mile west). | Cost included in BRT Extension cost estimate | Long-Term | FASTER Program; MMOF; A&I Fund; City general funds; Destination 2040 |

# Intersection Analysis Assumptions Memo (Revised)

**Date**: 6/30/2020

This memorandum provides a revised approach to developing existing baseline volumes for the six key intersection listed below. Due to the statewide stay-at-home orders, it is understood that the collection of new traffic data will not provide a representative analysis of typical conditions. In addition, it is unknown when these typical traffic conditions will be observed. Because of the effects of the national stay-at-home orders, various methodologies have been developed and published to overcome the reduction of non-essential travel while there is still a need for accurate turning movement counts. The process utilizes the foundations of the Synthesized Traffic Count Data with Nearby Traffic Data method[1]

Key intersections that will be included in the traffic analysis include the following:

- Grand Avenue & 8th Street
- Grand Avenue & 9th Street
- Grand Avenue & 14th Street
- 8th Street & Midland Avenue
- 8th Street &Colorado Avenue
- 8th Street & Pitkin Avenue

In order to move forward with the existing conditions traffic analysis, the project team recommends referencing the historic traffic data following data sources:

- **September 2018:** Glenwood Springs Signal Retiming, SH 82 Final Report (CDOT, January 2020)
  The report provides traffic data at intersections along SH 82 (Grand Avenue) collected in 2018 and covers three of the intersections at Grand Avenue listed above.
- **November 2013:** Glenwood Springs Downtown Vehicular and Pedestrian Circulation Study
  This report provides traffic data along a handful of intersections adjacent to SH 82. However, the traffic data was collected in 2013 which would require some adjustments to factor the data to 2018 conditions. Traffic data for the remaining three intersections at 8th Street (Midland Avenue, Colorado Avenue, and Pitkin Avenue) are included in this study. ***Note that these volumes represent the traffic patterns before the extension of 8th Street.***

It is assumed that the SH 82 volumes are representative of typical traffic conditions as these counts were collected less than 5 years ago. The 8th Street turning movement volumes referenced from the 2013 study will need to be projected to the existing baseline year and adjusted to represent the traffic patterns with the 8th Street extension. The following steps were followed to develop a set of synthesized existing baseline turning movement volumes:

1. Compare the 2013 8th Street & Midland inflow (westbound) and outflow (eastbound) peak hour volumes of the eastern intersection leg to two sets of 2016 counts provided by The City of Glenwood Springs collected on different days.
   a. Location 1 – 8th Street, Near the Roaring Forks River Bridge
   b. Location 2 – 8th Street, Between the Roaring Forks River Bridge and City Building

[1] From "Proposed Methodology for Developing Intersection Movement Volumes Using Historical Counts and Big Data" by KHA (2020)

*Table 1. 8th Street Traffic Volume Comparison*

| Period | 2013 (Midland) | 2016 - Location 1 | Factor 1 | 2016 - Location 2 | Factor 2 |
|---|---|---|---|---|---|
| Total AM | 635 | 1123 | 1.77 | 1105 | 1.74 |
| Total PM | 767 | 1401 | 1.83 | 1326 | 1.73 |

2. From the factors developed from **Table 1**, a global factor 1.77 was calculated based on the overall factors. The factor was applied to the three 8th Street intersections from the November 2013 study.
3. The next step was to adjust the turning moving percentages of the 8th Street intersections at both Pitkin Avenue and Colorado Avenue. The process was iterative that involved local knowledge and engineering judgement. The following assumptions were made:
    a. The turning movement percentages were adjusted to maintain a balance between each of the intersections including SH 82 & 8th Street.
    b. With the traffic shift from 7th Avenue to 8th Avenue, 25% of the southbound approach volumes were used during the AM period and 50% of the southbound approach volumes during the PM period.
    c. For the eastbound direction, it was assumed that 20 percent of traffic turns off 8th Street to School Street or 7th Avenue (non-study intersections).
4. **Figure 1** provides the final turning movement adjustments percentages and the volumes that will be used for the analysis and grown to represent the 2040 forecast.

*Figure 1. Traffic Reassignment*

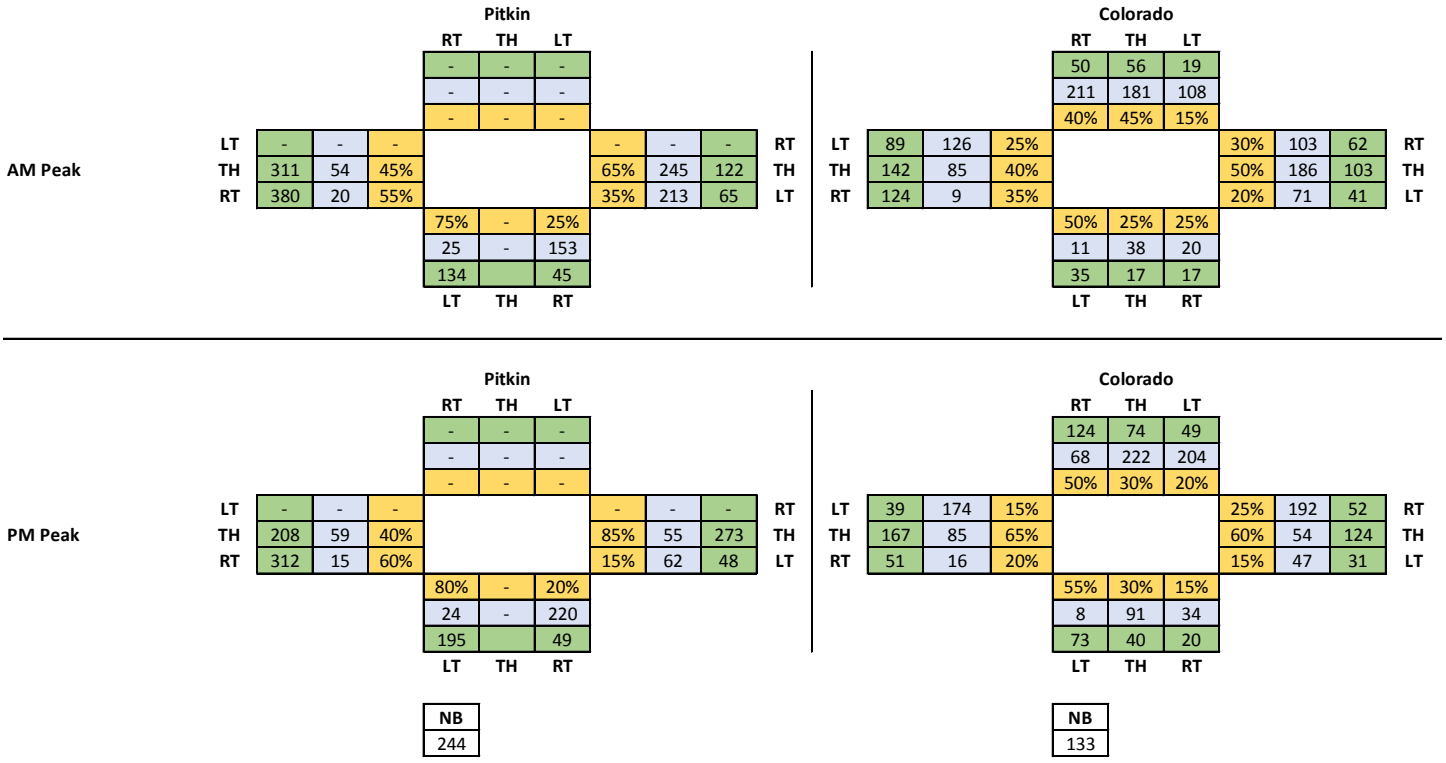


**Table 2** summarizes the 2013 counts and the factored/adjusted turning movement counts at the three key intersections that will be used for the existing conditions traffic analysis.

*Table 2. Factored Turning Movement Volumes*

| Intersection | Year | Period | EB | | | WB | | | NB | | | SB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT |
| 8th & Colorado | Nov, 2013 | AM | 71 | 48 | 5 | 40 | 105 | 58 | 6 | 21 | 11 | 61 | 102 | 119 |
| | | PM | 98 | 48 | 9 | 26 | 30 | 108 | 4 | 51 | 19 | 115 | 125 | 38 |
| | Factored/Adjusted | AM | 89 | 142 | 124 | 41 | 103 | 62 | 35 | 17 | 17 | 19 | 56 | 50 |
| | | PM | 39 | 167 | 51 | 31 | 124 | 52 | 73 | 40 | 20 | 49 | 74 | 124 |
| 8th & Pitkin | Nov, 2013 | AM | - | 30 | 11 | 120 | 138 | - | 14 | - | 86 | - | - | - |
| | | PM | - | 33 | 8 | 35 | 31 | - | 13 | - | 124 | - | - | - |
| | Factored/Adjusted | AM | - | 311 | 380 | 65 | 122 | - | 134 | - | 45 | - | - | - |
| | | PM | - | 208 | 312 | 48 | 273 | - | 195 | - | 49 | - | - | - |
| 8th & Midland | Nov, 2013 | AM | - | - | - | 30 | - | 126 | - | 189 | 133 | 346 | 215 | - |
| | | PM | - | - | - | 61 | - | 380 | - | 351 | 70 | 256 | 288 | - |
| | Factored | AM | - | - | - | 54 | - | 224 | - | 335 | 213 | 554 | 381 | - |
| | | PM | - | - | - | 92 | - | 570 | - | 622 | 124 | 454 | 510 | - |

# Traffic Forecasting Assumptions Memo

**Date**: 5/18/20

This document provides the proposed traffic growth rate that will be used to develop future traffic volumes. The growth rate will be globally applied to the six key intersections for the future traffic analysis. The six intersections include the following:

- Grand Avenue & 8th Street
- Grand Avenue & 9th Street
- Grand Avenue & 14th Street
- 8th Street & Midland Avenue
- 8th Street &Colorado Avenue
- 8th Street & Pitkin Avenue

Two sources of information were reviewed that provide estimated growth projections based on different methodologies:

1. **RFTA Integrated Transportation Strategic Plan (ITSP): Population and Employment Growth Projections for Roaring Fork Valley:** The RFTA ITSP growth projections were developed in 2016 to provide a 20-year (2036) transportation vision for the region. The growth rates were developed using the RFTA Ridership Estimation Tool spreadsheet that incorporates population and employment within specified zone areas to determine projected future trips. Comparing the 2016 and 2036 average weekday person-flow trip table data specifically for the Glenwood Springs area, a 20-year growth rate of 44.8% was calculated. This equates to a **1.9% annual compounded growth rate**.
2. **CDOT Online Transportation Information System (OTIS):** Each of the statewide count stations along state highway facilities provides a 20-year growth factor. The growth factor is a traffic forecasting statistic that when multiplied by the current AADT yields an estimate of AADT for 20 years in the Future. There is one continuous count station (Station 000214) located on SH 82, south of 27th Street. The other count stations along the corridor will not be considered as these are short-term locations and may not provide a reliable growth factor when basing the growth on historic trends. Station 000214 provides a 20-year growth factor of 1.24 (this equates to a 24% overall growth rate). This results in a **1.1% annual compounded growth rate**.

There is a noted disparity between the two sources where the CDOT projection provides a minimum threshold and the RFTA ITSP provides a maximum threshold. Due to possible changed travel patterns in the future as a result of COVID-19 and other uncertainties, the project team recommends being conservative and using the higher growth rate for future traffic analysis. The **1.9% annual compounded growth rate** will be used to represent future traffic conditions. We recommend taking this more conservative approach in order to determine and analyze what we believe is the worst-case scenario. If the resulting bus travel speeds and times and traffic LOS are not reasonable, we can always revisit the growth rate.


# Appendix G – Alternatives Analysis Report


# GLENWOOD SPRINGS MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY (MOVE)

## Bus Rapid Transit (BRT) Extension Report

August 2021

PARSONS

GLENWOOD SPRINGS COLORADO

RFTA

# ALTERNATIVES ANALYSIS REPORT

## TABLE OF CONTENTS

# Executive Summary

The alternatives development and evaluation process for extending BRT beyond 27th Street was conducted in two levels. Level 1 initial screening criteria were based on elements such as meeting corridor vision and needs for mobility improvements, station accessibility, parking impacts and operational criteria such as travel time savings. The Level 2 comprehensive screening criteria were placed in an evaluation matrix to measure the qualitative and quantitative values associated with each alternative.

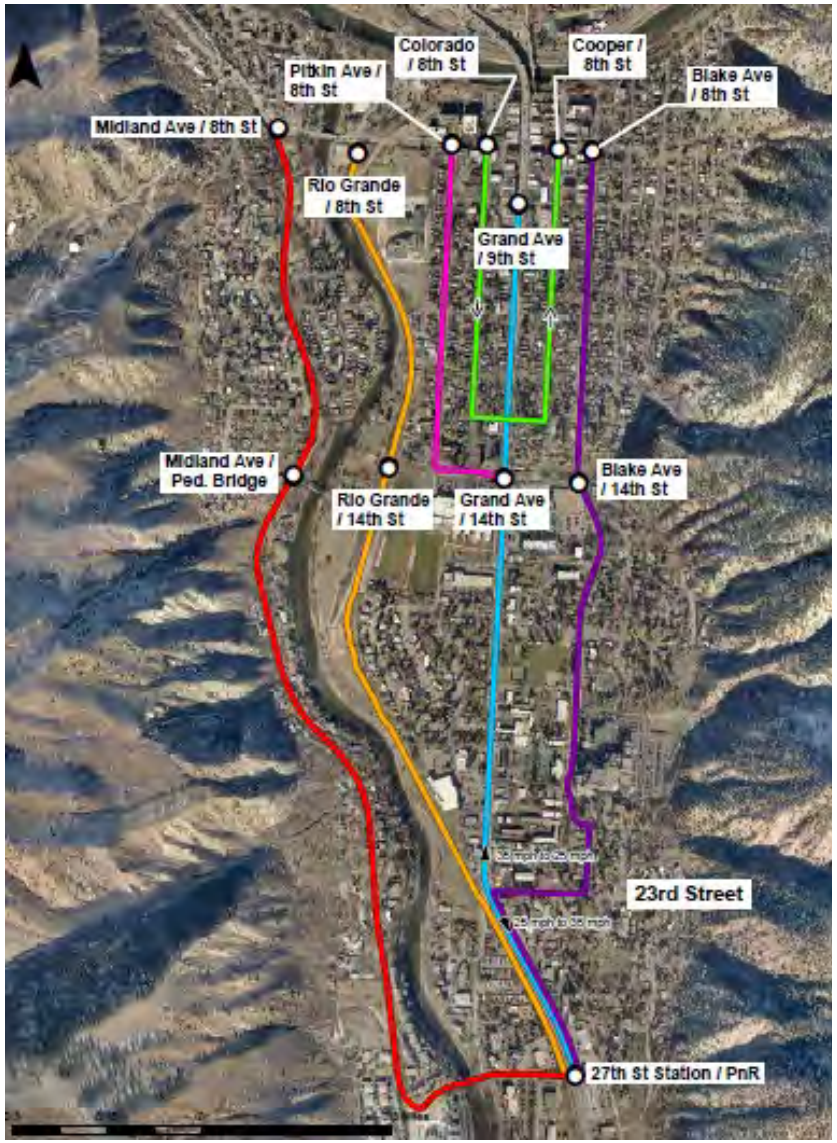
**ALTERNATIVES**

The six initial BRT extension alignment options and the three initial downtown transit center location options are shown in **Figure ES-1** and described later in this document**.** The anticipated BRT station locations for each alignment are located at the following cross streets:

1. 27th Street (Current RFTA Park-and-Ride (PnR))
2. 14th Street
3. In the vicinity of 8th or 9th Street

More details and the cross sections of each alignment option are explained in the **Alternatives** section of this document.

FIGURE ES-1 – BRT EXTENSION ALIGNMENT OPTIONS



**LEVEL 1 SCREENING**

Results of the Level 1 screening of the BRT extension alignment options are shown in **Table ES-1** below. The quantitative values are shown for each criterion along with the relative scores based on the comparative values among the alternatives. Green shading indicates the best options, yellow indicates the middle options, and red indicates the worst options for each criterion. Similarly, numeric values (3 for best, 1 for worst) are also applied to determine a total score for all the criteria. No weighting of relative importance was applied; all criteria were weighted equally.

TABLE ES-1- BRT EXTENSION ALIGNMENT OPTIONS LEVEL 1 SCREENING RESULTS

| | EVALUATION CRITERIA | NO BUILD | GRAND AVENUE | RIO GRANDE CORRIDOR | BLAKE AVENUE | COOPER/COLORADO ONE-WAY COUPLET | PITKIN AVENUE | MIDLAND AVENUE |
|---|---|---|---|---|---|---|---|---|
| *1* | **Improve BRT Travel Time Reliability (8th Street to 27th):** percentage of alignment in dedicated lanes | 1.6 miles in mixed flow (0%) dedicated lanes (1) | 1.6 miles total; 0.4 mile (25%) semi-dedicated lanes* (2) | 1.7 miles total; 100% dedicated lanes (3) | 1.7 miles total; 1.2 miles (70%) dedicated lanes (3) | 1.6 miles total; 0.4 mile (25%) dedicated lanes (2) | 1.7 miles total; 0.5 mile (29%) dedicated lanes (2) | 2 miles in mixed flow, 0% dedicated (1) |
| *2* | **BRT Travel Time:** One-way transit travel time of the BRT before and after dedicated lanes. Current time / Projected | 8.0 / 8.0 (1) | 8.0 / 7.1 (2) | NA / 4.6 (3) | 10.6 / 7.9 (1) | 8.0 / 7.2 (2) | 9.4 / 8.2 (1) | 8.0/8.0 (1) |
| *3* | **BRT Travel Time Savings:** One-way transit travel time savings of the BRT based on average speed with proposed dedicated lanes, compared with Grand Avenue with dedicated lanes. | 0.9 min. slower (1) | 0.9 min. faster than current (2) | 2.5 min. faster (3) | 0.8 min. slower (1) | 0.1 min slower (1) | 1.1 min. slower (1) | .9 min slower (1) |
| *4* | **Number of on-street parking spaces displaced** | 0 (3) | 140 spaces between 8th and 13th (2) | 0 (3) | 278 spaces between 23rd and 8th (1) | 140 spaces on Cooper/Colorado combined between 13th and 8th (2) | 161 spaces between 8th and 14th (2) | 0 (3) |
| *5* | **Community/Environmental Impact** | No Impact (3) | Moderate Impact (downtown community feel) (2) | High Impact (trail) (1) | High Impact (residential parking) (1) | High Impact (residential parking) (1) | High Impact (residential parking) (1) | Moderate Impact (residential street) (2) |
| | **TOTAL SCORE** | 9 | 10 | 13 | 7 | 8 | 7 | 8 |

*Business access/transit lanes that are semi-dedicated to BRT but also allow right turning vehicle



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As shown in **Table ES-1**, the BRT extension alignment options with the worst overall scores are: Blake Avenue, Cooper/Colorado, Pitkin Avenue, and Midland Avenue. The Rio Grande Corridor has the highest overall score and the Grand Avenue alignment has the second highest score; consequently, these two options were advanced to the Level 2 screening. In discussions with the City, RFTA, City Transportation Commission and the Focus Group about the Level 1 screening results, several refinements to the two finalist alignments were suggested for further analysis as described in the Level 2 screening section below.

## LEVEL 2 SCREENING

The Level 2 screening process was intended to evaluate the alternative BRT alignment options that passed the Level 1 screening, namely:

- Grand Avenue BRT extension
- Rio Grande Corridor BRT extension

The No Build condition of no BRT extension was also carried into the Level 2 screening in order to compare the final two BRT extension alignment alternatives with continuation of existing transit services as they currently operate.

In addition, during discussions with the Focus Group, a hybrid BRT extension alignment was suggested for evaluation. Specifically, the hybrid alignment option follows Grand Ave from the 27th Street Station to 14th Street to the Rio Grande Corridor to 8th Street as shown on the map on **Figure ES-2.**

The City and RFTA also decided that a downtown transit center was not desirable due to the anticipated traffic volume and congestion increases caused by layover buses, parking, and other amenities, and that inline BRT stations would better serve the community. Consequently, they requested evaluation of BRT connections to the West Glenwood Springs PnR to facilitate bus connections via 8th/Midland and via US 6 as shown in **Figure ES-2.**

FIGURE ES-2 – HYBRID BRT EXTENSION ALIGNMENT ON GRAND AVENUE AND RIO GRANDE CORRIDOR -

Since the individual alternatives had been evaluated in the Level 1 screening, the Level 2 screening was applied to each of the alternative BRT alignment options that survived the Level 1 screening, plus the new hybrid alignment option and the peak hour-only options, to determine which combination would provide the greatest overall benefits. To assist the evaluation of the BRT extension options, exhibits and renderings were prepared to illustrate how the BRT lanes might look on Grand Avenue and the Rio Grande Corridor. Additional renderings are included in **Appendix J**.

FIGURE ES-3 – GRAND AVENUE SEMI-DEDICATED BRT LANES PLAN VIEW

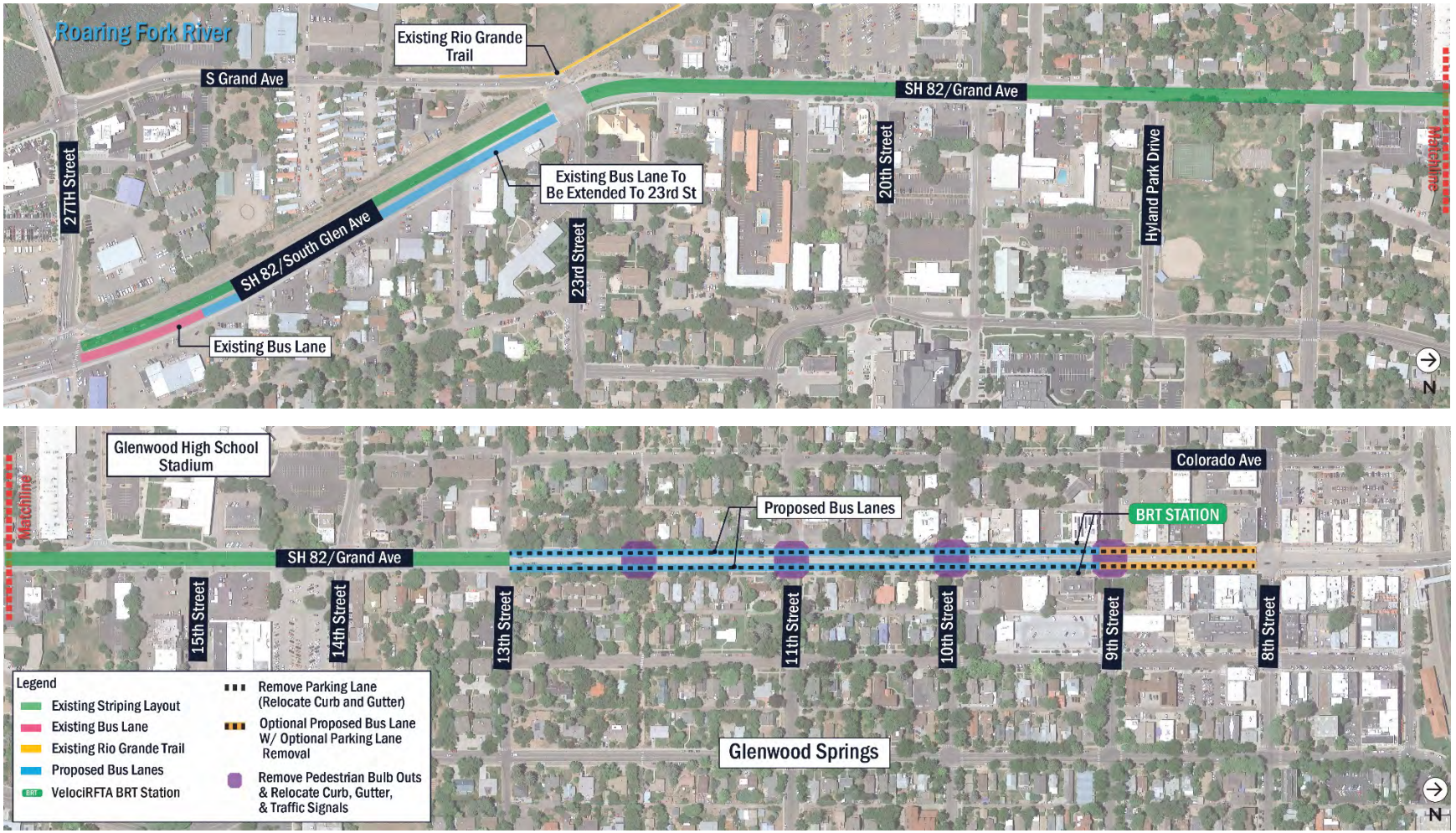


FIGURE ES-4 – GRAND AVENUE SEMI-DEDICATED BRT LANES*


** To accommodate wider lanes needed for this alternative, the curb will recede by two feet resulting in the removal of mature trees and bulbouts*

FIGURE ES-5 – RIO GRANDE BRT LANES AND TRAIL

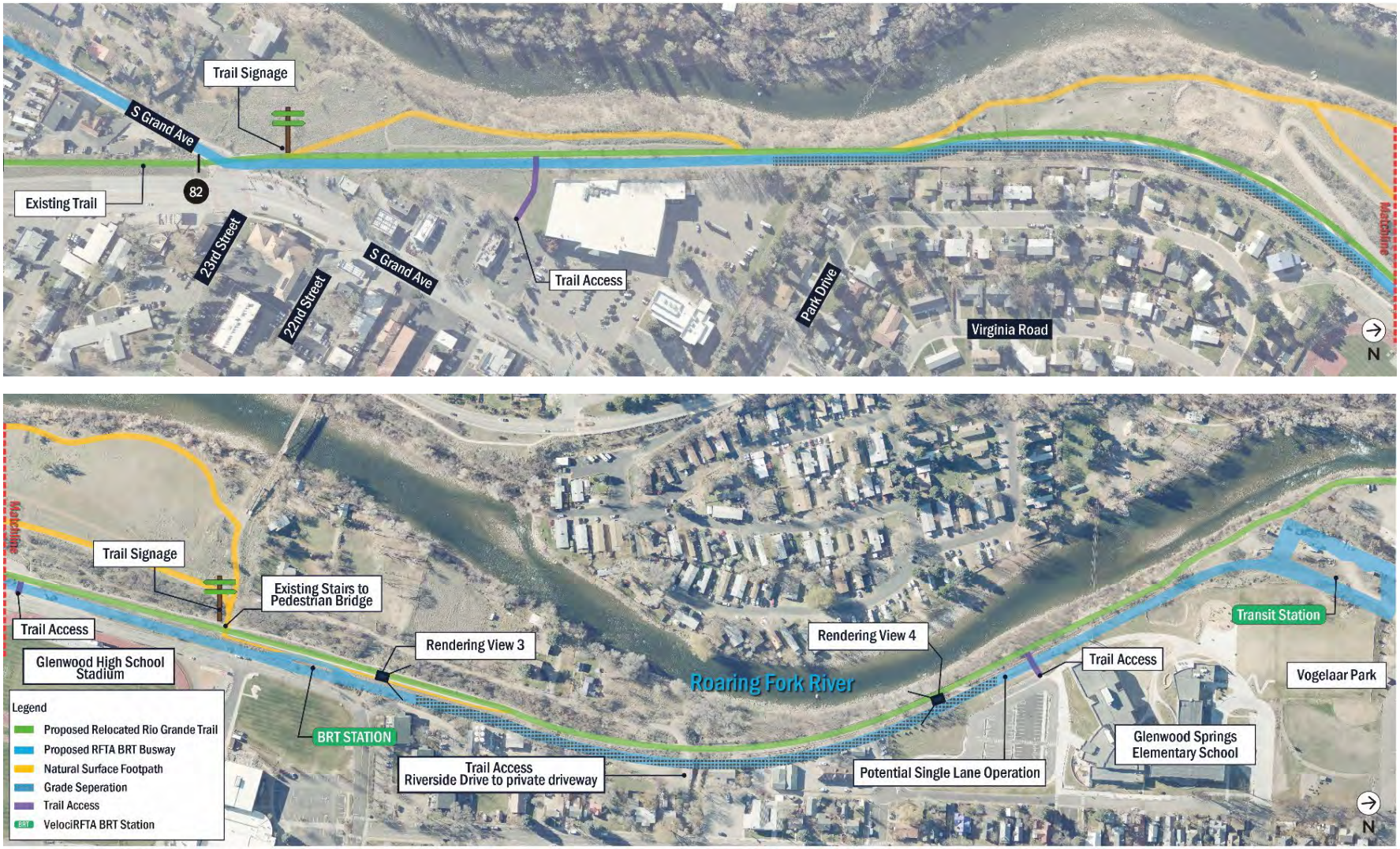
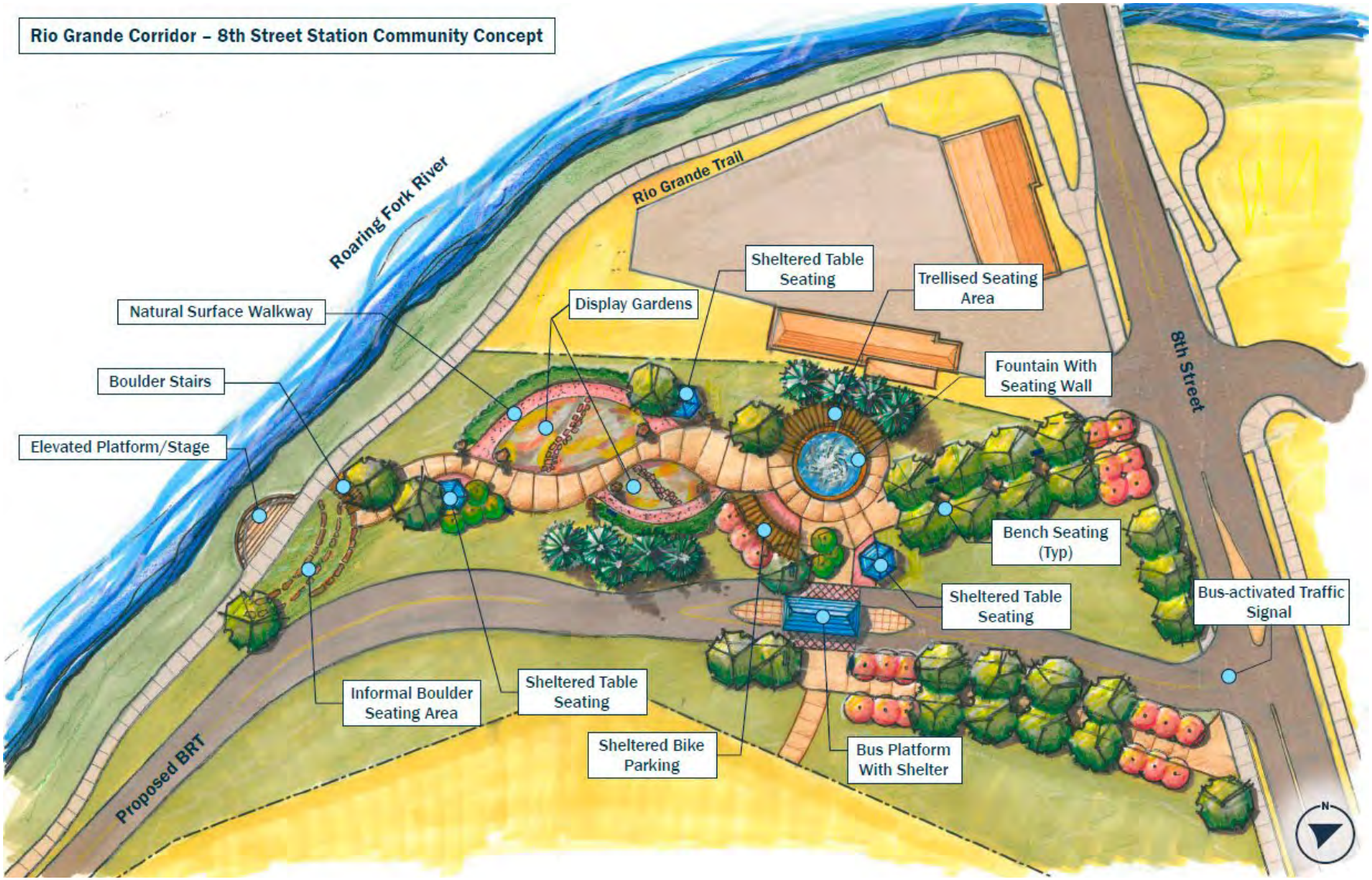


FIGURE ES-6 – RIO GRANDE CORRIDOR BRT RENDERING

FIGURE ES-7 – RIO GRANDE CORRIDOR BRT: 8TH STREET STATION COMMUNITY CONCEPT



Conceptual level design and rough order of magnitude cost estimates were also completed for both alignments and can be found in **Appendix H**. The intent of the Level 2 screening was to determine the best technical recommendation. Subsequently, the City and RFTA will seek input from the Transportation Commission, the Focus Group, and the community-at-large to understand their preferences and/or level of support for the recommended improvements as they select a preferred BRT alignment for implementation.

As shown in **Table ES-2**, several evaluation criteria beyond those used in the Level 1 screening were added to the Level 2 screening to provide a finer level and more detailed comparison of the final alternatives and their combinations. The criteria include several transit performance measures, conceptual level capital and incremental O&M cost increases, and several traffic, parking, and environmental impact criteria. The Alternative BRT Extension options were evaluated with the Level 2 screening process evaluation criteria and the results are shown below in Table ES-2. The quantitative values are shown for each criterion along with the relative scores based on the comparative values among the alternatives. Green shading indicates the best options, yellow indicates the middle options, and red indicates the worst options for each criterion. Similarly, numeric values (3 for best, 1 for worst) are also applied to determine a total score for all the criteria. No weighting of relative importance was applied; all criteria were weighted equally.

#### SCREENING RESULTS SUMMARY

The intent of the alternatives analysis is to provide an unbiased evaluation of the various alignment options for the BRT extension from the 27th Street station/PnR to downtown Glenwood Springs and a technical recommendation. The Level 1 screening reduced the number of viable BRT extension alignment options and added several variations on the basic alignments. The Level 2 screening, with a finer grain evaluation using three times as many criteria as Level 1, draws the following conclusion:

- With equal weighting of all criteria, either the Grand Avenue or the Rio Grande Corridor alignment would provide a good option for the BRT extension.
- However, despite its higher construction cost, the Rio Grande Corridor would provide significantly more benefits in terms of better travel time and reliability, lower service hours and O&M costs, and higher ridership.
- Extending the BRT service to the West Glenwood Springs park-n-ride will allow future extensions to other communities along the I-70 corridor as needed.

With input from various stakeholders, RFTA and the City will determine the preferred alternative to carry forward to the next steps of refinement and implementation.

TABLE ES-2 - BRT EXTENSION ALIGNMENT OPTIONS LEVEL 2 SCREENING RESULTS

| | | EVALUATION CRITERIA | BASIC ALTERNATIVE BRT ALIGNMENTS AFTER LEVEL 1 SCREENING | | | REFINED ALTERNATIVE BRT ALIGNMENTS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | No Build: Existing Mixed Flow BRT service with 14th Street and 8th Street stops | Grand Avenue BAT Lanes 13th to 8th (with 2 stops); 24 hours | Rio Grande Corridor BRT Lanes 27th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave to North RGC at 14th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave 27th-14th and RGC 14th to 8th peak hours only | Grand Ave: BAT lanes, both directions, peak hours only (7:30 - 8:30 AM and 4:30-5:30 PM) | Grand Ave: BAT lane peak direction only (AM SB / PM NB); peak hours only | Rio Grande Corridor: 2 exclusive lanes peak hours only; minimal construction option |
| **Transit Performance** | *1* | **BRT Travel Time:** One-way transit travel time of the BRT from 27th Street PnR to Downtown based on posted speeds and # of stops. | 8.46 | 7.99 | 5.83 | 6.84 | 6.84 | 7.99 | 7.99 | 5.83 |
| | *2* | **BRT Travel Time:** One-way transit travel time of the BRT from 27th Street PnR to West Glenwood PnR based on posted speeds and # of stops. | 13.41 | 12.92 | 11.17 | 12.17 | 12.17 | 12.92 | 12.92 | 11.17 |
| | *3* | **Improve BRT Travel Time Reliability (27th Street to Downtown):** percentage of alignment in dedicated lanes | 1.6 miles; 0% dedicated | 1.6 miles; 0.4 miles dedicated (25%) | 1.7 miles; all dedicated (100%) | 1.8 miles; 0.6 miles dedicated (33%) | 1.8 miles; 0.6 miles dedicated (33%) | 1.6 miles; 0.4 miles dedicated (25%) | 1.6 miles; 0.4 miles dedicated (25%) | 1.7 miles; all dedicated (100%) |
| **Transit Service Hours** | *4* | **BRT Annual Service Hours:** Calculated BRT service hours per alternative. (27th Street PnR to Downtown) (incremental service hours compared to RFTA Baseline. Baseline assumes summer schedule adopted year-round and 40% of BRT trips extending to West Glenwood PnR.) | 6,954 | 6,954 | 3,454 | 5,204 | 5,204 | 6,954 | 6,954 | 3,454 |
| **Transit Service Hours** | *5* | **BRT Annual Service Hours:** Calculated BRT service hours per alternative. (27th Street PnR to West Glenwood PnR) (incremental service hours compared to RFTA Baseline. Baseline assumes summer schedule adopted year-round and 40% of BRT trips extending to West Glenwood PnR.) | 15,654 | 8,754 | 4,348 | 6,551 | 6,551 | 8,754 | 8,754 | 4,348 |
| **Costs** | *6* | **Incremental Annual O&M Cost:** BRT Estimated operations and maintenance costs (27th Street PnR to Downtown) (estimated using RFTA Cost Allocation model; does not include BRT-specific features such as additional maintenance at BRT stations and ROW maintenance likely required for Rio Grande alternative) | $321,000 | $321,000 | $174,000 | $327,000 | $327,000 | $321,000 | $321,000 | $174,000 |
| | *7* | **Incremental Annual O&M Cost:** BRT Estimated operations and maintenance costs (27th Street PnR to West Glenwood PnR) (estimated using RFTA Cost Allocation model; does not include BRT-specific features such as additional maintenance at BRT stations and ROW maintenance likely required for Rio Grande alternative) | $1,128,813 | $862,000 | $568,000 | $582,000 | $582,000 | $862,000 | $862,000 | $568,000 |
| | *8* | **Capital Cost:** Conceptual level capital cost (separate memo) | 0 | $3.5M | $18M-$31M | $12M | $12M | $3.5M | $3.5M | $18M-$31M |

| | | EVALUATION CRITERIA | BASIC ALTERNATIVE BRT ALIGNMENTS AFTER LEVEL 1 SCREENING | | | REFINED ALTERNATIVE BRT ALIGNMENTS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | No Build: Existing Mixed Flow BRT service with 14th Street and 8th Street stops | Grand Avenue BAT Lanes 13th to 8th (with 2 stops); 24 hours | Rio Grande Corridor BRT Lanes 27th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave to North RGC at 14th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave 27th-14th and RGC 14th to 8th peak hours only | Grand Ave: BAT lanes, both directions, peak hours only (7:30 - 8:30 AM and 4:30-5:30 PM) | Grand Ave: BAT lane peak direction only (AM SB / PM NB); peak hours only | Rio Grande Corridor: 2 exclusive lanes peak hours only; minimal construction option |
| Automobile Impacts | 9 | **Auto Travel Time Improvements on Grand Ave:** Through traffic improvements due to Transit Signal Priority and reduced parallel parking conflicts | No improvement | Slight improvement in traffic movement | No improvement | No improvement | No improvement | Minimal improvement in traffic movement | Minimal improvement in traffic movement | No improvement |
| | 10 | **Ped/Bike Ability to Cross BRT Alignment** | 15 | 15 | 4 | 14 | 14 | 15 | 15 | 4 |
| | 11 | **Multimodal-BRT conflict points:** number of locations where cyclists and pedestrians cross BRT route | 15 | 15 | 4 | 14 | 14 | 15 | 15 | 4 |
| | 12 | **Buffer from BRT traffic:** physical separation from BRT route (average buffer width) | 4.3' | 2' | 4.1' | 2.3' | 2.3' | 2' | 2' | 4.1' |
| Preliminary Business Parking Displacements | 13 | **Number of on-street parking spaces displaced** | 0 | 140 spaces between 8th and 13th | 0 | 0 | 0 | 140 spaces between 8th and 13th during peak hours | 70 spaces between 8th and 13th during peak hours | 0 |
| Impacts on Community Amenities (trail) | 14 | **Impacts to Rio Grande Multimodal Trail (experience of user, noise, visual)** | No Impacts | No Impacts | High Impacts | Moderate Impacts | Moderate Impacts | No Impacts | No Impacts | High Impacts |
| Construction Challenges/Duration | 15 | **Construction Impacts (including maintenance of traffic and trail impacts)/years for construction** | No Impacts | No Impacts | High Impacts | Moderate Impacts | Moderate Impacts | No Impacts | No Impacts | High Impacts |
| Ridership (see separate memo) | 16 | **Expected BRT Ridership** (General estimate based on stations and access to Downtown as well as BRT travel time and reliability) | 1 | 2 | 3 | 3 | 3 | 2 | 2 | 2 |
| | | **TOTAL SCORE** | 30 | 34 | 38 | 34 | 34 | 34 | 35 | 37 |
| | | | No Build | Grand Ave | Rio Grande | Rio Hybrid | Rio Hybrid Peak | Grand 2 lanes peak | Grand 1 lane peak | Rio Peak |
| | | **Scoring: Red=1, Yellow=2, Green=3 with higher total scores representing best alternatives** | | | | | | | | |

# Introduction

## Background

While the entire Garfield-Pitkin County region is anticipated to grow over the next 20 years, population and employment growth will be most acute between Glenwood Springs and Parachute. Glenwood Springs lies the at the heart of this region and will likely bear the benefits and externalities of this growth. Creating efficient and reliable BRT service between West Glenwood Spring and 27th street can provide Glenwood Spring's residents, visitors, shoppers, employees and through travelers with an effective alternative to creating congestion within and through the City, particularly as SH82 congestion increases.

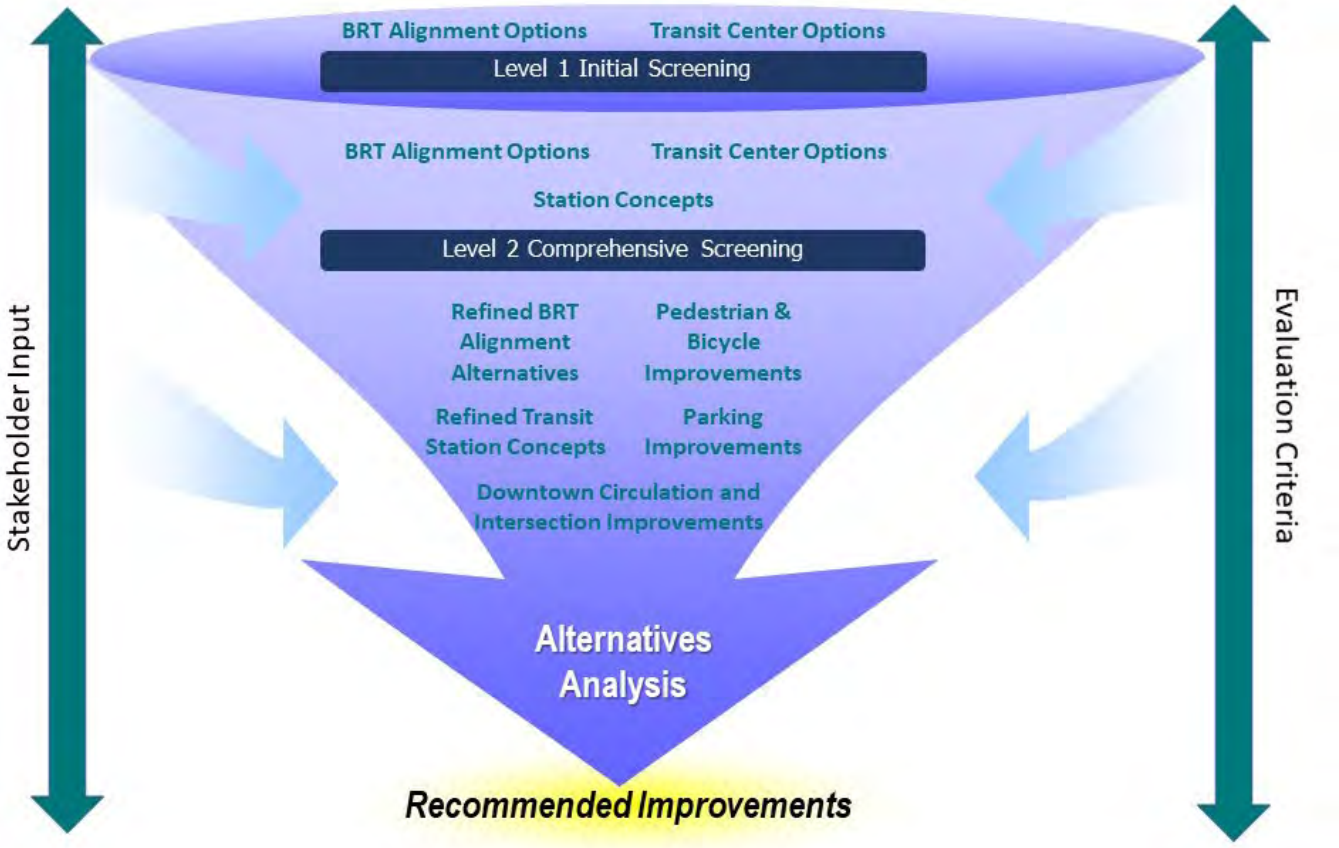
The purpose of this analysis is to provide an unbiased evaluation of the critical components of this BRT system and offer a technical recommendation for potential implementation, including:

1) BRT alignments
2) Locations for additional in-line BRT stations in downtown Glenwood Springs
3) Transit center scope and location west of downtown, as a terminus for BRT layover and a connecting point for routes to western I-70 communities
4) Complementary improvements in pedestrian/bicycle infrastructure, parking facilities, Transportation Demand Management (TDM) measures, and traffic signal optimization to enhance the transit operations and overall mobility in the City.

The recommended improvements that emerge from this study are intended to benefit the mobility, economic vitality, economic sustainability and quality of life of the City and the entire region.

The alternatives development and evaluation process are shown on **Figure 8**.

FIGURE 8 - ALTERNATIVES DEVELOPMENT AND EVALUATION PROCESS




The Level 1 initial screening criteria are based on elements such as meeting corridor vision and needs for mobility improvements, station accessibility, parking impacts and operational criteria such as travel time savings.

Alternatives that emerge from the Level 1 initial screening and any variations suggested by the technical committees were explained to the public and stakeholders. During the second public meeting, the Parsons team sought input on the Level 2 comprehensive screening criteria and input on the alternatives. The Level 2 comprehensive screening criteria were placed in an evaluation matrix to measure the qualitative and quantitative values associated with each alternative. Each of the alternatives for the Level 2 screening is enhanced and/or made possible by a program of improvements in the following areas:

- Regional and local bus integration improvements
- Pedestrian facilities improvements
- Bicycle facilities improvements
- Traffic operations and safety improvements, including downtown circulation and intersection improvements
- Parking facilities improvements
    - Downtown
    - 27th Street RFTA station and park-n-ride
    - West Glenwood RFTA station and park-n-ride

This study includes separate technical documents for each of the modes and improvements listed above.

## Study Area

The Glenwood Springs study area is illustrated in **Figure 9**.

FIGURE 9 - GLENWOOD SPRINGS STUDY AREA

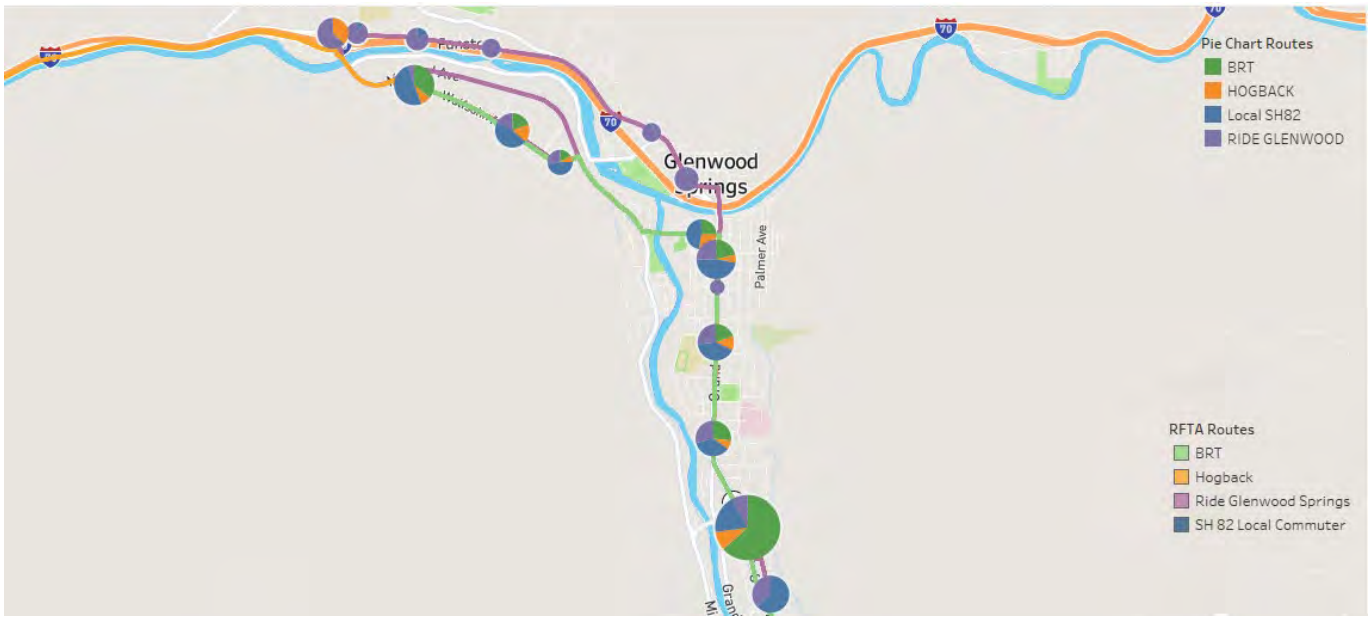
## Current Transit Operations

RFTA's VelociRFTA Bus Rapid Transit (BRT) serves Glenwood Springs to/from Aspen and travels mostly along SH-82, with headways of 10 minutes or less during peak periods, or 6 buses per hour per direction. Of the 77 up valley and down valley BRT runs per day (Winter/Summer), all of them serve the 27th Street South Glenwood station and park-n-ride, while 41% of the daily BRT runs also serve the West Glenwood park-n-ride via 8th Street, Midland Avenue, and Wulfsohn Road. Travel time between 27th Street station and West Glenwood is 15 minutes in mixed traffic on the local roads. Beyond these two endpoint stations, intermediate stops are made at:

- 21st Street/Grand Avenue
- 14th Street/Grand Avenue
- 9th Street/Colorado Avenue
- 8th Street/Pitkin Avenue (Upvalley Only)
- Wulfsohn Road/E. Meadows
- Wulfsohn Road/W. Meadows

Currently, about 45% of transit users that want to access downtown Glenwood Springs have to transfer to a local RFTA or Ride Glenwood Springs bus at the 27th Street station to complete their journey. **Figure 10** shows the summer season weekday RFTA and Ride Glenwood average boarding activity by route and by stop.

FIGURE 10 - SUMMER TRANSIT AVERAGE STOP ACTIVITY BY ROUTE



# Alternatives

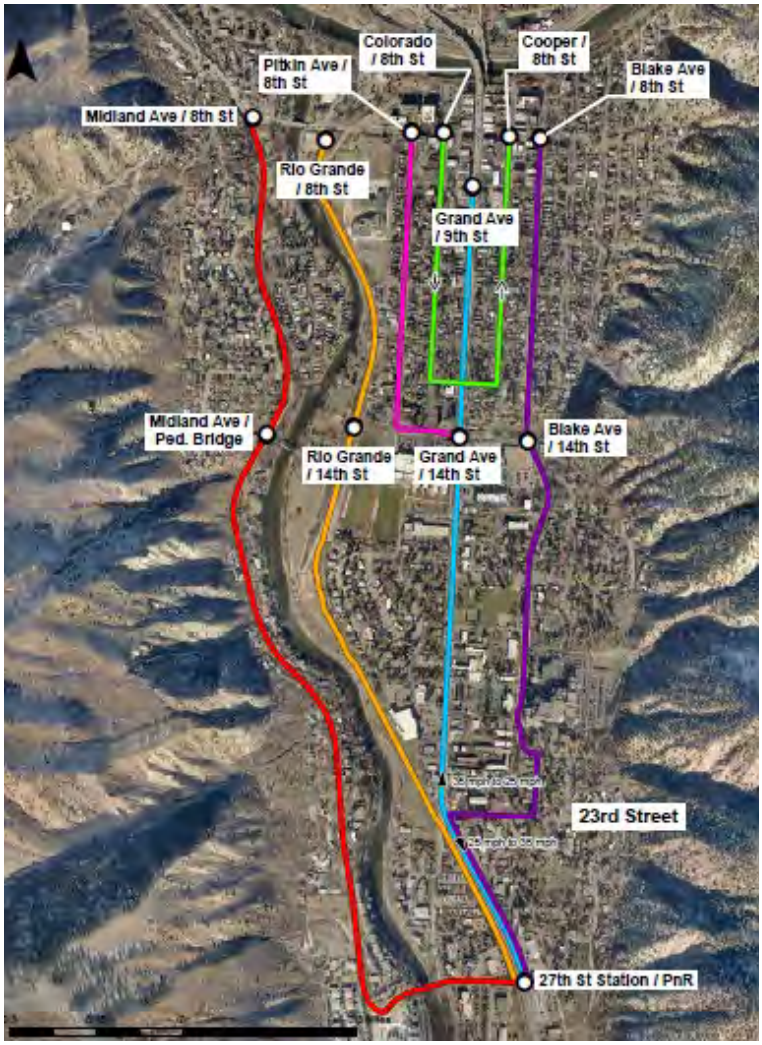
The six initial BRT extension alignment options and the three initial downtown transit center location options are described in this section.

## BRT Extension Alignment Options

RFTA and the City are considering an extension of the BRT service to downtown Glenwood Springs on a route alignment that can accommodate dedicated lanes to provide shorter travel times. The BRT extension would include a downtown transit station/center large enough to accommodate layovers and transfer connections with other bus routes, similar to the 27th Street facility or the Rubey Park facility in Aspen. **Figure 11** illustrates the BRT extension alignment options from the 27th Street BRT station to downtown Glenwood Springs.

- **Grand Avenue alignment**
- **Rio Grande Corridor alignment**
- **Blake Avenue alignment**
- **Pitkin Avenue alignment**
- **Cooper/Colorado Avenues one-way couplet alignment**
- **Midland Avenue alignment (west of the Roaring Fork River)**

FIGURE 11 – BRT EXTENSION ALIGNMENT OPTIONS



The anticipated BRT station locations for each alignment option are summarized in **Table 3**.

TABLE 3 - BRT EXTENSION ALIGNMENT ALTERNATIVES

| | Grand Avenue | Rio Grande Corridor | Blake Avenue | Cooper/Colorado One-way Couplet | Pitkin Avenue | Midland Avenue |
|---|---|---|---|---|---|---|
| Station Locations | Grand Ave/27th (Current RFTA PnR) | Grand Ave/27th (Current RFTA PnR) | Grand Ave/27th (Current RFTA PnR) | Grand Ave/27th (Current RFTA PnR) | Grand Ave/27th (Current RFTA PnR) | Grand Ave/27th (Current RFTA PnR) |
| | Grand Ave/14th Street | Rio Grande Corridor/14th Street (Coach Miller Dr) | Blake Ave/14th Street | Grand Ave/14th Street | Grand Ave/14th Street | Midland/14th Street (adjacent to pedestrian bridge) |
| | Grand Ave/9th Street | Rio Grande Corridor/8th Street | Blake Ave/8th Street | Cooper/8th Street and Colorado/8th Street | Pitkin Ave/8th Street | Midland/8th Street |

The **Grand Avenue alignment option** (1.6 miles) would provide a northbound dedicated BRT lane between 27th Street and 23rd Street (one-third mile) as shown in the typical section #2 **on Figures 13 and 16**, similar to the existing condition south of 27th Street shown in typical section #1 on **Figure 16**. From 23rd Street to 13th Street, the BRT vehicles would operate in the existing mixed flow traffic lanes, as shown in typical section #3 on **Figures 14 and 16**. From 13th Street to 8th Street, business access/transit (BAT) lanes would provide semi-dedicated BRT lanes in both directions but would also allow right-turn movements, as shown in typical section #4 on **Figures 15 and 16**. The BAT lanes would displace a total of 140 on-street parking spaces between 8th and 13th Streets along that 0.4-mile segment, and the existing curb will need to be relocated to make the lane wider, which would result in the removal of many of the existing pedestrian bulb-outs and mature trees. BRT stations would be located in the vicinity of 14th Street/Grand Avenue and 9th Street/Grand Avenue. The posted speed limit is 25 mph north of 22nd Street and 35 mph to the south.

FIGURE 12 - GRAND AVENUE (SH 82) AT 10TH STREET


FIGURE 13 - GRAND AVENUE TYPICAL SECTION 2: 27TH STREET TO 23RD STREET

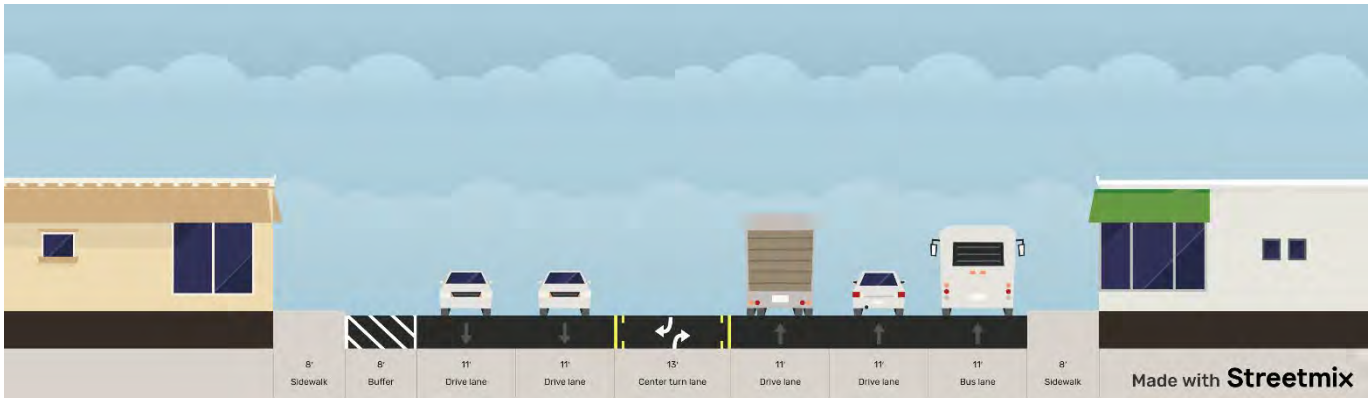



FIGURE 14 - GRAND AVENUE TYPICAL SECTION 3: 23RD STREET TO 13TH STREET

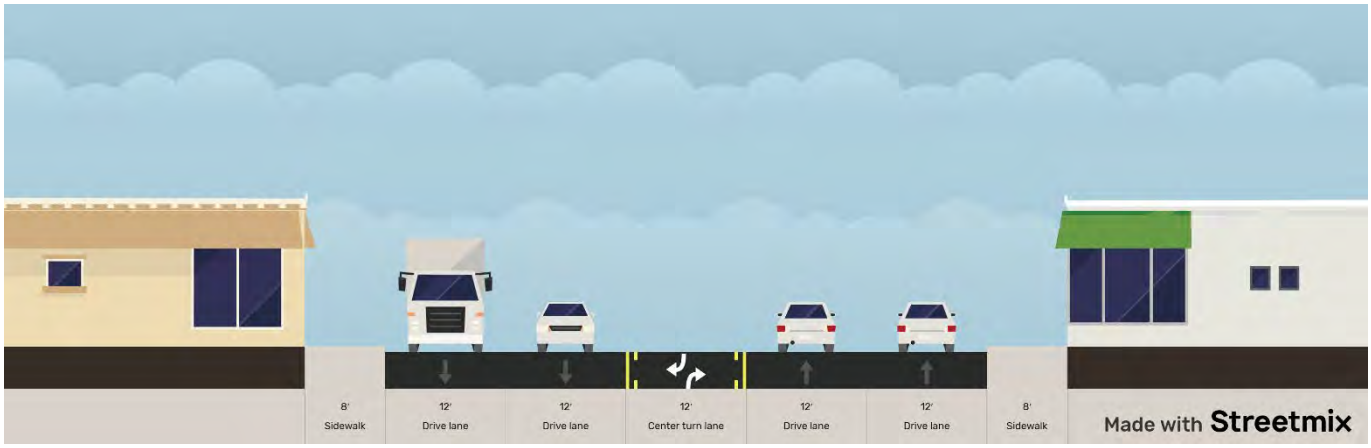


FIGURE 15 - GRAND AVENUE TYPICAL SECTION 4: 13TH STREET TO 8TH STREET

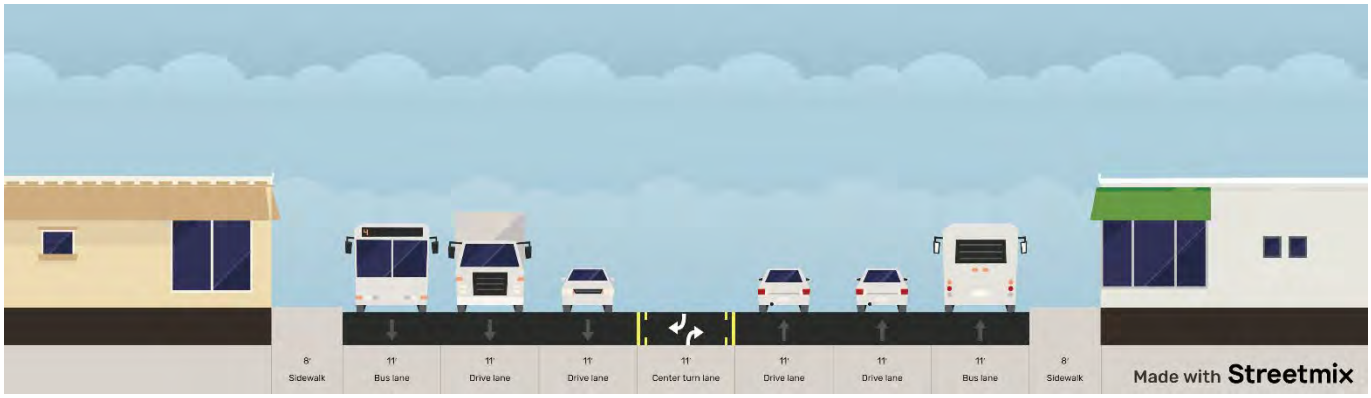
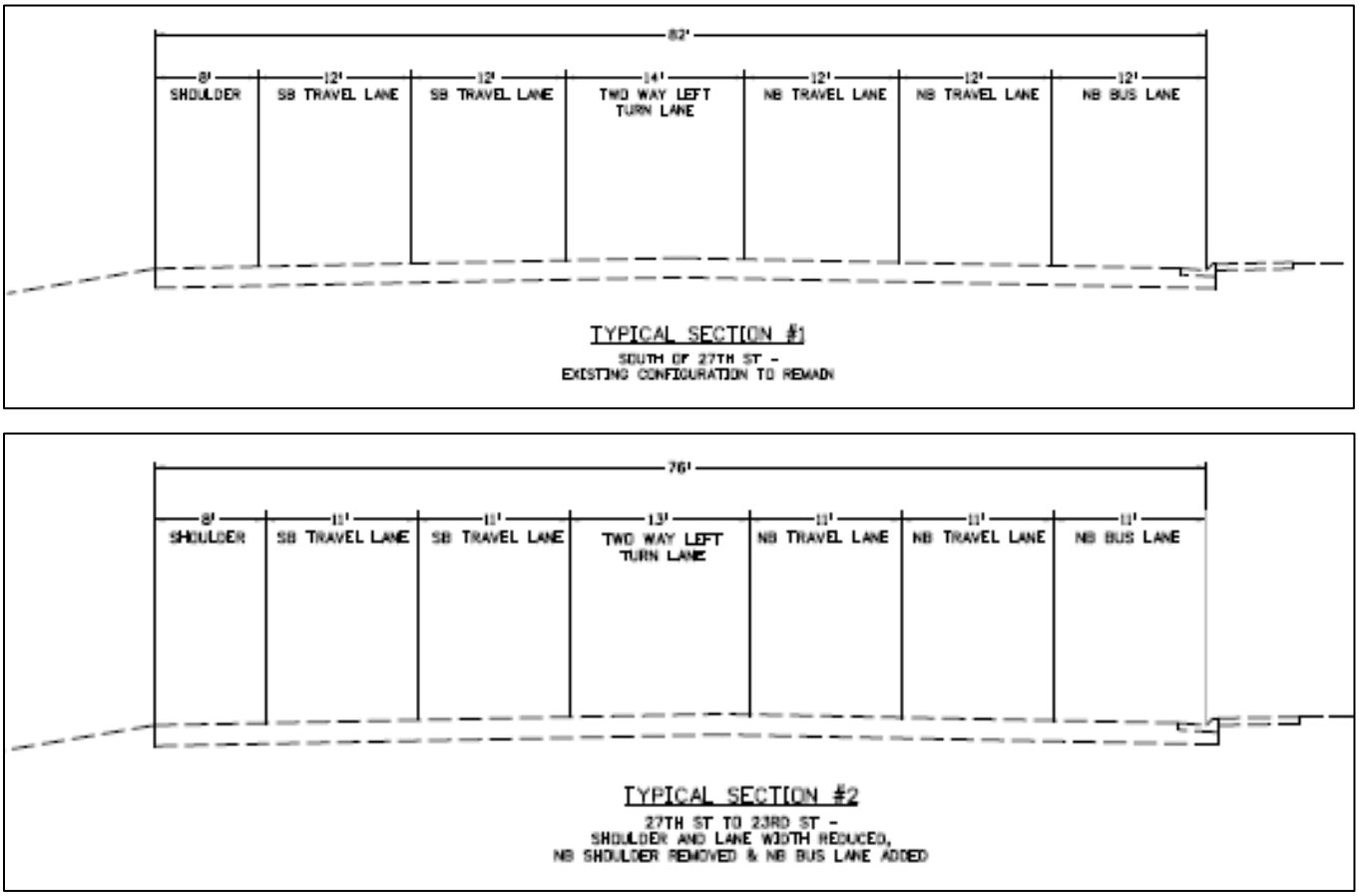
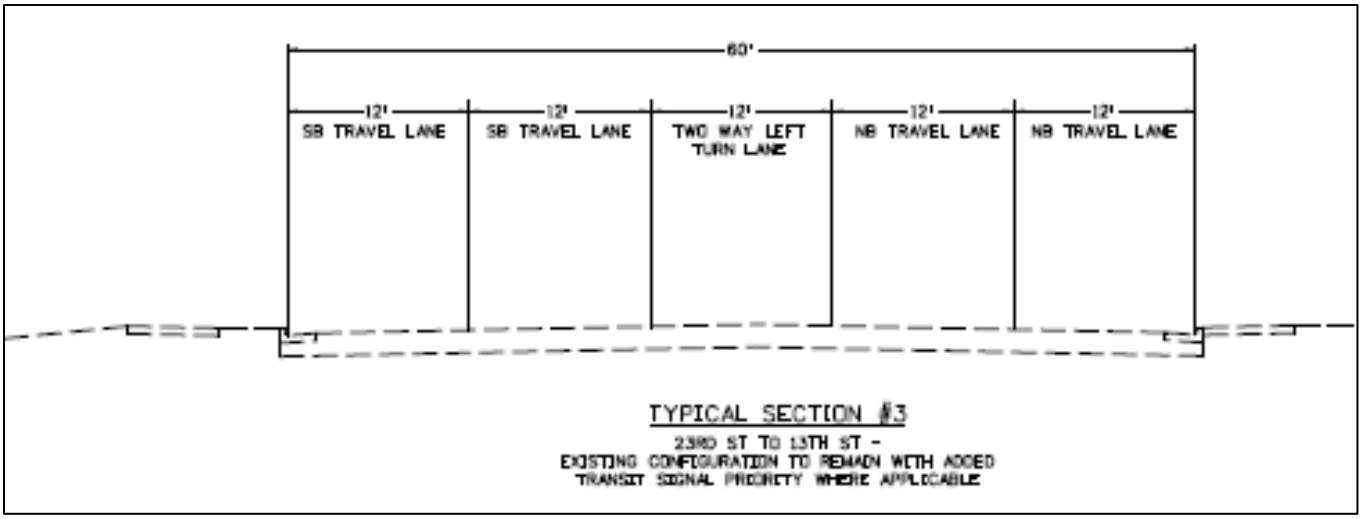
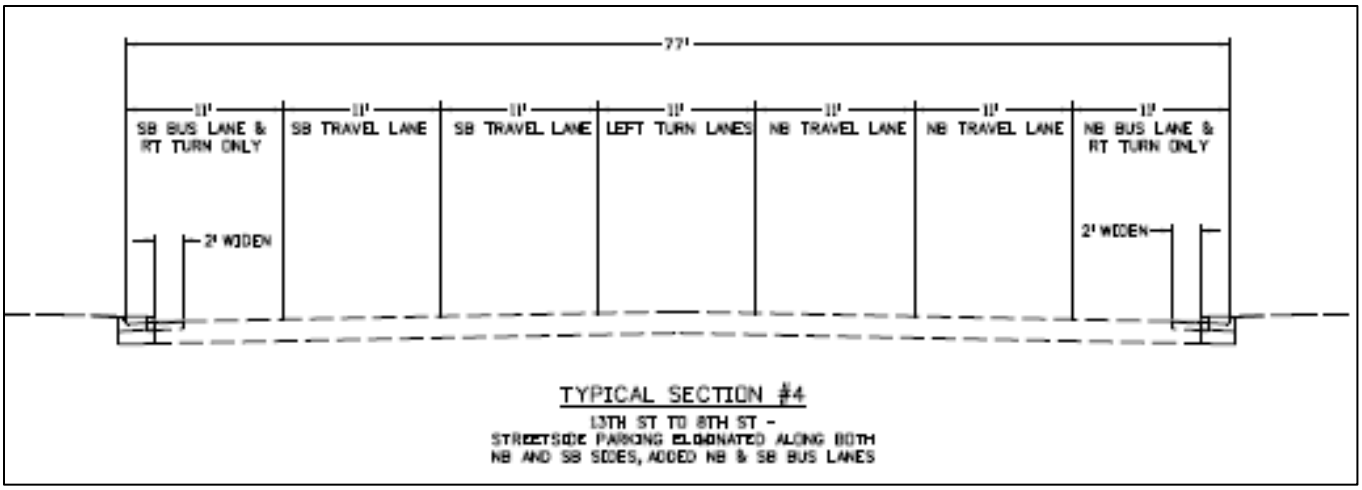



FIGURE 16 - GRAND AVENUE TYPICAL SECTIONS






The **Rio Grande Corridor alignment option** (1.7 miles) would provide fully dedicated BRT lanes in the exclusive right-of-way owned by RFTA that currently includes the Rio Grande trail shown in **Figure 17**. The typical sections of this alignment are shown in **Figures 18-22**. The BRT lanes would extend along the corridor from either 27th Street or 23rd Street to 8th Street. An inline BRT station would be located west of Glenwood Springs High School (approximately at 14th Street) and a more significant station with other bus connections would be located at 8th Street adjacent to the RFTA property.

FIGURE 17 - RIO GRANDE TRAIL

FIGURE 18 - RIO GRANDE CORRIDOR TYPICAL SECTION 1: 23RD TO 27TH STREETS

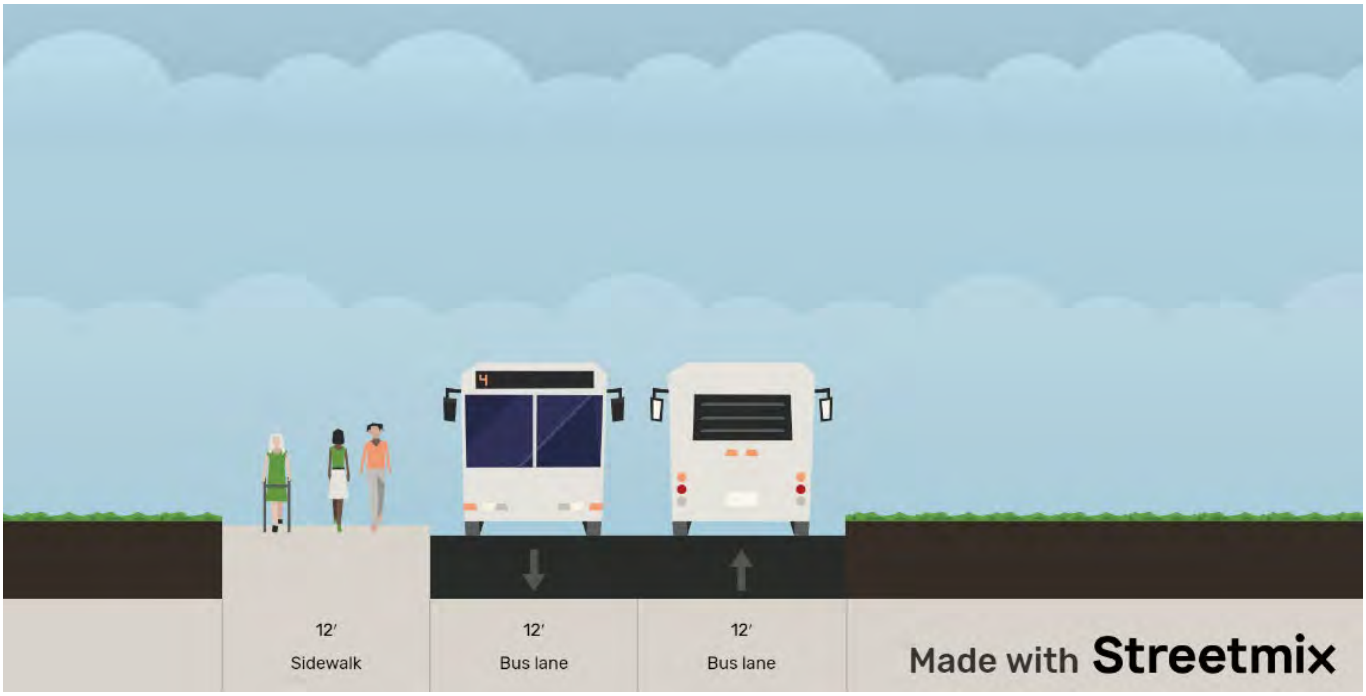



FIGURE 19 - RIO GRANDE CORRIDOR TYPICAL SECTION 2: 23RD STREET TO SAFEWAY SITE

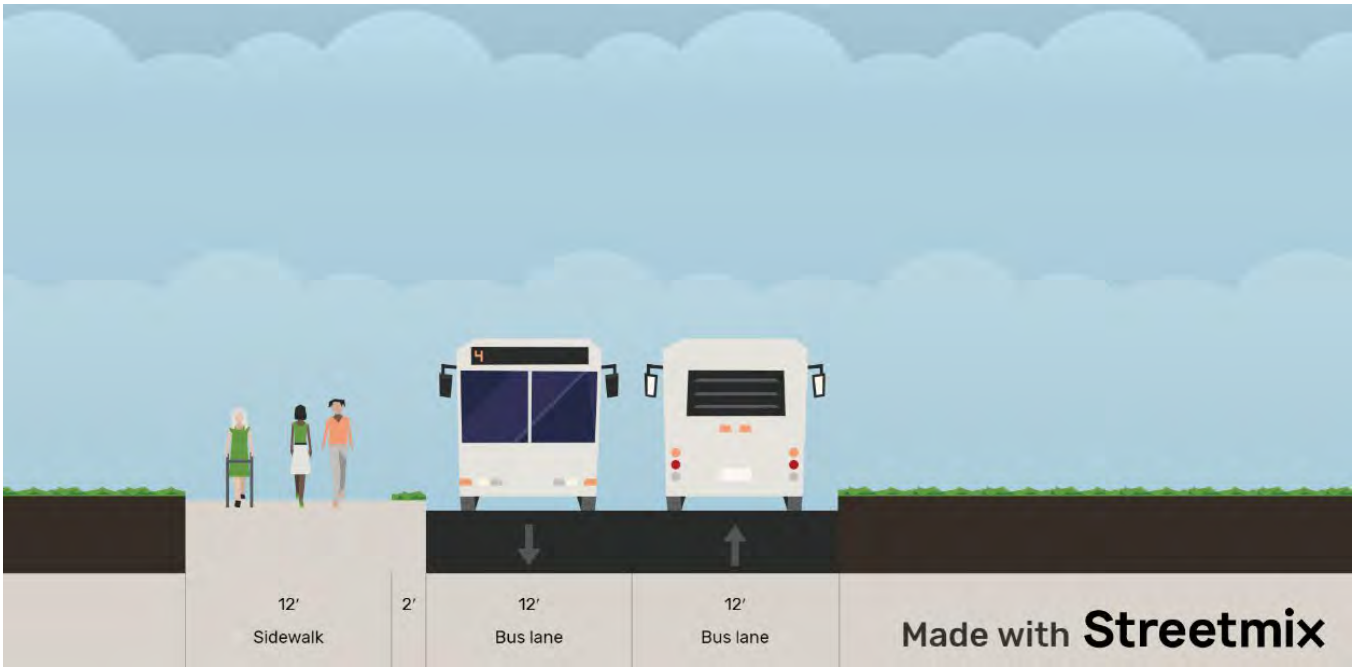


FIGURE 20 - RIO GRANDE CORRIDOR TYPICAL SECTION 3: WEST OF PARK DRIVE NEIGHBORHOOD

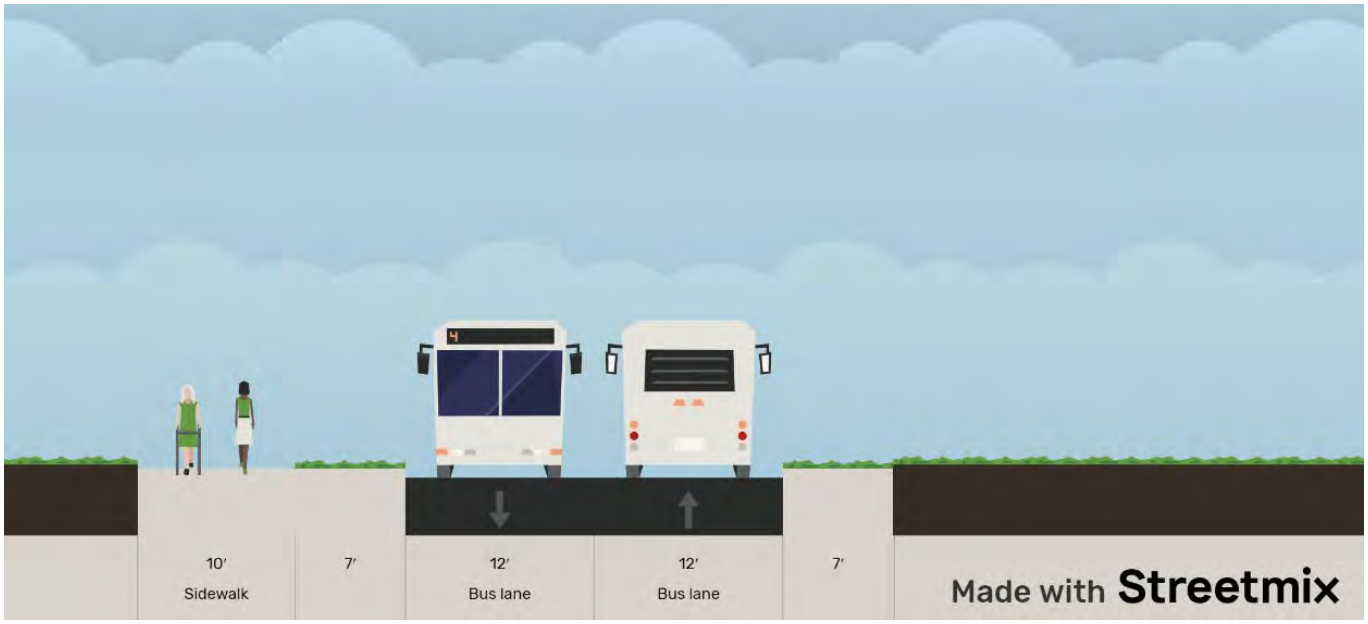



FIGURE 21 - RIO GRANDE CORRIDOR TYPICAL SECTION 4: WEST OF GLENWOOD SPRINGS HIGH SCHOOL AND ELEMENTARY SCHOOL

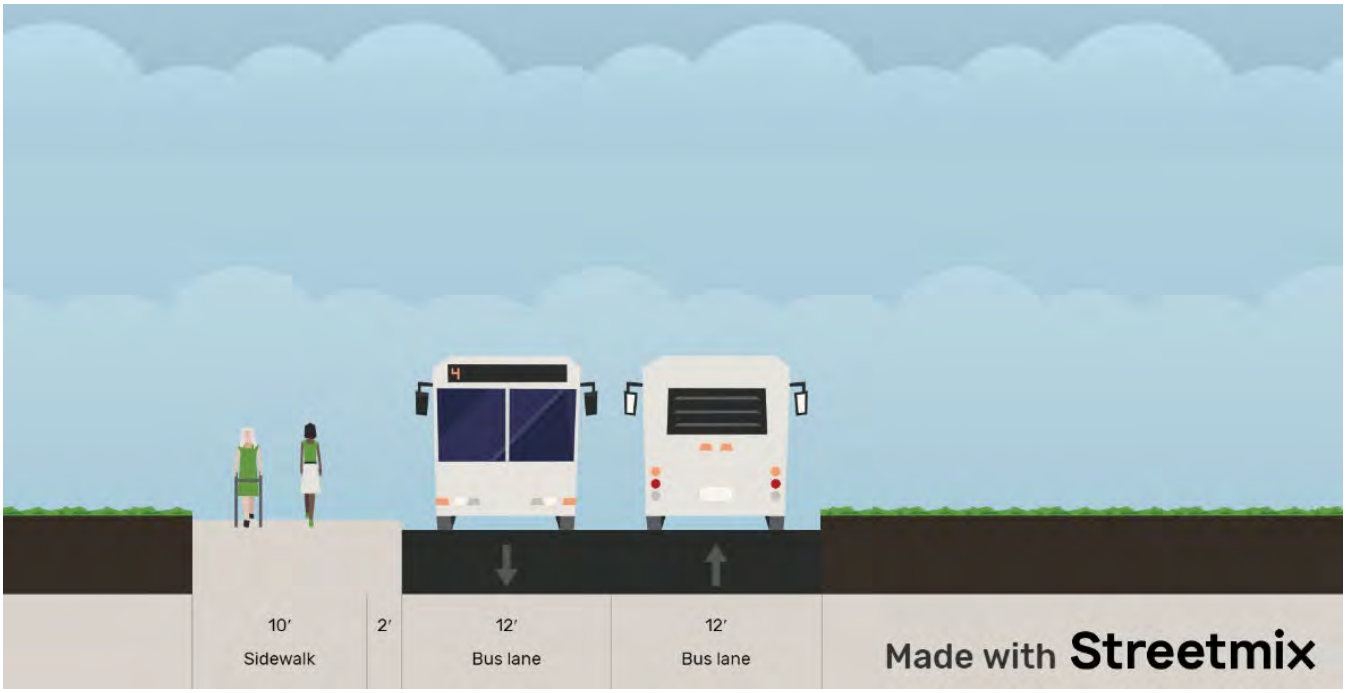
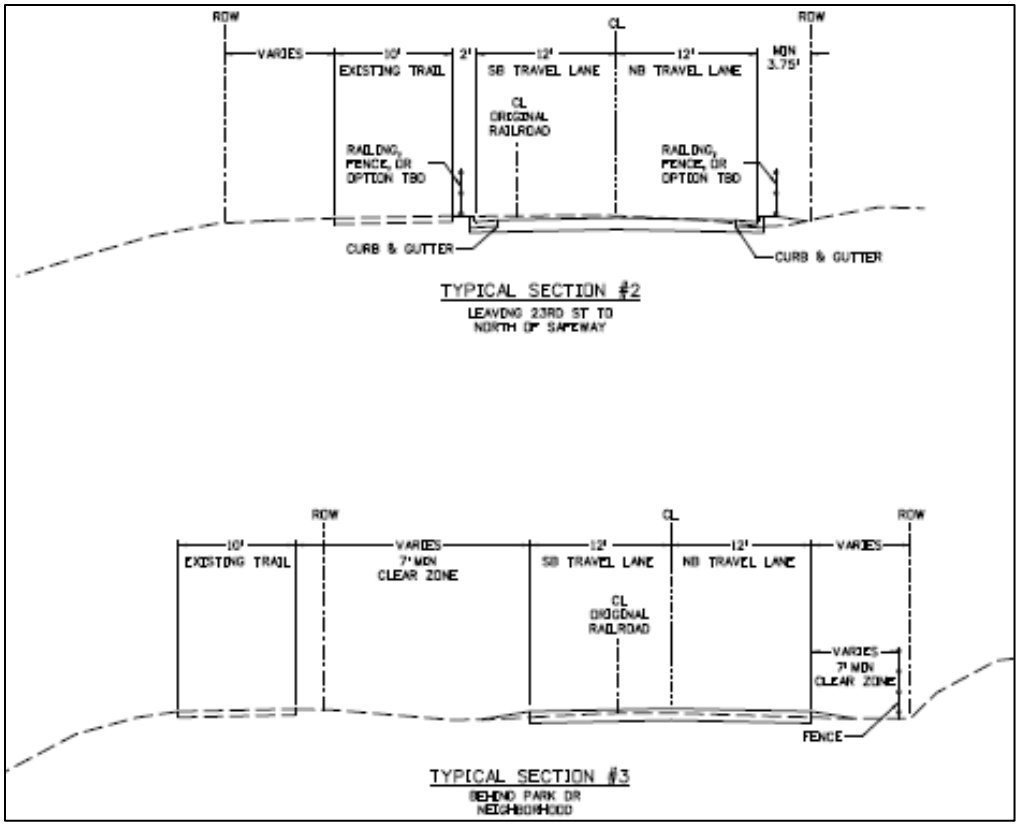


FIGURE 22 - RIO GRANDE CORRIDOR TYPICAL SECTIONS



**Rio Grande Busway Design Attributes**

Because of its unique status among the BRT extension alignment options as an exclusive right-of-way, the initial Rio Grande corridor busway design attributes are defined as follows:

- Busway platform-
  - 2-12' wide dedicated bus lanes, one in each direction
  - No roadway barriers unless needed due to clear zone requirements (adjacent steep slopes, roadside obstructions, etc.)
  - Trail connections are not grade separated. Provide safe at-grade trail crossings across busway.
  - No paved shoulders or curbing.
  - Busway location tending to the eastern side of the corridor
  - Barrier/fence on east side of the busway to protect adjacent properties where needed.
  - Transit stops included:
    - An inline BRT station at Confluence site south of 8th Street at RFTA driveway (to accommodate other bus connections/transfers but no parking)
    - Center-running inline BRT station behind Glenwood Spring high school (approximately 14th Street)
  - North-end connection at 8th Street and RFTA driveway, signalized at-grade intersection
  - South-end connections - four options (refer to plan sheet drawings for more information):
    - SH 82/27th Street intersection
    - SH 82/23rd Street intersection converted to buses-only, signalized at-grade. Public/business access from 27th Street.
    - SH 82/New intersection spaced between 23rd and 27th for buses-only, signalized at-grade.
    - South Grand Avenue/23rd Street intersection (just south of SH 82 where the Rio Grande Corridor meets South Grand Avenue).
  - Crossing gates at roadway connections to keep private vehicles off busway
- Busway design speed-30 mph; posted speed 25 mph
- Busway and Rio Grande trail on same roadway platform
- New Rio Grande Trail:
  - Width-12' (existing width is 10')
  - Trail location tending towards the river side (west side of the corridor)
  - Aesthetic barrier/fence between trail and busway
  - 4 trail connections at-grade across busway at Glenwood Springs Elementary School, 13th Street (include driveway), Stubler Drive (behind GSHS athletic field, include driveway), and near Safeway.

The design attributes listed above minimized the width of disturbance and places the trail and transit alignment next to each other with a barrier separation. We referred to this as the "Minimal Construction Option". During the course of the study, stakeholders also requested exploring maximizing the physical and visual separation between the bus lane and trail user. This secondary "Vertical Separation Option" includes busway and Rio Grande trail not on the same roadway platform where space allows, landscaping between the trail, busway, and properties and a parallel gravel running path where space allows. In this case 70% of the trail will move to at least 8' away from the busway and 30% of the trail will be next to the busway but vertically separated. Refer to the Level 2 Screening section for plan views and renderings of these options.

The **Blake Avenue alignment option** (1.7 miles) would provide dedicated BRT lanes between 23rd Street and 8th Street as shown in the typical sections on **Figures 23-28**. The dedicated lanes would displace a total of 278 on-street parking spaces in that 1.2-mile segment. Between 23rd Street and 27th Street, the BRT service would operate along Grand Avenue in mixed traffic flow in the existing travel lanes. A BRT station would be located at Blake Avenue/14th Street and at Blake Avenue/8th Street. The posted speed limit is 25 mph.

FIGURE 23 - BLAKE AVENUE


FIGURE 24 – BLAKE AVENUE TYPICAL SECTION 1: 23RD TO 21ST STREETS

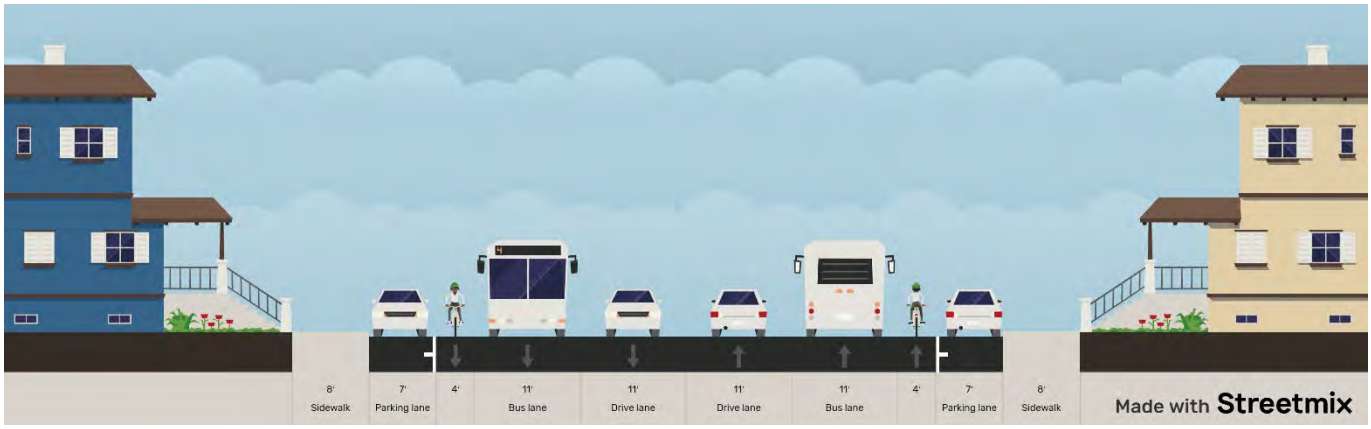


FIGURE 25 - BLAKE AVENUE TYPICAL SECTION 2: 21ST TO 19TH STREETS

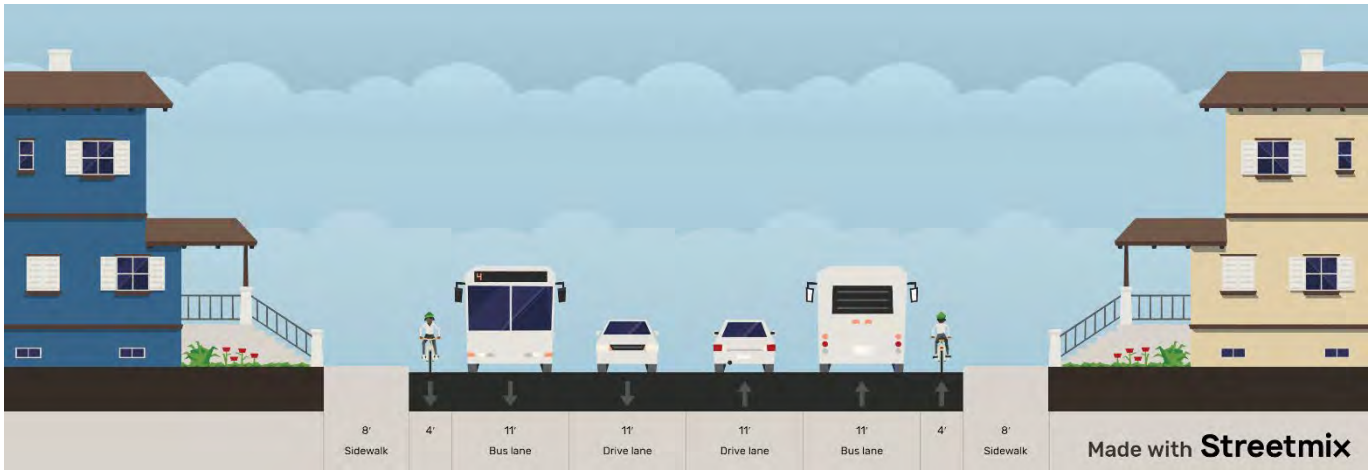



FIGURE 26 - BLAKE AVENUE TYPICAL SECTION 3: 19TH STREET TO HYLAND PARK DRIVE

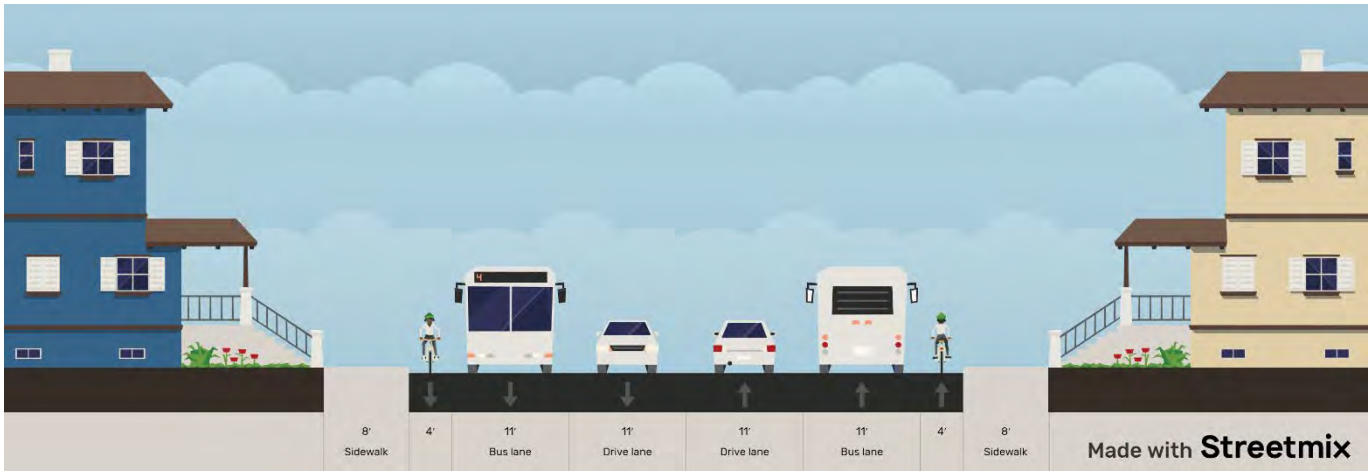



FIGURE 27 - BLAKE AVENUE TYPICAL SECTION 4: HYLAND PARK DRIVE TO 8TH STREET

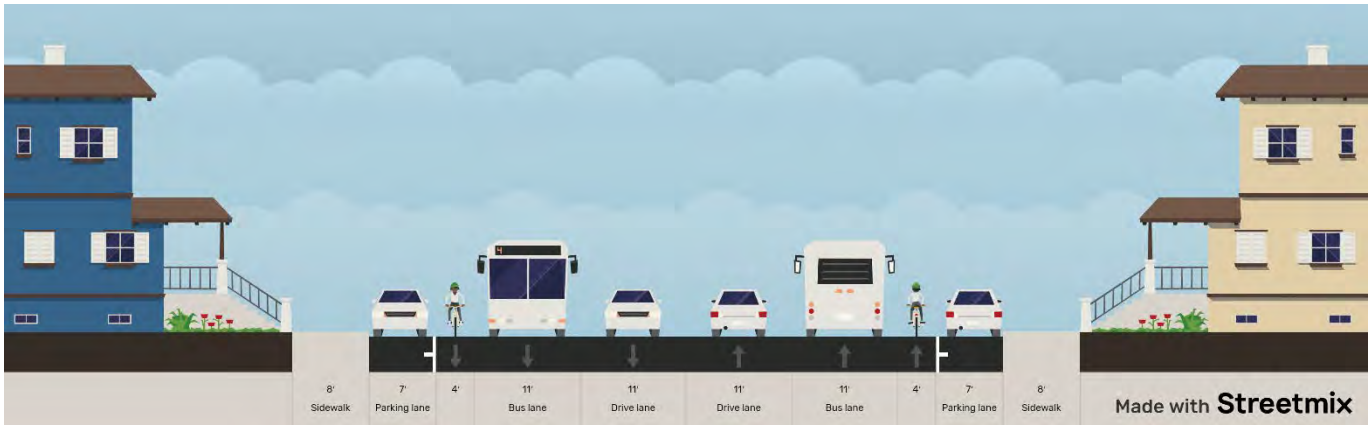
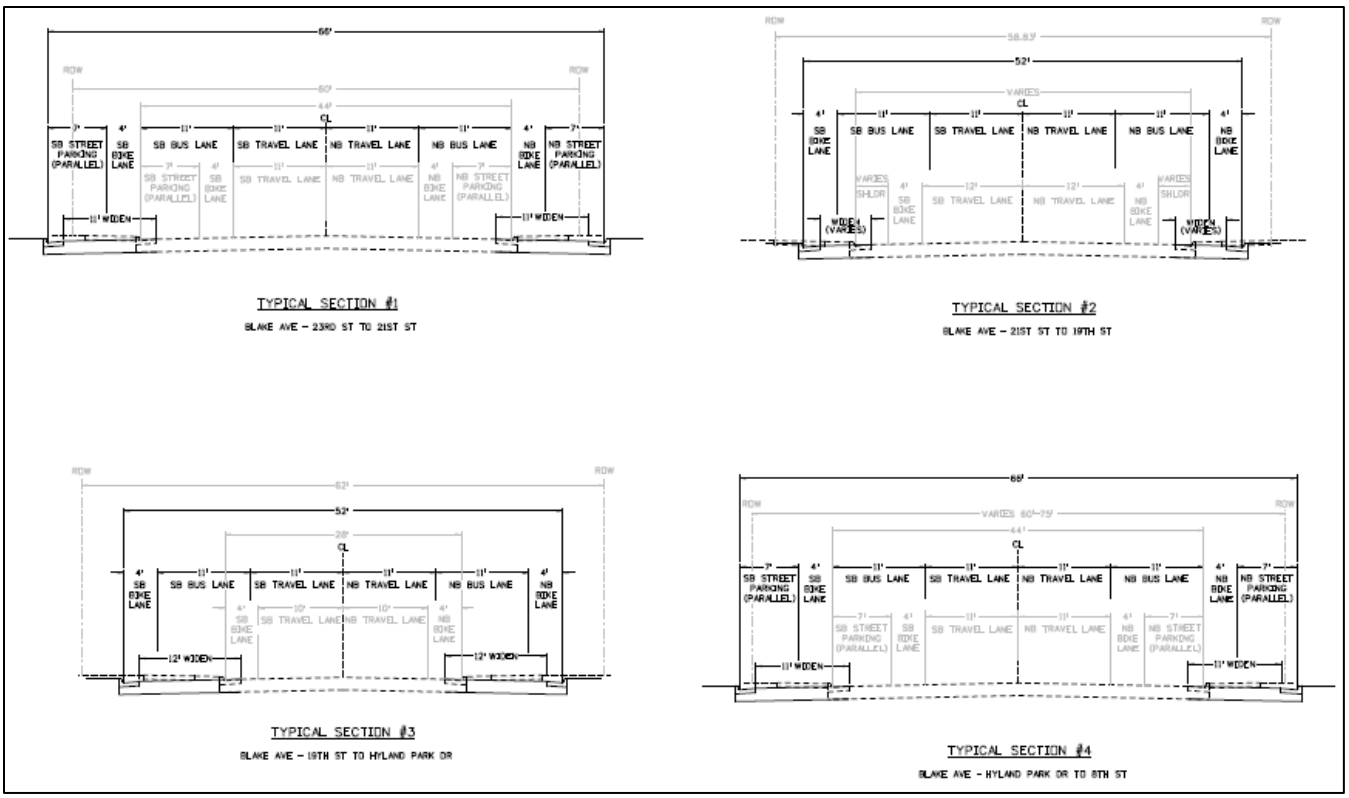


FIGURE 28 - BLAKE AVENUE TYPICAL SECTIONS



The **Cooper (NB)/Colorado (SB) one-way couplet alignment option** (1.6 miles) would provide dedicated BRT lanes between 13th Street and 8th Street as shown in the typical sections on **Figures 24-30**. The dedicated lanes along Colorado and Cooper Avenues would displace a total of 140 on-street parking spaces in that 0.4-mile segment. Between 13th Street and 27th Street, the BRT service would operate along Grand Avenue in mixed traffic flow in the existing travel lanes. A BRT station would be located at 14th Street/Grand Avenue and at 8th Street/Cooper Avenue (NB) and at 8th Street/Colorado Avenue (SB). The posted speed limit is 25 mph on both streets.

FIGURE 29 - COOPER AVENUE (ONE-WAY NORTHBOUND)

FIGURE 30 - COLORADO AVENUE (ONE-WAY SOUTHBOUND)


FIGURE 31 - COOPER TYPICAL SECTION: 10TH TO 13TH STREETS

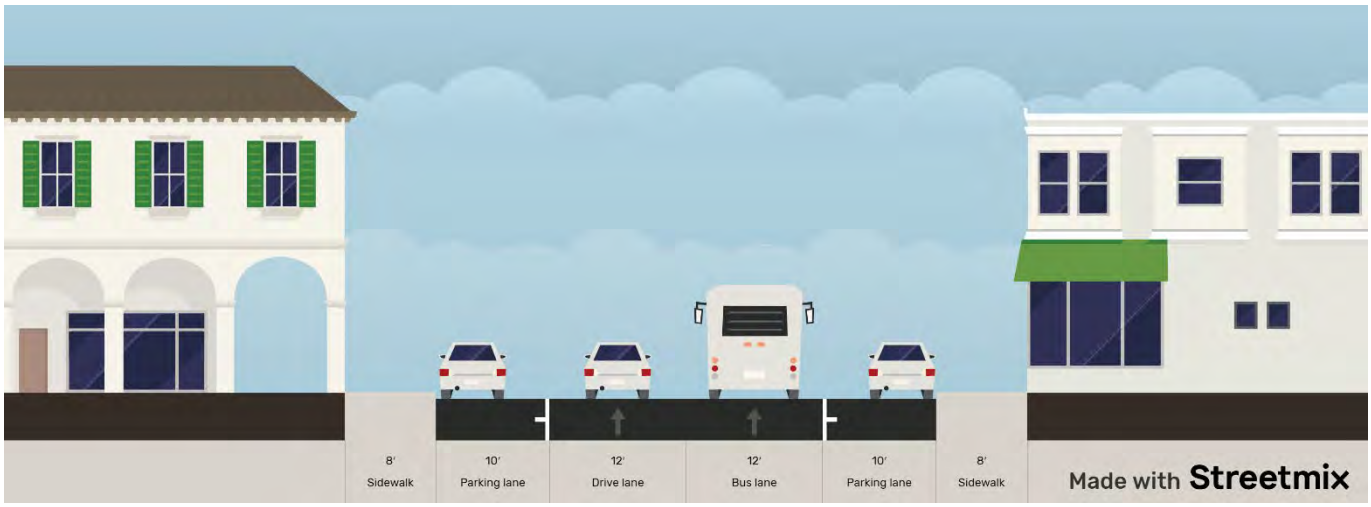


FIGURE 32 - COLORADO TYPICAL SECTION: 10TH TO 13TH STREETS

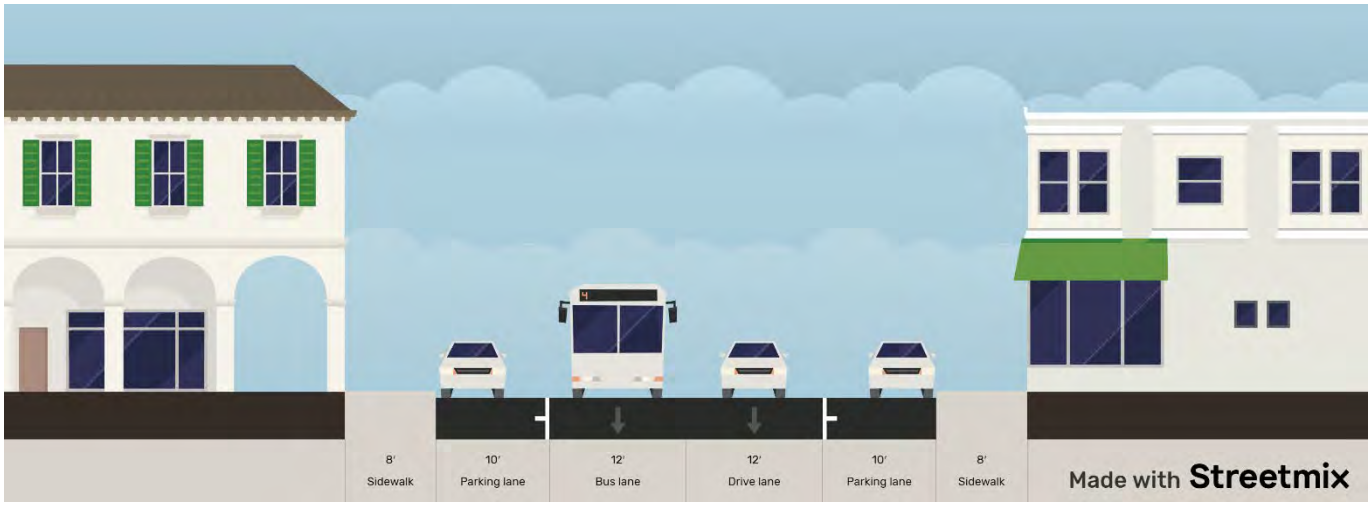



FIGURE 33 - COOPER TYPICAL SECTION: 9TH TO 10TH STREETS

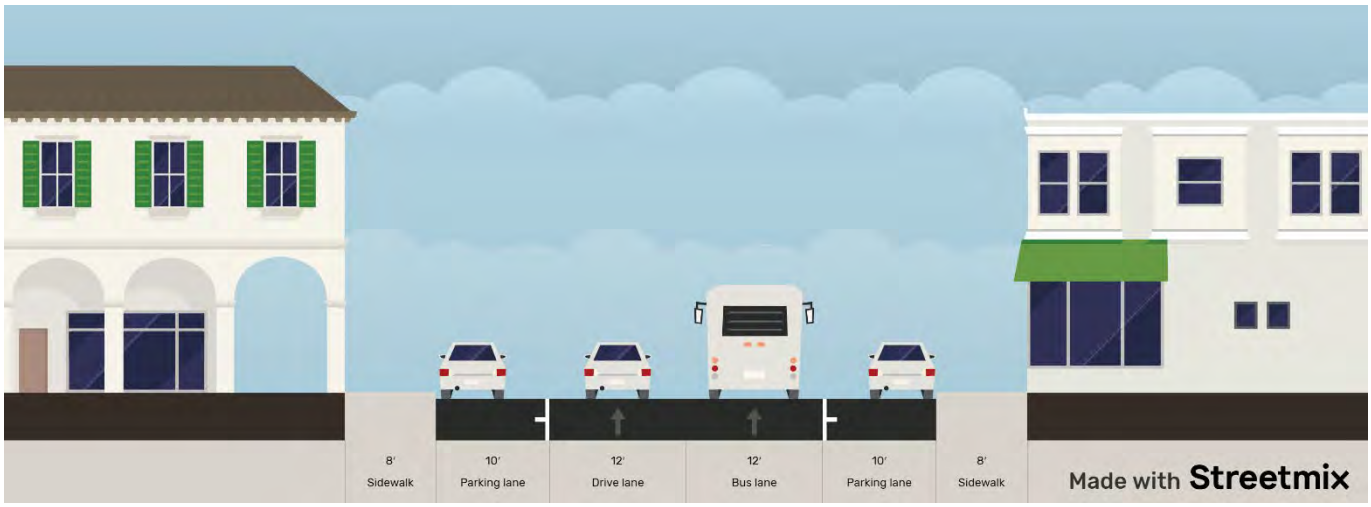



FIGURE 34 - COLORADO TYPICAL SECTION: 9TH TO 10TH STREETS

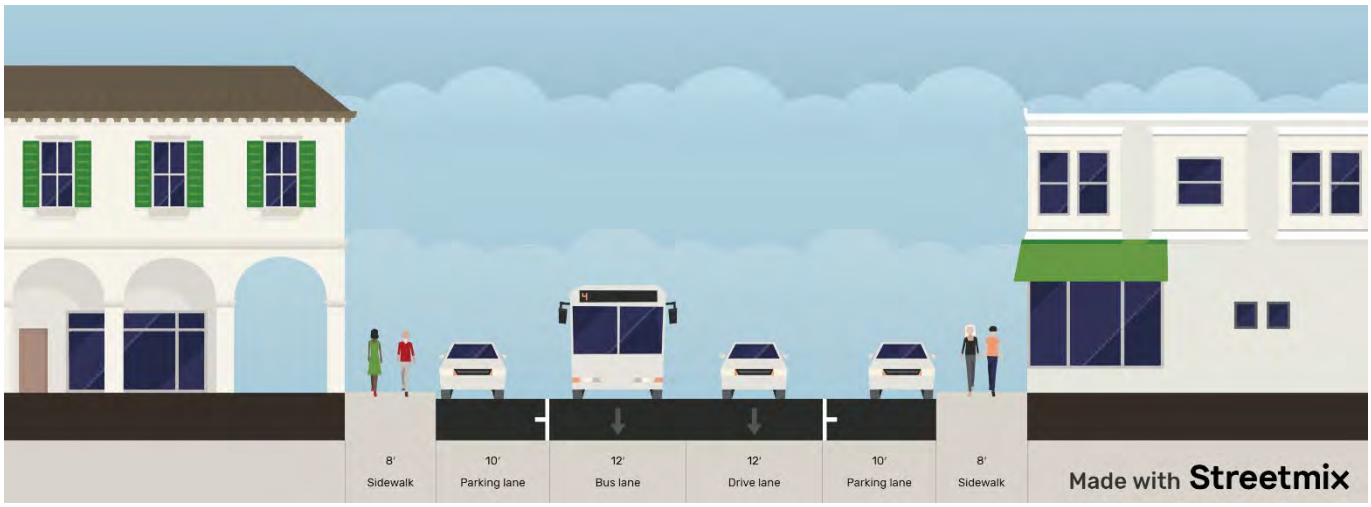


FIGURE 35 - COOPER AND COLORADO TYPICAL SECTION: 7TH TO 9TH STREETS

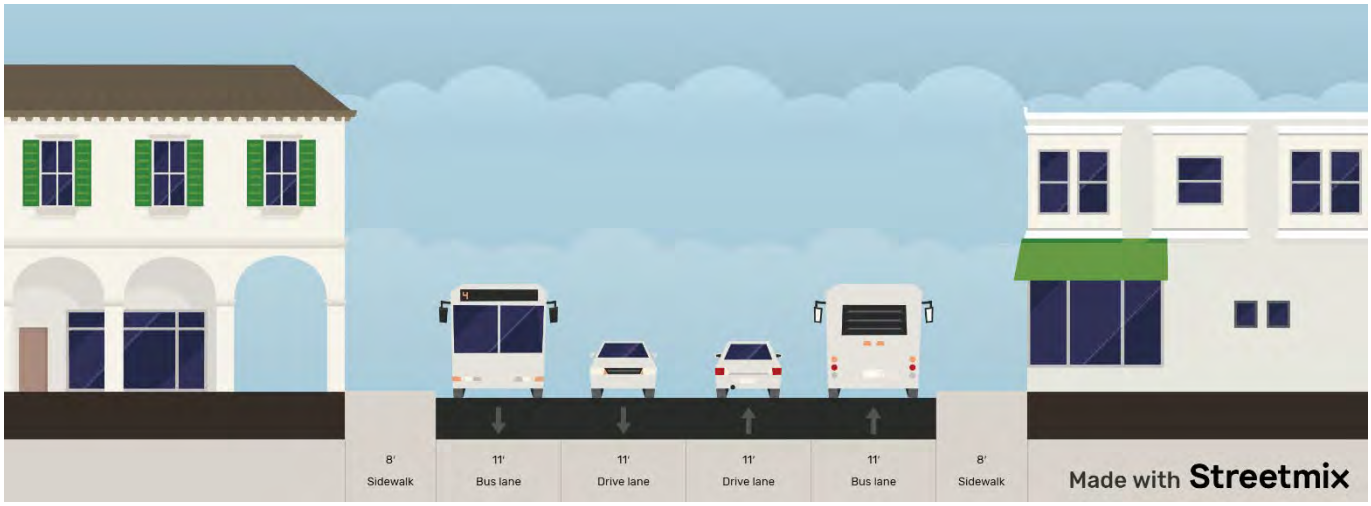
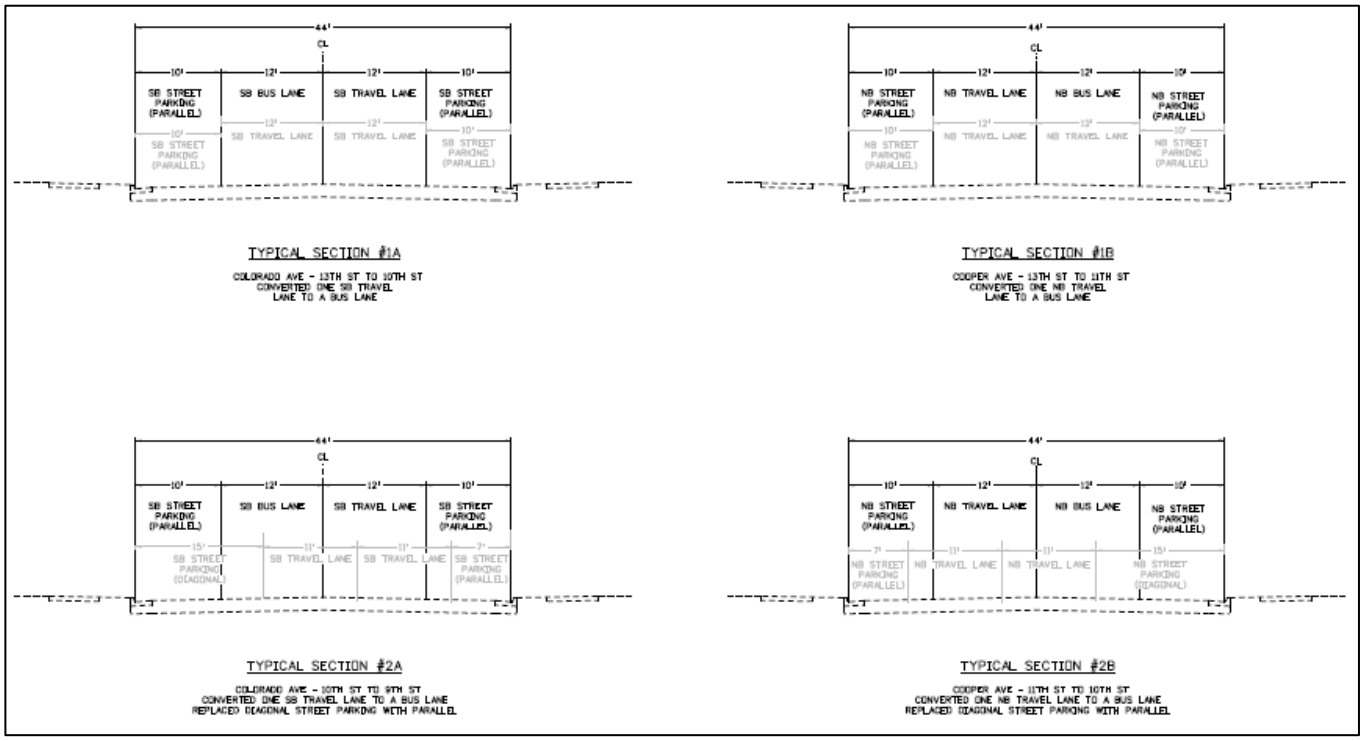
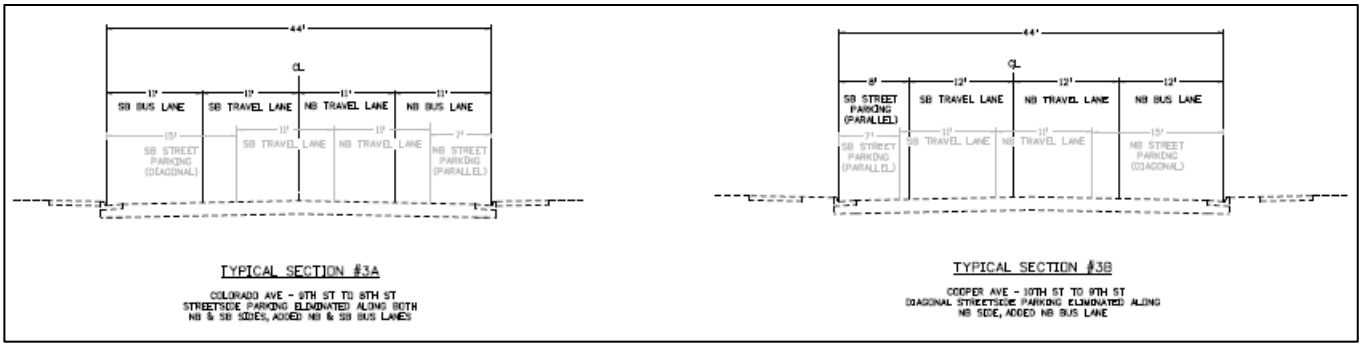



FIGURE 36 - COOPER/COLORADO TYPICAL SECTIONS






The **Pitkin Avenue alignment option** would provide dedicated BRT lanes between 14th Street and 8th Street as shown in the typical sections on **Figures 38 and 39**. The dedicated lanes would displace a total of 161 on-street parking spaces in that 0.5-mile segment. Between 14th Street and 27th Street, the BRT service would operate in mixed traffic flow in the existing travel lanes along Grand Avenue. A BRT station would be located at 14th Street/Grand and at 8th Street/Pitkin Avenue. The posted speed limit is 25 mph.

FIGURE 37 - PITKIN AVENUE

FIGURE 38 - PITKIN AVENUE TYPICAL SECTION: 8TH TO 14TH STREETS

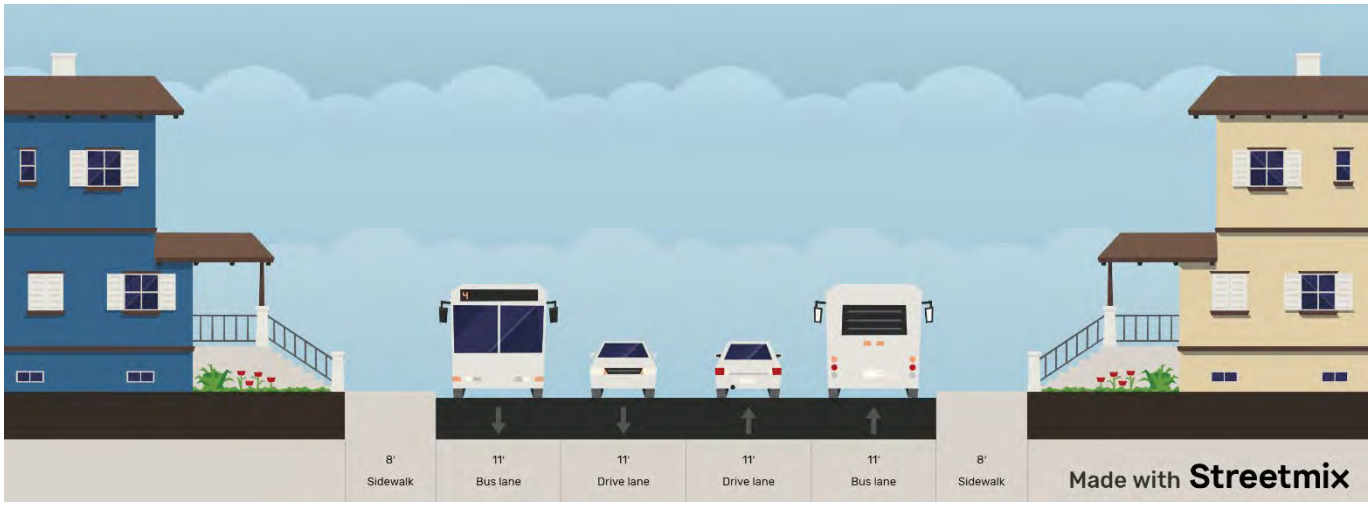
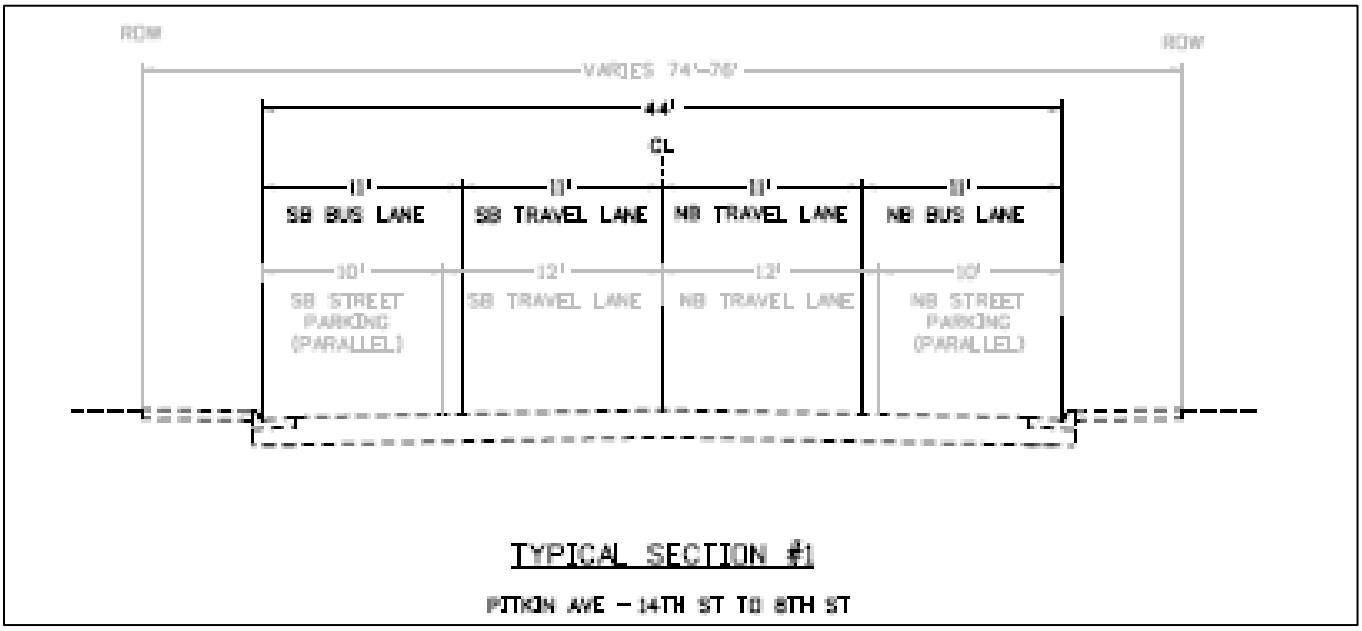


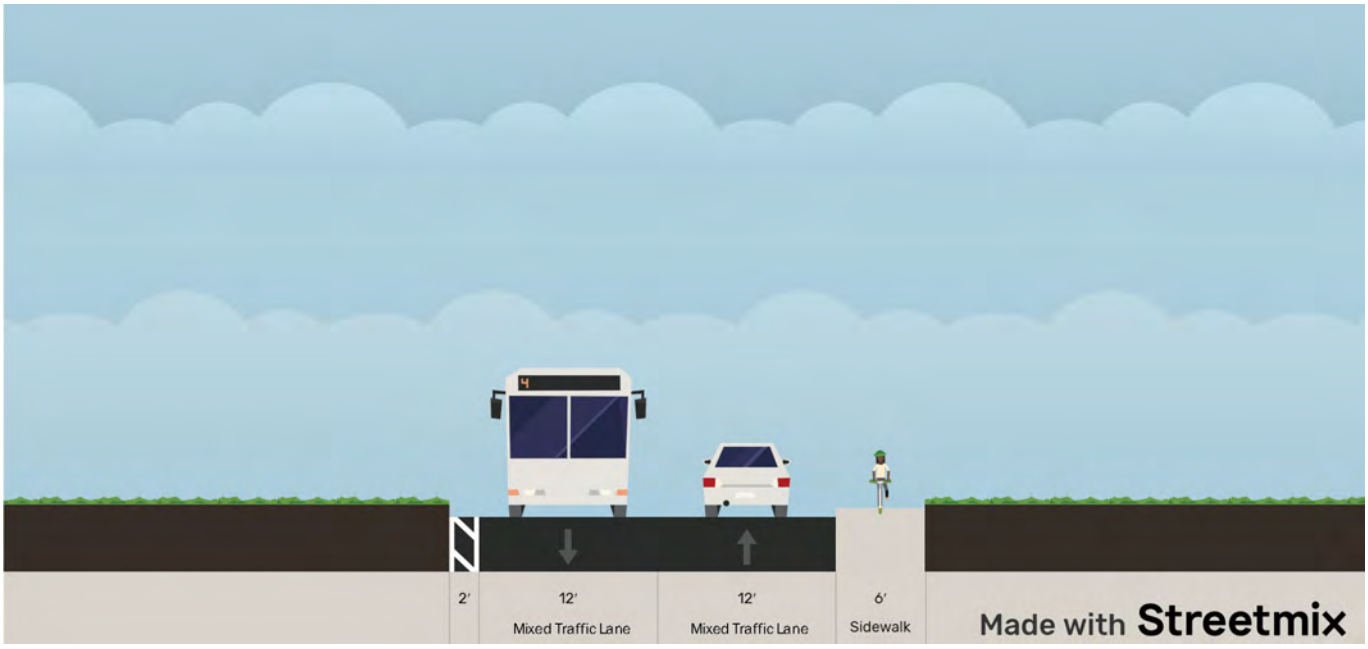

FIGURE 39 - PITKIN AVENUE TYPICAL SECTION: 8TH TO 14TH STREETS




The **Midland Avenue alignment option** from 27th Street to 8th Street (2.0 miles) would have the BRT service operating in mixed traffic flow for the entire alignment since the current ROW will not allow any dedicated lanes and property acquisition would be very costly due to the topography in the area. A typical section of Midland Avenue is shown on **Figure 41**. A BRT station would be located adjacent to the pedestrian bridge that spans the Roaring Fork River approximately 1 mile north of 27th Street on Midland Avenue between 14th and 15th Streets. A BRT station would be located at 8th Street/Midland Ave. The posted speed limit is 25 mph.

FIGURE 40 - MIDLAND AVENUE

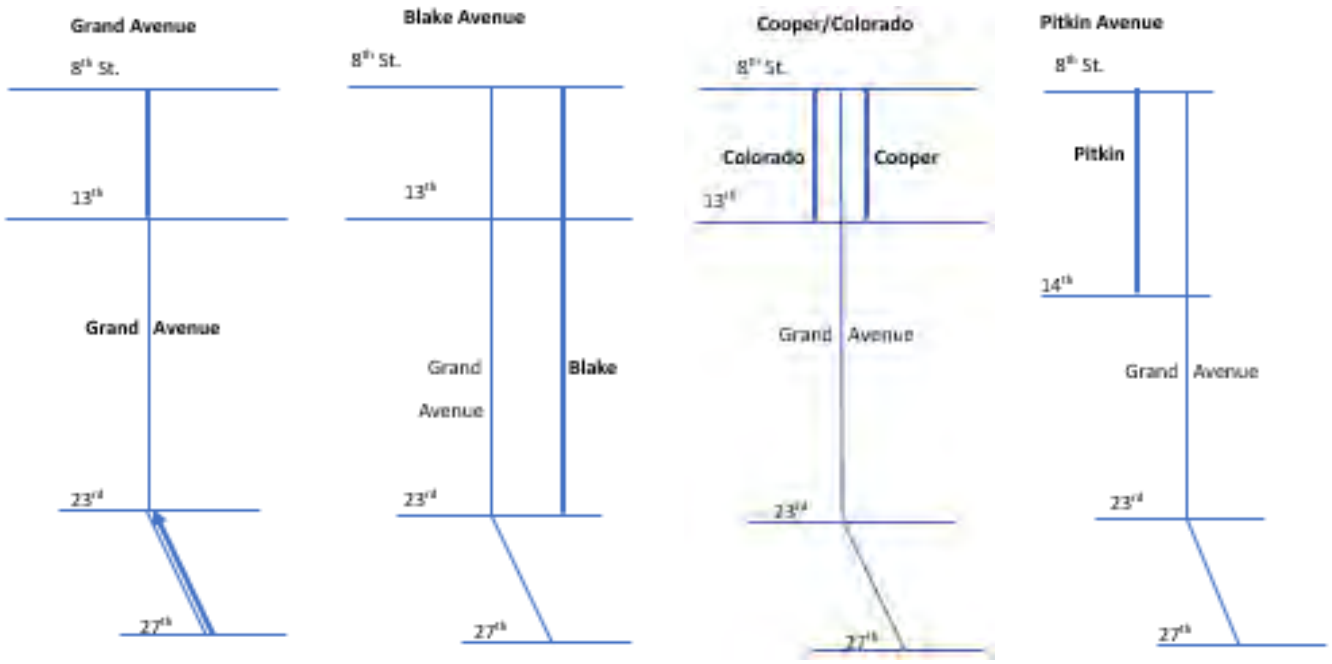

FIGURE 41 - MIDLAND AVENUE TYPICAL SECTION: 27TH TO 8TH STREETS



## Comparison of BRT Alignment Options

The four street alignments that have dedicated BRT segments are illustrated below on **Figure 42** with the dedicated lanes shown as **heavier** lines. The Rio Grande Corridor alignment includes 100% dedicated lanes along that exclusive right-of-way. The Midland Avenue alignment cannot include dedicated BRT lanes due to the limited right-of-way.

FIGURE 42 - DEDICATED BRT LANE SEGMENTS




Using Google Maps, each BRT extension alignment option was observed during weekday peak hours during the week of July 6. That tool provides typical travel times for auto and bus for various routes or alignments. The 1.6-mile Grand Avenue alignment between 8th Street and 27th Street Station provided the baseline condition since the BRT service currently uses that alignment. It was noted that bus travel speeds typically were 75% of the auto travel speeds with stops and signal delays. The corresponding travel times for bus were typically one-third longer than the auto travel times.

The existing condition/travel times of buses in mixed flow on Grand Avenue are the No Build comparison point for the various alignment alternatives and their varying amounts of dedicated lanes. Per Google maps run times and the bus schedule run times, the average BRT speed on Grand Avenue in the peak hours between 27th Street Station and 8th Street is about 12.0 mpg, compared with 16.0 mph for cars (25 mph posted speed), so the buses take 8 minutes to travel that distance (1.6 miles) and cars take 6 minutes.

The segment of dedicated BRT lanes between 13th Street and 8th Street represents 0.4 mile or 25% of the Grand Avenue alignment. It was assumed that the buses would achieve 5% faster average speed over the existing condition for every 10% of the alignment with dedicated BRT lanes. This is consistent with experience on various BRT corridors such as the 15.7-mile sbX E Street BRT corridor in San Bernardino, CA. For example, with 25% dedicated lanes along Grand Avenue, the average speed might increase to 13.5 mph over the existing 12.0 mph bus speed for a 12.5% faster speed and 12.5% shorter travel time. This would produce a

one-way travel time of 7.1 minutes compared with the existing 8.0-minute travel time or a travel time savings of 0.9 minute for each trip with the short segment of dedicated lanes.

The formula for these calculations is: 25% dedicated lanes divided by 10% = 2.5 X 5% faster speed = 0.125 X 12.0 mph (existing BRT speed) = 1.5 mph (faster speed) + 12.0 mph = 13.5 mph. The travel time equals 60 minutes divided by 13.5 mph = 4.44 X 1.6-mile corridor = 7.1 minutes (travel time with dedicated lanes).

As a sensitivity check on these assumptions, the Grand Avenue alignment was also evaluated assuming a 10% faster average speed for every 10% of the alignment with dedicated lanes. These calculations produced an average BRT speed of 15.0 mph which is nearly as fast as the auto travel time and a travel time of 6.4 minutes, neither of which are realistic with only a 0.4-mile segment of dedicated lanes.

These same travel time savings assumptions for Grand Avenue were applied to each of the other three street alignments. **Table 4** provides a comparison of average speeds, travel times, and savings for the five BRT extension alignment options. For the Rio Grande Corridor, it was assumed that the buses would operate at the posted speed of 25 mph with a 30-second dwell at the proposed 14th Street station. This would produce an average speed of 22 mph and a travel time of 4.6 minutes which compares very favorably with the improved Grand Avenue trip time of 7.1 minutes. The Blake Avenue alignment with 70% dedicated lanes would produce BRT travel time of 7.9 minutes, worse than the Grand Avenue trip time, primarily due to the somewhat slower stop sign control along the alignment. The Cooper/Colorado alignment with 25% dedicated lanes would produce BRT travel time of 7.2 minutes. The Pitkin alignment with 29% dedicated lanes would produce BRT travel time of 8.2 minutes. The latter three alignments would not produce any time savings compared with the Grand Avenue alignment with dedicated lanes.

TABLE 4 - COMPARISON OF BRT EXTENSION ALIGNMENT OPTIONS

| Alignment | Distance: 8th to 27th Street (miles) | Posted Speed Limit | Peak Hour Average Speed/Travel Time (car) | Peak Hour Average Speed/Travel Time (bus)* | Dedicated BRT lane length (% of corridor) / % speed increase** | BRT average speed /travel time / savings with dedicated lanes** |
|---|---|---|---|---|---|---|
| Grand Avenue | 1.6 / 0.4 mile ded. | 25 | 16.0 mph/ 6.0 minutes | 12.0 mph/ 8.0 minutes | 25% dedicated / 12.5% faster than current | 13.5 mph / 7.1 minutes / 0.9 minutes savings |
| Rio Grande Corridor | 1.7 / 1.7 mile ded. | 25 | 25 mph/ 4.1 minutes | 25 mph with 30-second dwell at 14th Street station = 22 mph / 4.6 minutes | 100% dedicated / 83% faster than current Grand Avenue | 22.0 mph/ 2.5 minutes savings compared to Grand Ave with BRT lanes; 3.4 minutes savings compared with current Grand Ave time |
| Blake Avenue | 1.7 / 1.2 mile ded. | 25 | 12.7 mph/ 8.0 minutes | 9.5 mph/ 10.6 minutes | 70% / 35% faster than current | 12.8 mph / 7.9 minutes / 2.7 minutes savings |
| Cooper/ Colorado | 1.6 / 0.4 mile ded. | 25 | 16.0 mph/ 6.0 minutes | 12.0 mph/ 8.0 minutes | 25% / 12.5% faster than current | 13.4 mph / 7.2 minutes / 0.8 minutes savings |
| Pitkin Avenue | 1.7 / 0.5 mile ded. | 25 | 14.6 mph/ 7.0 minutes | 11.0 mph/ 9.4 minutes | 29% / 14.5% faster than current | 12.6 mph / 8.1 minutes / 1.3 minutes savings |
| Midland Avenue | 2.0/ 0 mile ded/ | 25 | 20 mph/ 6.0 minutes | 15 mph/ 8.0 minutes | 0% dedicated / 0% faster than current | 15 mph/ 8.0 minutes / 0 minutes savings |

**per Google map measures of travel time during weekday peak hours, average bus speed typically equals 75% of average auto speeds*

***assumes 5% faster average speed for each 10% increase in dedicated lanes*

## Downtown Transit Center Location Options

*The initial scope of work for this project included analysis of several potential sites for a downtown transit center to facilitate transfers and increase transit usage; the results of that analysis are included below. But near the end of the analysis, based on input from the City of Glenwood Springs and various stakeholders, it was decided that a downtown transit center is not needed. Instead, the focus shifted extension of the BRT corridor to the West Glenwood park and ride facility with opportunities for expansion as needed in coming years to accommodate increasing demand.*

The 2017 *Confluence Redevelopment Plan* identified various development scenarios and potential sites for a downtown transit center as well as shared parking to serve the potential development and support downtown parking demand. Downtown parking is addressed in a separate MOVE report. However, for reference, RFTA currently has a total of 710 park-n-ride spaces in nine facilities, including 50 spaces in the Glenwood Springs 27th Street Park & Ride facility and 94 spaces in the West Glenwood Park & Ride facility (including 17

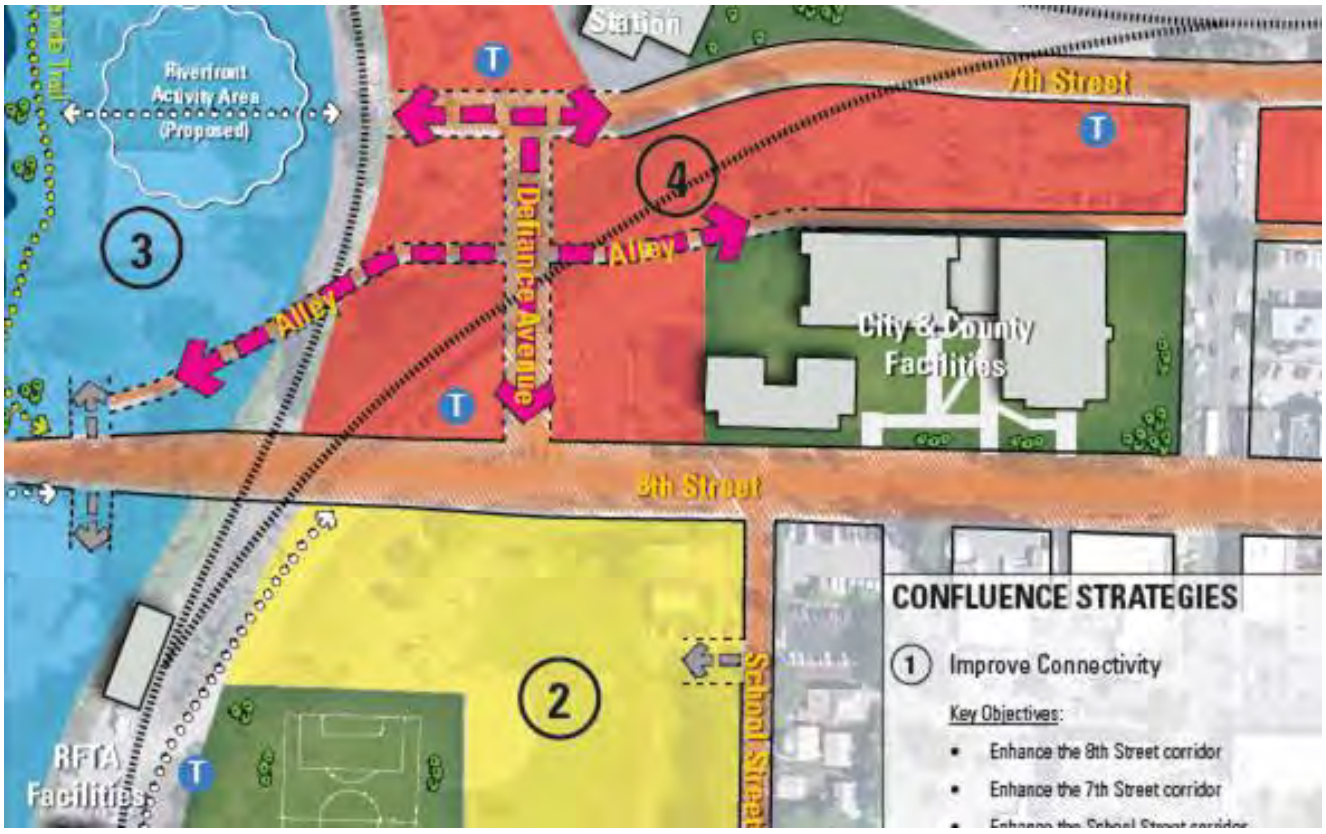
Bustang-only spaces). The 27th Street pnr is planned for expansion with an additional 65-95 spaces and the West Glenwood pnr is planned for expansion with an additional 158 spaces. Both the West Glenwood and 27th Street pnr facilities provide connection/transfer points for the Local Valley, BRT, Ride Glenwood, and Rifle Hogback bus routes.

For purposes of this report, the downtown transit center is not specifically intended to include parking since there is concern that such a facility would attract additional vehicle trips to the area and add to existing traffic congestion. The intent of the downtown transit center is to facilitate transfers and increase transit usage in order to reduce traffic congestion to the extent possible.

The Confluence Area Redevelopment Plan identified four possible locations for a multi-modal transit center within the Confluence area as shown in **Figure 43**, including:

- 7th Street, adjacent to the City's lift station
- Northwest corner of Defiance Street and 8th Street
- 7th Street north of the City and County facilities
- Site by the play fields adjacent to the park and across from the RFTA property

FIGURE 43 - CONFLUENCE AREA REDEVELOPMENT PLAN (TRANSIT CENTER SITE OPTIONS)




The 2017 *6th Street Corridor Master Plan* identified a fifth potential site in the SH 6 area in the North Glenwood redevelopment area. A sixth potential transit center location was identified on the RFTA property south of 8th Street across from the park, specifically for the Rio Grande Corridor BRT extension alignment.

Based on discussions with City and RFTA staff, the following three potential transit center sites were selected as the best options for further evaluation:

- 7th Street north of the City and County facilities as shown in **Figure 44**.
- Rio Grande Corridor alignment on RFTA property south of 8th Street as shown in **Figure 45**.
- SH 6 area as shown in **Figure 46**.

It should be noted that no transit center site was considered for the Midland Avenue alignment due to its distance from the downtown area.

FIGURE 44 - 7TH AND COLORADO TRANSIT CENTER SITE

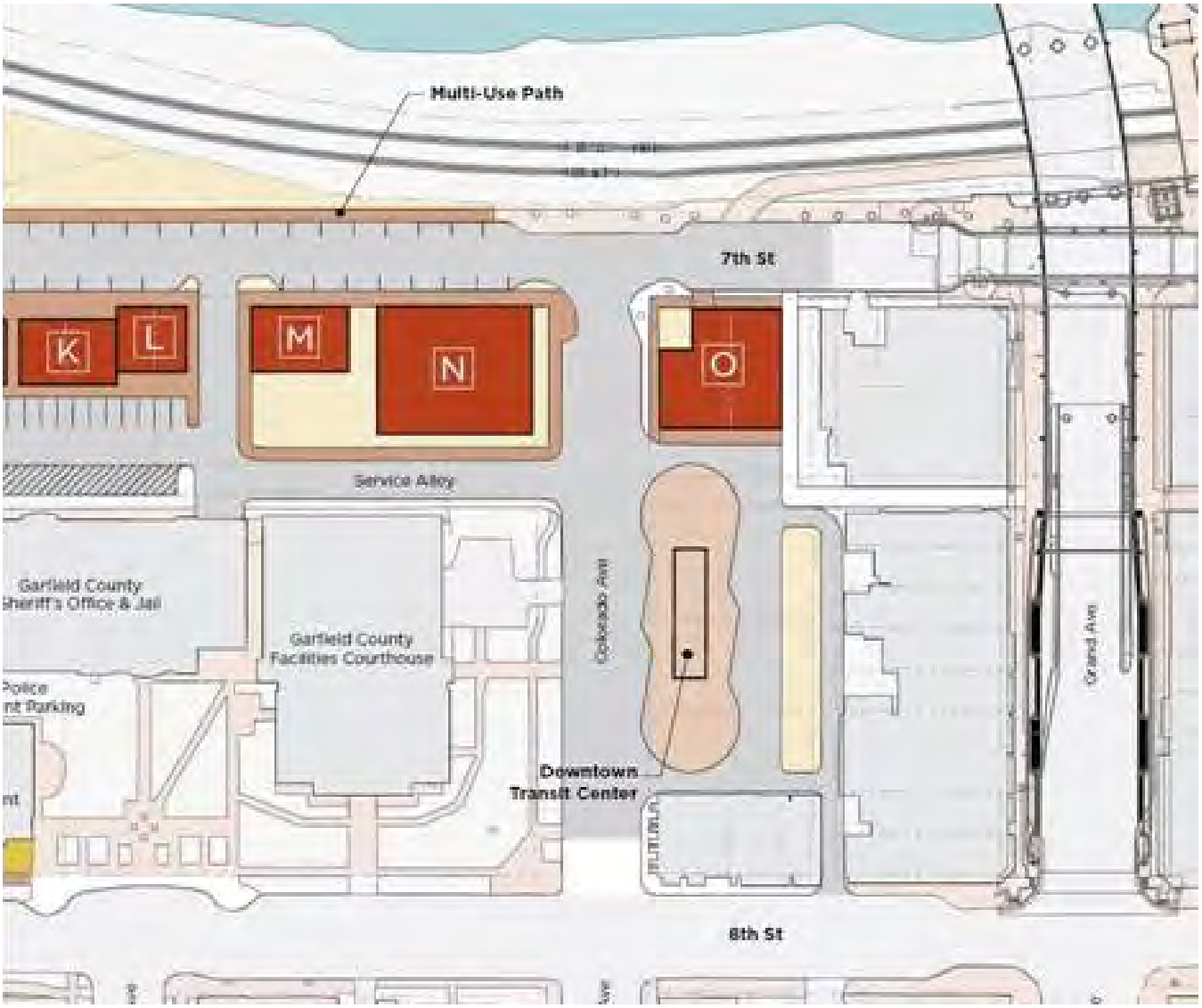


FIGURE 45 - RIO GRANDE CORRIDOR ALIGNMENT SITE (ON RFTA PROPERTY SOUTH OF 8TH STREET)

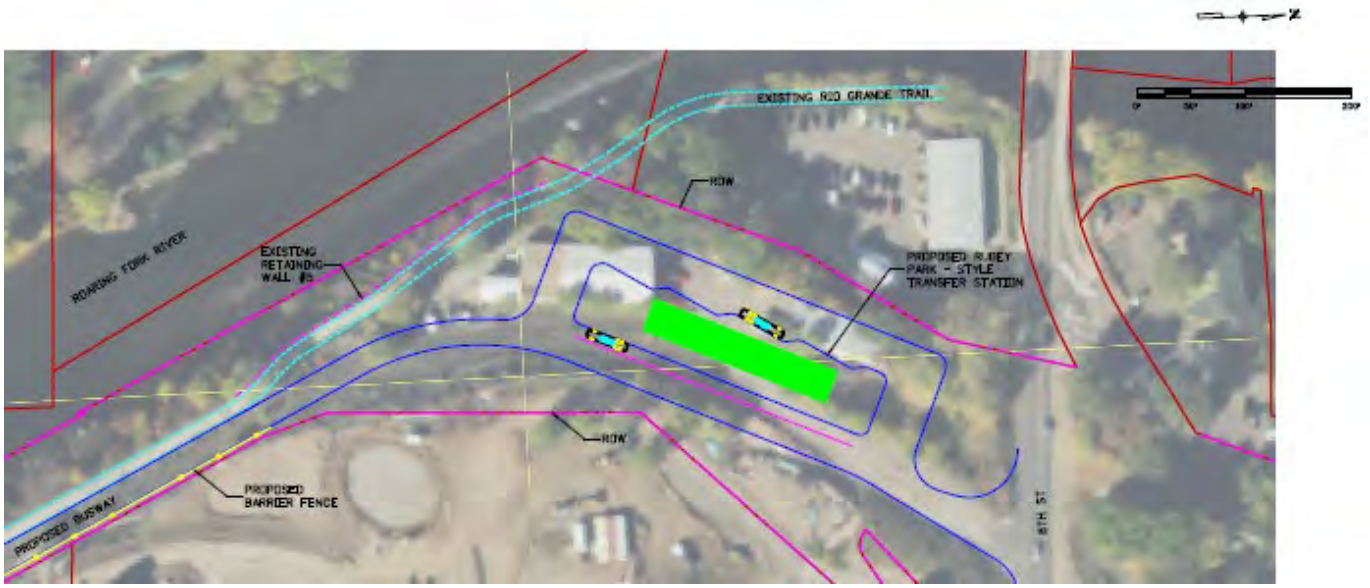



FIGURE 46 - SH 6 AREA PLAN


## Comparison of Downtown Transit Center Options

Several characteristics of the three transit center site options are summarized in **Table 5**. All three sites are assumed to have sufficient land area to allow development of a Rubey Park-style transit center that would be appropriately scaled for the expected level of BRT operations. The RFTA property site would obviously work best with the Rio Grande Corridor BRT alignment option, but it could work with any of the other alignment options as well. That site is ¼-mile from the heart of downtown at 8th and Grand Avenue. The 7th and Colorado site could work well with any of the BRT extension alignment options given its central location and

ease of access. Its proximity to the heart of downtown at 8th Street and Grand Avenue is also a plus. The SH 6 site could work with any of the alignment options but is farthest (1/2-mile) from the heart of downtown at 8th Street and Grand Avenue with poor pedestrian connections other than the new Grand Avenue pedestrian bridge. But with its associated parking structure in the redevelopment plan, the SH 6 site could intercept traffic north of I-70 so it would not add to traffic congestion in the downtown area. Either of the other two sites would work well as transit centers but they do not include parking; patrons driving to either site would park at either the West Glenwood or 27th Street park-n-ride depending on their direction of travel.

In terms of convenient routing between the transit center locations and the West Glenwood park-n-ride as the end-of-line BRT station, the RFTA property site at the Rio Grande and 8th Street is the closest and fastest connection via 8th Street and Midland Avenue, just as the BRT routing currently operates. The 7th/Colorado site would be only slightly farther away. The SH 6 site would be farthest away since the routing via SH 6 to the West Glenwood/I-70 interchange would require some backtracking, but the travel time is as fast as the current 8th/Midland Avenue route due to the higher posted speed limits.

In terms of transit-oriented development and density of development (existing or planned) with access within a ¼-mile of the transit center sites, the 7th/Colorado site ranks highest; the SH 6 site ranks second, and the RFTA property site ranks third. The additional evaluation criteria used to screen the three transit center sites are addressed in the next section.

TABLE 5 - COMPARISON OF DOWNTOWN TRANSIT CENTER OPTIONS

| | RFTA property on Rio Grande south of 8th St. | 7th and Colorado in Confluence area | SH 6 Area |
|---|---|---|---|
| **Pedestrian and Bicycle Accessibility to Heart of Downtown GWS (Grand Ave/8th Street):** One-way distance | 1,200'<br>0.23 mile | 350'<br>0.07 mile | 2,800'<br>0.53 mile |
| **Routing to West Glenwood PNR:** Travel time/distance to West Glenwood PNR | 5 min/1.6 miles | 6 min/1.8 miles | 6 min/2.6 miles |
| **Transit Oriented Location:** Density of businesses and activity centers within ¼-mile walk | Middle | Highest | Middle |
| **Congestion relief for Glenwood Springs south of I-70:** | Fair | Poor | Good |

# Evaluation of Alternatives

This section describes the Level 1 and Level 2 screening criteria used to evaluate the BRT extension options and the downtown transit center location options, along with the screening results. The full set of Level 1 screening criteria is listed below along with their applicability to the two sets of options to be evaluated.

# Level 1 Screening

The full set of Level 1 screening criteria is listed below in **Table 6** along with their applicability to the two sets of options to be evaluated.

TABLE 6 - LEVEL 1 SCREENING CRITERIA

| | Level 1 Screening Criteria | Applicable for BRT extension | Applicable for Transit Centers |
|---|---|---|---|
| 1 | **Improve BRT Travel Time Reliability (8th Street to 27th):** percentage of alignment in dedicated lanes | BRT extensions | N/A |
| 2 | **BRT Travel Time:** One-way transit travel time of the BRT before and after dedicated lanes. Current time / Projected | BRT extensions | N/A |
| 3 | **BRT Travel Time Savings:** One-way transit travel time savings of the BRT based on average speed with proposed dedicated lanes, compared with Grand Avenue with dedicated lanes. | BRT extensions | N/A |
| 4 | **Number of on-street parking spaces displaced** | BRT extensions | N/A |
| 5 | **Community/Environmental Impact** | BRT extensions | N/A |
| 6 | **Pedestrian and Bicycle Accessibility to Heart of Downtown GWS (Grand Ave/8th Street):** One-way distance | N/A | Transit Centers |
| 7 | **Routing to West Glenwood PNR:** Travel time/distance to West Glenwood PNR | N/A | Transit Centers |
| 8 | **Transit Oriented Location:** Density of businesses and activity centers within ¼-mile walk | N/A | Transit Centers |
| 9 | **Congestion relief for downtown Glenwood Springs south of I-70:** attracting fewest cars through downtown | N/A | Transit Centers |

## Level 1 Screening Results for BRT Extension Alignment Options

Results of the Level 1 screening of the BRT extension alignment options are shown in **Table 7**. The quantitative values are shown for each criterion along with the relative scores based on the comparative values among the alternatives. Green shading indicates the best options, yellow indicates the middle options, and red indicates the worst options for each criterion. Similarly, numeric values (3 for best, 1 for worst) are also applied to determine a total score for all the criteria. No weighting of relative importance was applied; all criteria were weighted equally.

TABLE 7 - BRT EXTENSION ALIGNMENT OPTIONS LEVEL 1 SCREENING RESULTS

| Evaluation | Criteria | No Build | Grand Avenue | Rio Grande Corridor | Blake Avenue | Cooper/Colorado One-way Couplet | Pitkin Avenue | Midland Avenue |
|---|---|---|---|---|---|---|---|---|
| 1 | **Improve BRT Travel Time Reliability (8th Street to 27th):** percentage of alignment in dedicated lanes | 1.6 miles in mixed flow (0%) dedicated lanes (1) | 1.6 miles total; 0.4 mile (25%) semi-dedicated lanes* (2) | 1.7 miles total; 100% dedicated lanes (3) | 1.7 miles total; 1.2 miles (70%) dedicated lanes (3) | 1.6 miles total; 0.4 mile (25%) dedicated lanes (2) | 1.7 miles total; 0.5 mile (29%) dedicated lanes (2) | 2 miles in mixed flow, 0% dedicated (1) |
| 2 | **BRT Travel Time:** One-way transit travel time of the BRT before and after dedicated lanes. Current time / Projected | 8.0 / 8.0 (1) | 8.0 / 7.1 (2) | NA / 4.6 (3) | 10.6 / 7.9 (1) | 8.0 / 7.2 (2) | 9.4 / 8.2 (1) | 8.0/8.0 (1) |
| 3 | **BRT Travel Time Savings:** One-way transit travel time savings of the BRT based on average speed with proposed dedicated lanes, compared with Grand Avenue with dedicated lanes. | 0.9 min. slower (1) | 0.9 min. faster than current (2) | 2.5 min. faster (3) | 0.8 min. slower (1) | 0.1 min slower (1) | 1.1 min. slower (1) | .9 min slower (1) |
| 4 | **Number of on-street parking spaces displaced** | 0 (3) | 140 spaces between 8th and 13th (2) | 0 (3) | 278 spaces between 23rd and 8th (1) | 140 spaces on Cooper/Colorado combined between 13th and 8th (2) | 161 spaces between 8th and 14th (2) | 0 (3) |
| 5 | **Community/Environmental Impact** | No Impact (3) | Moderate Impact (downtown community feel) (2) | High Impact (trail) (1) | High Impact (residential parking) (1) | High Impact (residential parking) (1) | High Impact (residential parking) (1) | Moderate Impact (residential street) (2) |
| TOTAL | SCORE | 9 | 10 | 13 | 7 | 8 | 7 | 8 |

**Business access/transit lanes that are semi-dedicated to BRT but also allow right-turning vehicles*

As shown in **Table 5**, the BRT extension alignment options with the worst overall scores are: Blake Avenue, Cooper/Colorado, Pitkin Avenue, and Midland Avenue. The Rio Grande Corridor has the highest overall score and the Grand Avenue alignment has the second highest score; consequently, these two options were advanced to the Level 2 screening. In discussions with the City, RFTA, City Transportation Commission and the Focus Group about the Level 1 screening results, several refinements to the two finalist alignments were suggested for further analysis as described in the Level 2 screening section below.

## Level 1 Screening Results for Transit Center Location Options

Results of the Level 1 screening of the transit center location options are shown in **Table 8** below. No weighting of relative importance was applied; all criteria were weighted equally.

TABLE 8 - TRANSIT CENTER LOCATION OPTIONS LEVEL 1 SCREENING RESULTS

| Evaluation | Criteria | RFTA property on Rio Grande south of 8th St. | 7th and Colorado in Confluence area | SH 6 Area |
|---|---|---|---|---|
| 6 | **Pedestrian and Bicycle Accessibility to Heart of Downtown GWS (Grand Ave/8th Street):** One-way distance | 1,200'<br>0.23 mile<br>(2) | 350'<br>0.07 mile<br>(3) | 2,800'<br>0.53 mile<br>(1) |
| 7 | **Routing to West Glenwood PNR:** Travel time/distance to West Glenwood PNR | 5 min/1.6 miles<br>(3) | 6 min/1.8 miles<br>(2) | 6 min/2.6 miles<br>(1) |
| 8 | **Transit Oriented Location:** Density of businesses and activity centers within ¼-mile walk | Middle<br>(2) | Highest<br>(3) | Middle<br>(2) |
| 9 | **Congestion relief for downtown Glenwood Springs south of I-70:** attracting fewest cars through downtown | Fair<br>(2) | Poor<br>(1) | Good<br>(3) |
| TOTAL SCORE | | 9 | 9 | 7 |

As shown, the SH 6 transit center site has the worst overall score, but it's a slight difference from the other two site scores. The 7th Street/Colorado Avenue transit center site has the highest overall score, the RFTA property transit center site has the second highest score, and the SH 6 location has the third highest score. However, in discussions with the City, RFTA, City Transportation Commission and the Focus Group about the Level 1 screening, there was considerable concern with advancing any of the downtown transit center location options due to the anticipated traffic volume and congestion increases they may cause. Instead, it was decided that an "intercept" transit center at the West Glenwood station/park-n-ride facility would better serve the City by intercepting trips from the west and provide a good end-of-line station for the BRT operations. Transfers between BRT and local or regional buses could occur at West Glenwood or at the intermediate BRT stations identified at 9th and 14th Streets. It was recognized that the West Glenwood location would add bus service hours and O&M costs beyond current levels.

# Level 2 Screening

The Level 2 screening process was intended to evaluate the alternative BRT alignment options that passed the Level 1 screening, namely:

- Grand Avenue BRT extension
- Rio Grande Corridor BRT extension

The No Build condition of no BRT extension was also carried into the Level 2 screening in order to compare the final two BRT extension alignment alternatives with continuation of existing transit services as they currently operate.

In addition, during discussions with the Focus Group, a hybrid BRT extension alignment was suggested for evaluation. Specifically, the hybrid alignment option follows Grand Ave from the 27th Street Station to 14th Street to the Rio Grande Corridor to 8th Street as shown on the map on **Figure 47**. The intent is to reduce the length of the Rio Grande Corridor that is impacted while gaining the travel time benefits of using at least a portion of that excusive ROW and eliminating the impacts of removing on-street parking on Grand Avenue between 8th and 13th Streets.

The City and RFTA also decided that a downtown transit center was not desirable, and that inline BRT stations would better serve the community. Consequently, they requested evaluation of BRT connections to the West Glenwood Springs park-and-ride to facilitate bus connections via 8th/Midland and via US 6 as shown in the map below.

FIGURE 47 - HYBRID BRT EXTENSION ALIGNMENT ON GRAND AVENUE AND RIO GRANDE CORRIDOR

## Level 2 Screening Alternatives for Evaluation

Since the individual alternatives had been evaluated in the Level 1 screening, the Level 2 screening was applied to each of the alternative BRT alignment options that survived the Level 1 screening, plus the new hybrid alignment option and the peak hour only options, to determine which combination would provide the greatest overall benefits, including:

- No BRT extension
- Grand Avenue BRT extension BAT lanes with 14th and 9th Street stations; 24 hours per day
- Grand Avenue BRT extension BAT lanes with 14th and 9th Street stations; two AM and two PM peak hours only
- Grand Avenue BRT extension BAT lanes with 14th and 9th Street stations; peak hour/peak direction lane only (AM southbound / PM northbound), two AM and two PM peak hours only
- Rio Grande Corridor BRT extension; two exclusive lanes with 14th and 9th Street stations; 24 hours per day
- Rio Grande Corridor BRT extension with one exclusive lane with 14th and 9th Street stations; peak hour/peak direction lane only (AM southbound / PM northbound); two AM and two PM peak hours only
- Hybrid-Grand Ave to Rio Grande Corridor via 14th Street; 24 hours with 14th and 9th Street stations
- Hybrid-Grand Ave to Rio Grande Corridor via 14th Street; two AM and two PM peak hours only with 14th and 9th Street stations

The BRT extension alignment options are shown on the maps on **Figures 48 and 49**. There are three routing options being shown to/from the West Glenwood Springs Park-n-Ride, via 8th Street and Midland Avenue or via the Grand Avenue Bridge and I-70. Current travel times are very similar for these three routes and will vary slightly from the results shown below for two of the routes depending on the traffic signals. Further analysis will be needed for the eventual routing to/from the West Glenwood Springs Park-n-Ride once a BRT extension is determined.

TABLE 9 - TRAVEL TIMES TO/FROM GLENWOOD SPRINGS PARK-N-RIDE AND 7TH STREET/GRAND AVENUE (9/9/2020, MIDDAY)

| | Route: 8th and Midland Route | Route: Grand Avenue Bridge and I-70 Route |
|---|---|---|
| 7th Street and Grand Avenue to West Glenwood PNR | 5 min 10 sec | 4 min 55 sec |
| West Glenwood PNR to 7th Street and Grand Avenue | 4 min 59 sec | 5 min 15 sec |

FIGURE 48 – GRAND AVENUE CORRIDOR ALIGNMENT

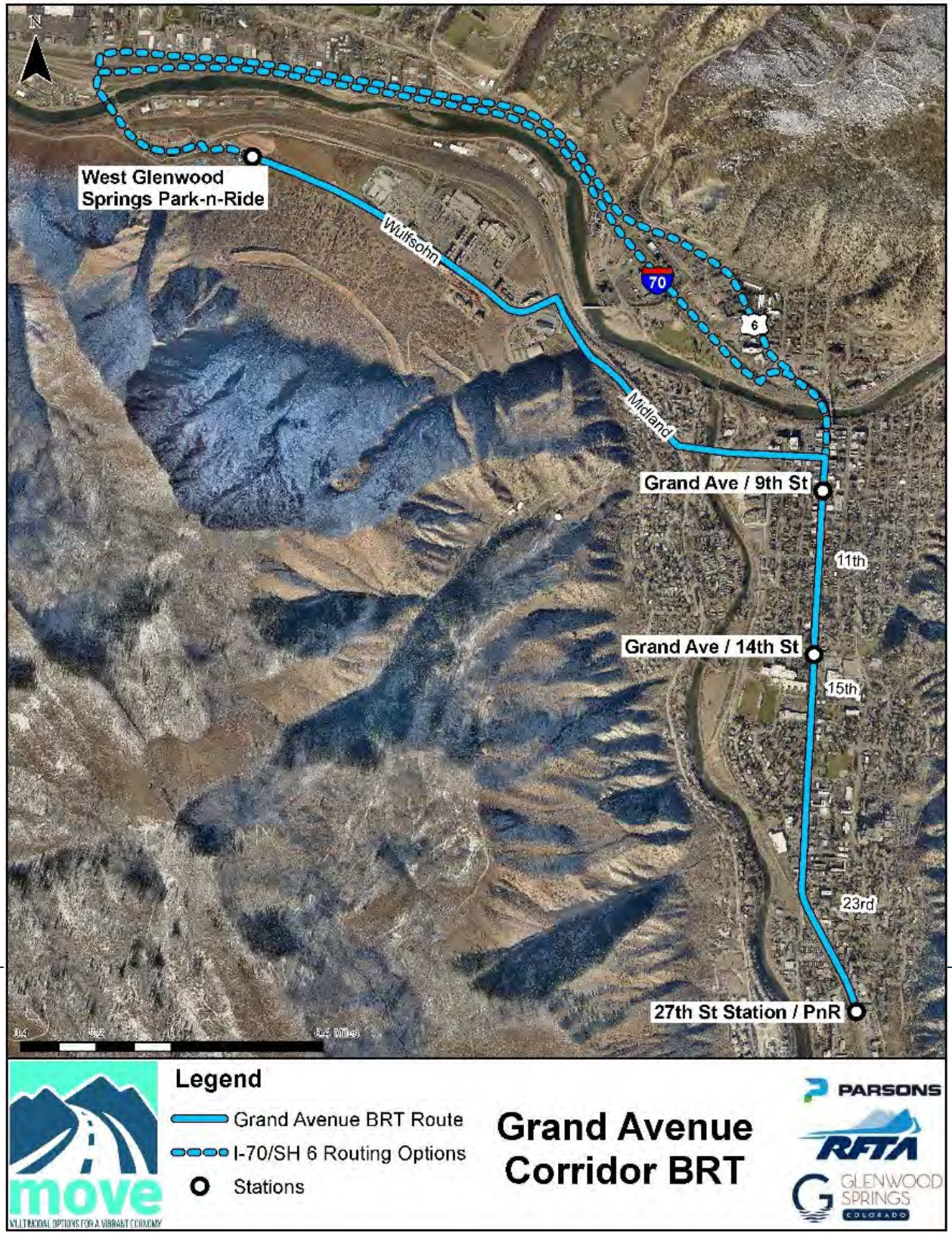


FIGURE 49 – RIO GRANDE CORRIDOR ALIGNMENT

## Grand Avenue/Rio Grande Alignment BRT Extension Renderings

To assist the evaluation of the BRT extension options, Parsons prepared exhibits and renderings to illustrate how the BRT lanes might look on Grand Avenue (**Figures 50 through 53**) and the Rio Grande Corridor (**Figures 54 through 59**).

FIGURE 50 - GRAND AVENUE SEMI-DEDICATED BRT LANES PLAN VIEW

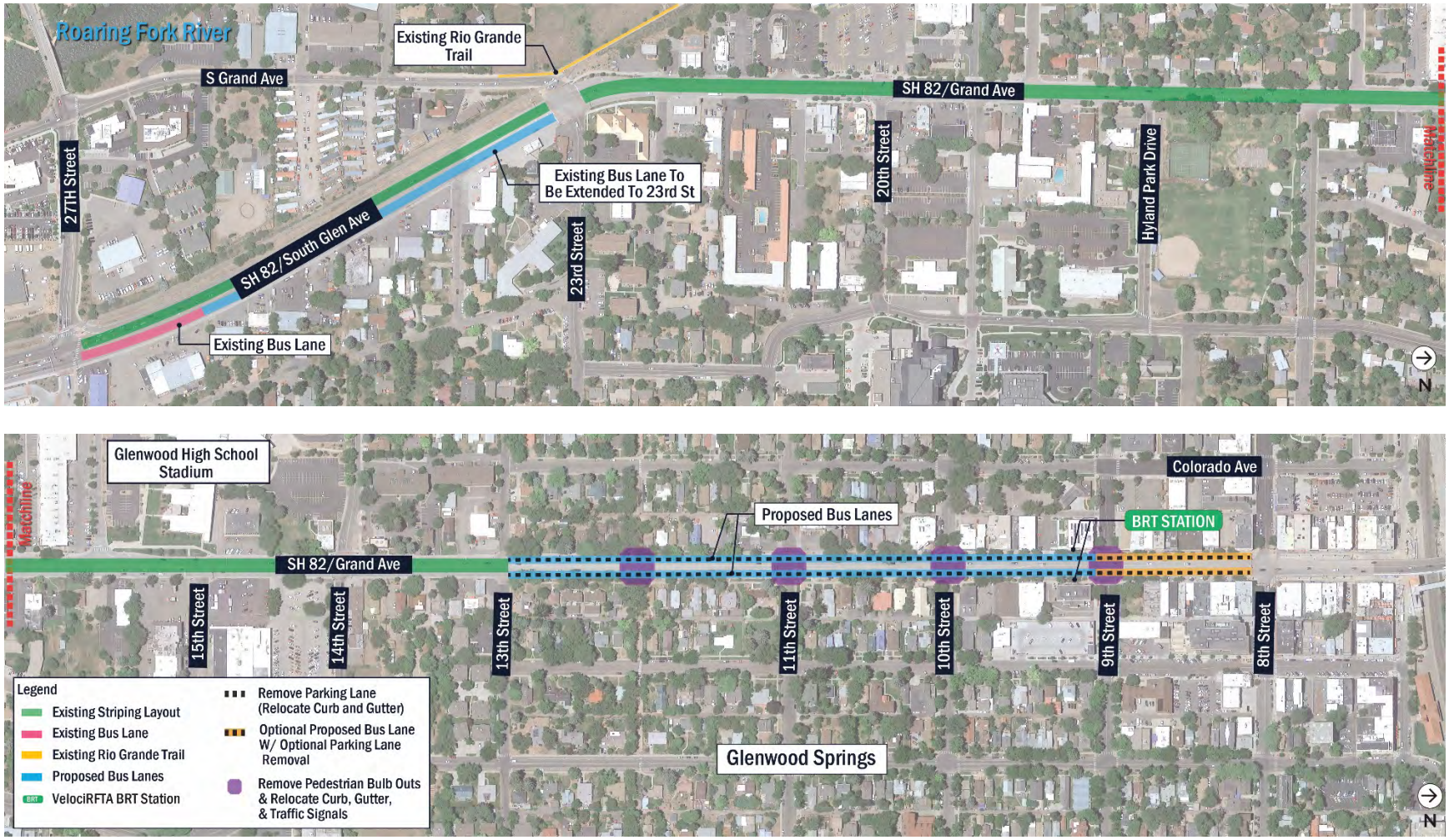


FIGURE 51 - GRAND AVENUE SEMI-DEDICATED BRT LANES THAT ALLOW RIGHT-TURNING VEHICLES

FIGURE 52 - RENDERING OF EXISTING GRAND AVENUE

FIGURE 53 - RENDERING OF GRAND AVENUE SEMI-DEDICATED BRT LANES


*To accommodate wider lanes, the curb will recede by two feet resulting in removal of mature trees and bulbouts*

FIGURE 54 - RIO GRANDE BRT LANES AND TRAIL: MINIMAL CONSTRUCTION OPTIONS PLAN VIEW

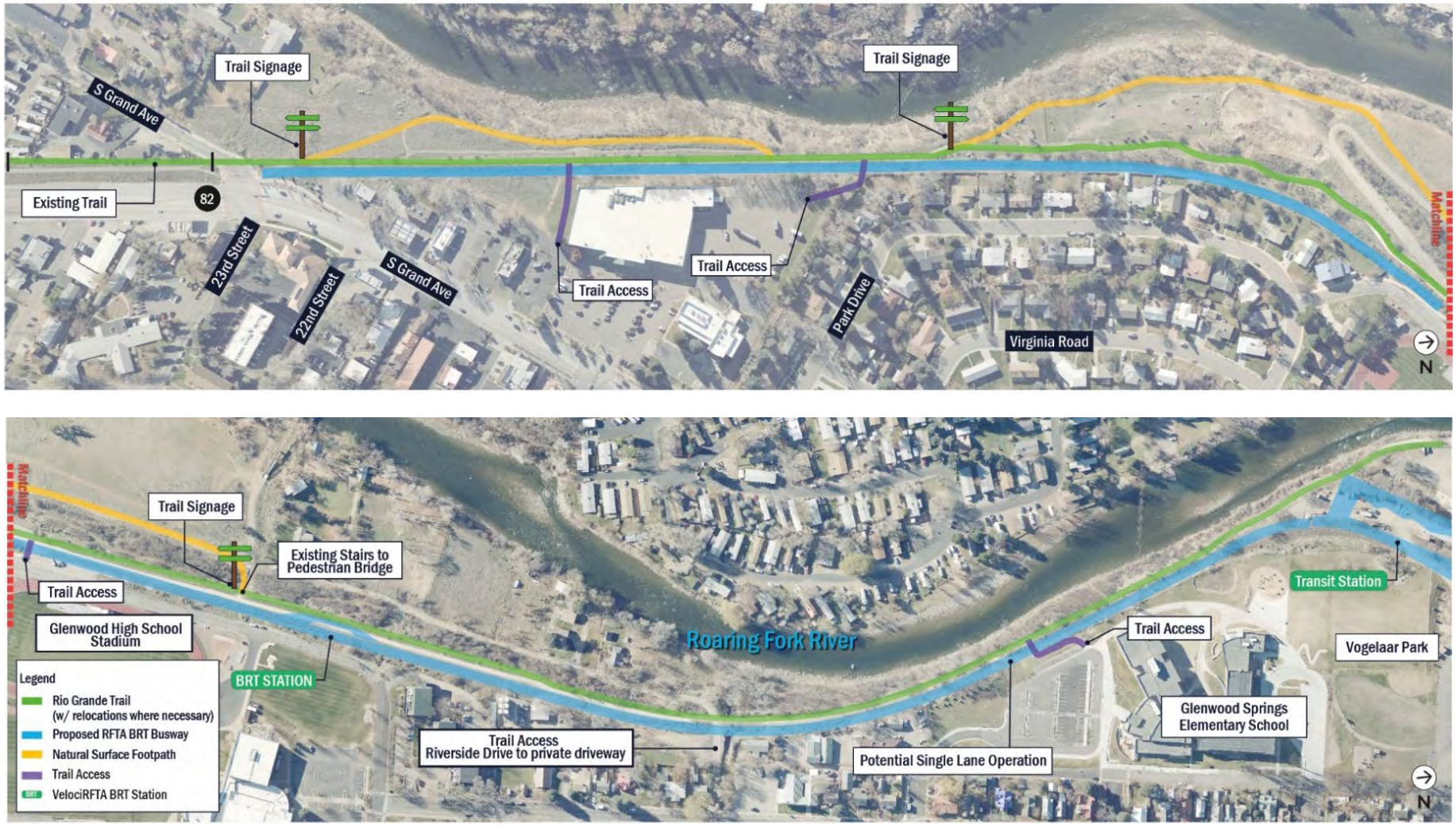


FIGURE 55 - RIO GRANDE CORRIDOR BRT: MINIMAL CONSTRUCTION OPTIONS (VIEWS FROM THE RIO GRANDE TRAIL)

FIGURE 56 - RIO GRANDE CORRIDOR BRT LANES AND TRAIL: VERTICAL SEPARATION OPTIONS PLAN VIEW

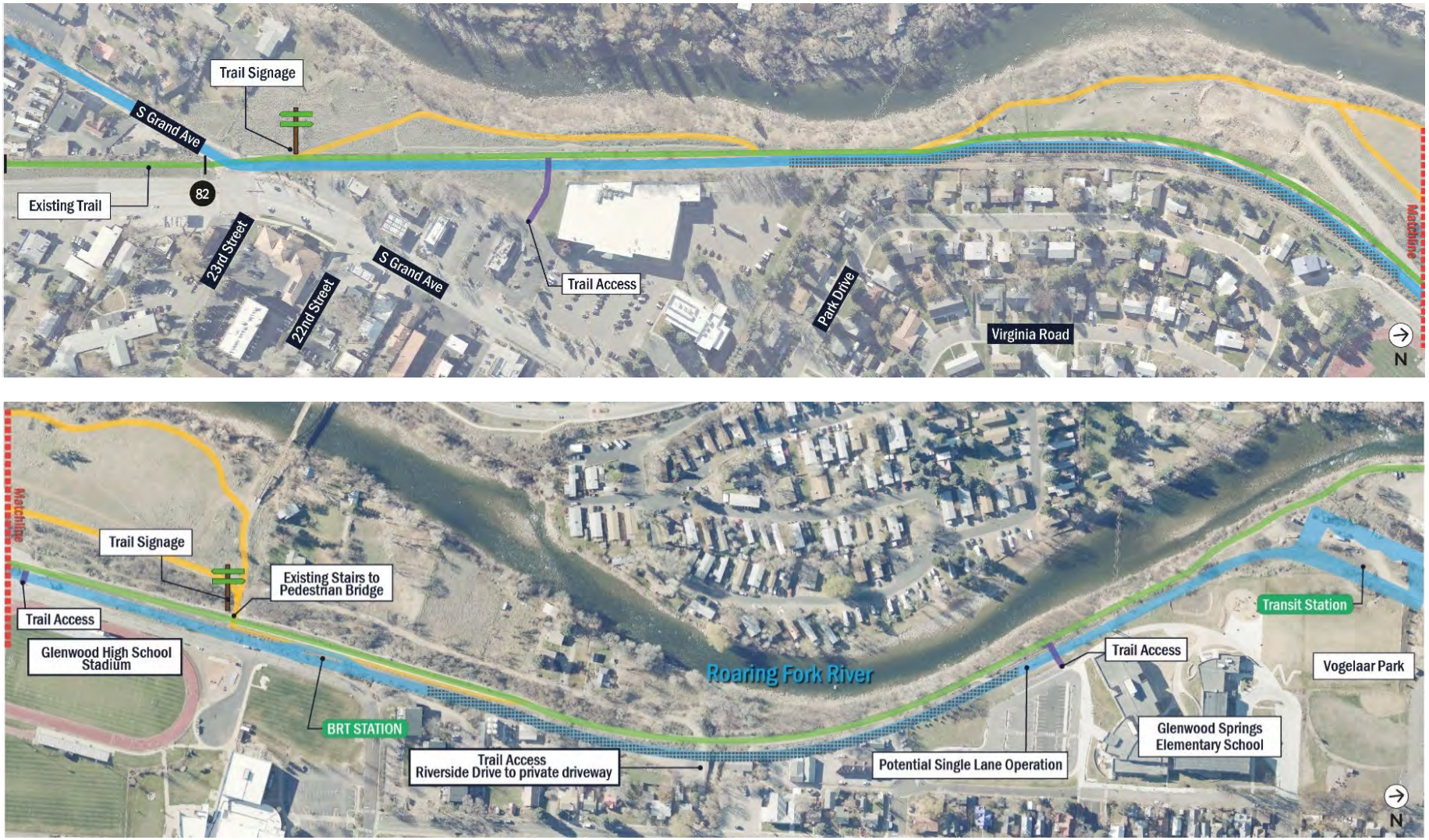
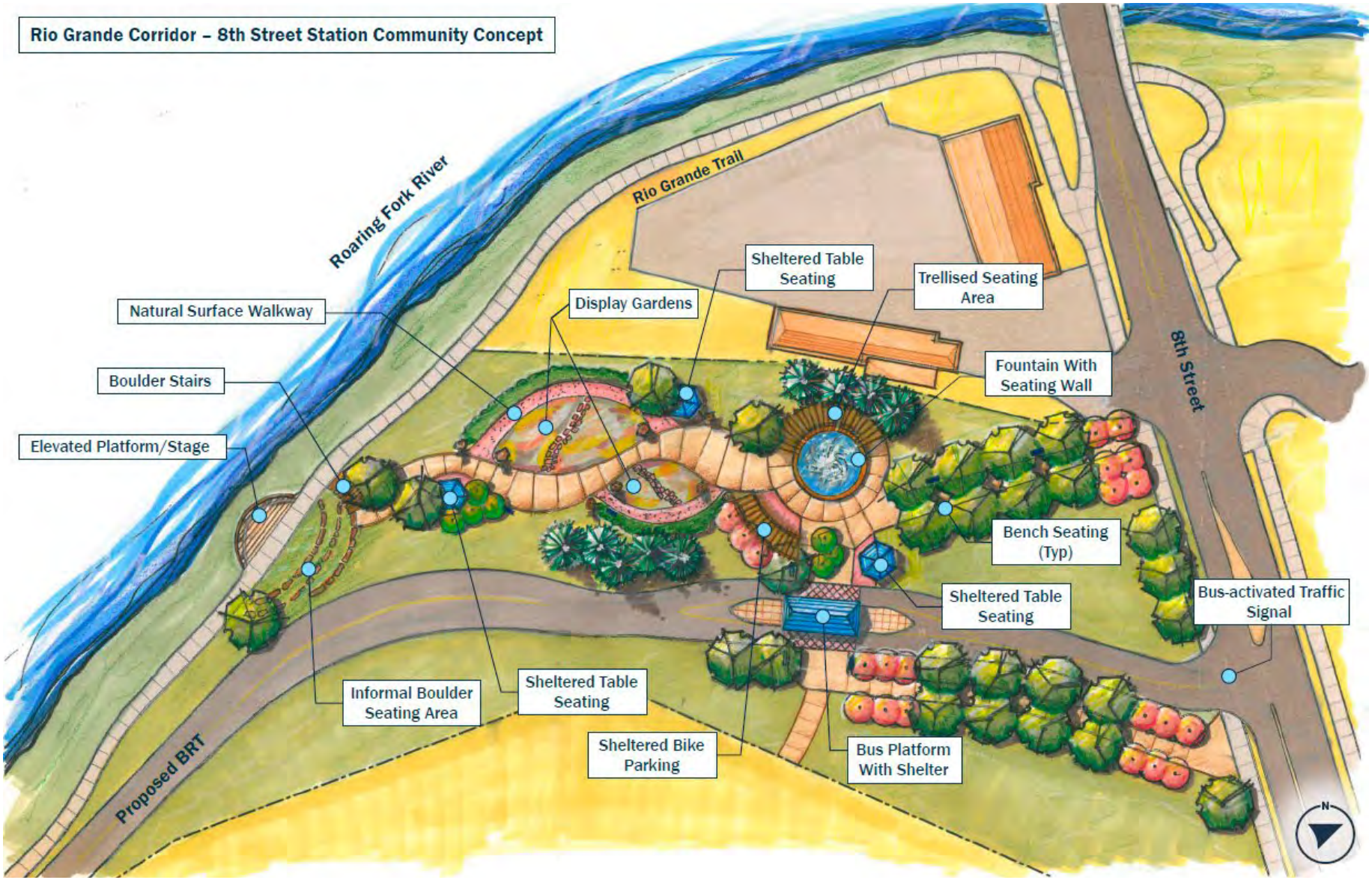


FIGURE 57 - RIO GRANDE CORRIDOR BRT EXISTING

FIGURE 58 - RIO GRANDE CORRIDOR BRT RENDERING

FIGURE 59 - RIO GRANDE CORRIDOR: 8TH STREET STATION COMMUNITY CONCEPT



## Level 2 Screening Criteria

The Level 2 screening criteria are listed in **Table 10.**

TABLE 10 - LEVEL 2 SCREENING CRITERIA

| | Level 2 Evaluation Criteria | |
|---|---|---|
| Transit Performance | 1 | **BRT Travel Time:** One-way transit travel time of the BRT from 27th Street PNR to 8th Street based on posted speeds and # of stops. (in minutes) |
| | 2 | **BRT Travel Time:** One-way transit travel time of the BRT from 27th Street PNR to West Glenwood PNR based on posted speeds and # of stops. (in minutes) |
| | 3 | **Improve BRT Travel Time Reliability (27th Street to 8th Street):** percentage of alignment in dedicated lanes |
| Transit Service Hours | 4 | **BRT Annual Service Hours:** Calculated BRT service hours from 27th to 8th Street. |
| | 5 | **BRT Annual Service Hours:** Calculated BRT service hours from 27th to West Glenwood pnr. |
| Costs | 6 | **O&M Cost:** BRT Estimated operations and maintenance costs for extended service to 8th Street. |
| | 7 | **O&M Cost:** BRT Estimated operations and maintenance costs for service to West Glenwood PNR. |
| | 8 | **Capital Cost:** Estimated capital cost for basic improvements (conceptual level) |
| Automobile Travel Time Improvement | 9 | **Auto Travel Time Improvements on Grand Ave:** Through traffic improvements due to Transit Signal Priority and reduced parallel parking maneuvers/conflicts |
| Multimodal Ease and Safety | 10 | **Ped/Bike Ability to Cross BRT Alignment:** number of crossing points |
| | 11 | **Multimodal-BRT conflict points:** number of locations where cyclists and pedestrians cross BRT route |
| | 12 | **Buffer from BRT traffic:** physical separation from BRT route (average buffer width) |
| Preliminary Business Parking Displacements | 13 | **Number of on-street parking spaces displaced:** number of spaces |
| Impacts on Community Amenities (trail) | 14 | **Impacts to Rio Grande Multimodal Trail (experience of user, noise, visual)** |
| Construction Challenges/Duration | 15 | **Construction Impacts (including maintenance of traffic and trail impacts/years for construction)** |
| Ridership | 16 | **Expected BRT Ridership** (General estimate based on stations and access to Downtown as well as BRT travel time and reliability); see separate technical memorandum |

The intent of the Level 2 screening is to determine the best technical recommendation. Subsequently, the City and RFTA will seek input from the Transportation Commission, the Focus Group, and the community-at-large to understand their preferences and/or level of support for the recommended improvements as they select a preferred BRT alignment for implementation.

As shown in Table 8, several evaluation criteria beyond those used in the Level 1 screening were added to the Level 2 screening to provide a finer level and more detailed comparison of the final alternatives and their combinations. The criteria include several transit performance measures, conceptual level capital and incremental O&M cost increases, and several traffic, parking, and environmental impact criteria. The following clarifications should be noted:

- Travel times are average peak period one-way travel times
- Annual service hours are incremental service hours over RFTA's "Baseline." For purposes of this evaluation, we defined RFTA's baseline as providing their (non-COVID) summer schedule year-round, retaining the split of buses extended to West Glenwood PNR (40%). Our incremental numbers are based on either terminating all trips at the transit center or terminating all trips at West Glenwood PNR. We did not attempt to improve peak service by 10-15% for purposes of this exercise as it leads to a strange headway, but it's a refinement that can be added in manually down the road if needed. O&M costs are expressed as incremental annual O&M costs over the BRT "Baseline," parallel with our method for determining incremental annual service hours. We used RFTA's cost allocation model provided as the basis for estimating costs, since RFTA costs out their regular BRT service using this model. It's worth pointing out BRT alternatives could include some marginal additional costs for station maintenance and for the Rio Grande corridor alignment maintenance since it is not a city street; these costs are not included in the O&M cost estimate.

  Ridership estimates are based on a travel time sensitivity model and documented in a separate technical memorandum. It concludes that the Grand Avenue alignment would generate ridership approximately 3% higher than the No Build scenario, but that the Rio Grande Corridor alignment would generate ridership approximately 12% higher than the No Build scenario.

## Level 2 Screening Results

The Alternative BRT Extension options were evaluated with the Level 2 screening process evaluation criteria shown above in Table 8 and the results are shown below in Table 8. The quantitative values are shown for each criterion along with the relative scores based on the comparative values among the alternatives. Green shading indicates the best options, yellow indicates the middle options, and red indicates the worst options for each criterion. Similarly, numeric values (3 for best, 1 for worst) are also applied to determine a total score for all the criteria. No weighting of relative importance was applied; all criteria were weighted equally.

TABLE 11 - BRT EXTENSION ALIGNMENT OPTIONS LEVEL 2 SCREENING RESULTS

| | | | BASIC ALTERNATIVE BRT ALIGNMENTS AFTER LEVEL 1 SCREENING | | | REFINED ALTERNATIVE BRT ALIGNMENTS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | EVALUATION CRITERIA | No Build: Existing Mixed Flow BRT service with 14th Street and 8th Street stops | Grand Avenue BAT Lanes 13th to 8th (with 2 stops); 24 hours | Rio Grande Corridor BRT Lanes 27th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave to North RGC at 14th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave 27th-14th and RGC 14th to 8th peak hours only | Grand Ave: BAT lanes, both directions, peak hours only (7:30 - 8:30 AM and 4:30-5:30 PM) | Grand Ave: BAT lane peak direction only (AM SB / PM NB); peak hours only | Rio Grande Corridor: 2 exclusive lanes peak hours only; minimal construction option |
| Transit Performance | 1 | **BRT Travel Time:** One-way transit travel time of the BRT from 27th Street PnR to Downtown based on posted speeds and # of stops. | 8.46 | 7.99 | 5.83 | 6.84 | 6.84 | 7.99 | 7.99 | 5.83 |
| | 2 | **BRT Travel Time:** One-way transit travel time of the BRT from 27th Street PnR to West Glenwood PnR based on posted speeds and # of stops. | 13.41 | 12.92 | 11.17 | 12.17 | 12.17 | 12.92 | 12.92 | 11.17 |
| | 3 | **Improve BRT Travel Time Reliability (27th Street to Downtown):** percentage of alignment in dedicated lanes | 1.6 miles; 0% dedicated | 1.6 miles; 0.4 miles dedicated (25%) | 1.7 miles; all dedicated (100%) | 1.8 miles; 0.6 miles dedicated (33%) | 1.8 miles; 0.6 miles dedicated (33%) | 1.6 miles; 0.4 miles dedicated (25%) | 1.6 miles; 0.4 miles dedicated (25%) | 1.7 miles; all dedicated (100%) |
| Transit Service Hours | 4 | **BRT Annual Service Hours:** Calculated BRT service hours per alternative. (27th Street PnR to Downtown) (incremental service hours compared to RFTA Baseline. Baseline assumes summer schedule adopted year-round and 40% of BRT trips extending to West Glenwood PnR.) | 6,954 | 6,954 | 3,454 | 5,204 | 5,204 | 6,954 | 6,954 | 3,454 |
| Transit Service Hours | 5 | **BRT Annual Service Hours:** Calculated BRT service hours per alternative. (27th Street PnR to West Glenwood PnR) (incremental service hours compared to RFTA Baseline. Baseline assumes summer schedule adopted year-round and 40% of BRT trips extending to West Glenwood PnR.) | 15,654 | 8,754 | 4,348 | 6,551 | 6,551 | 8,754 | 8,754 | 4,348 |
| Costs | 6 | **Incremental Annual O&M Cost:** BRT Estimated operations and maintenance costs (27th Street PnR to Downtown) (estimated using RFTA Cost Allocation model; does not include BRT-specific features such as additional maintenance at BRT stations and ROW maintenance likely required for Rio Grande alternative) | $321,000 | $321,000 | $174,000 | $327,000 | $327,000 | $321,000 | $321,000 | $174,000 |

| | | EVALUATION CRITERIA | BASIC ALTERNATIVE BRT ALIGNMENTS AFTER LEVEL 1 SCREENING | | | REFINED ALTERNATIVE BRT ALIGNMENTS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | No Build: Existing Mixed Flow BRT service with 14th Street and 8th Street stops | Grand Avenue BAT Lanes 13th to 8th (with 2 stops); 24 hours | Rio Grande Corridor BRT Lanes 27th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave to North RGC at 14th to 8th (with 2 stops); 24 hours | Hybrid: Grand Ave 27th-14th and RGC 14th to 8th peak hours only | Grand Ave: BAT lanes, both directions, peak hours only (7:30 - 8:30 AM and 4:30-5:30 PM) | Grand Ave: BAT lane peak direction only (AM SB / PM NB); peak hours only | Rio Grande Corridor: 2 exclusive lanes peak hours only; minimal construction option |
| | *7* | **Incremental Annual O&M Cost:** BRT Estimated operations and maintenance costs (27th Street PnR to West Glenwood PnR) (estimated using RFTA Cost Allocation model; does not include BRT-specific features such as additional maintenance at BRT stations and ROW maintenance likely required for Rio Grande alternative) | $1,128,813 | $862,000 | $568,000 | $582,000 | $582,000 | $862,000 | $862,000 | $568,000 |
| | *8* | **Capital Cost:** Conceptual level capital cost (separate memo) | 0 | $3.5M | $18M-$31M | $12M | $12M | $3.5M | $3.5M | $18M-$31M |
| **Automobile Impacts** | *9* | **Auto Travel Time Improvements on Grand Ave:** Through traffic improvements due to Transit Signal Priority and reduced parallel parking conflicts | No improvement | Slight improvement in traffic movement | No improvement | No improvement | No improvement | Minimal improvement in traffic movement | Minimal improvement in traffic movement | No improvement |
| | *10* | **Ped/Bike Ability to Cross BRT Alignment** | 15 | 15 | 4 | 14 | 14 | 15 | 15 | 4 |
| | *11* | **Multimodal-BRT conflict points:** number of locations where cyclists and pedestrians cross BRT route | 15 | 15 | 4 | 14 | 14 | 15 | 15 | 4 |
| | *12* | **Buffer from BRT traffic:** physical separation from BRT route (average buffer width) | 4.3' | 2' | 4.1' | 2.3' | 2.3' | 2' | 2' | 4.1' |
| **Preliminary Business Parking Displacements** | *13* | **Number of on-street parking spaces displaced** | 0 | 140 spaces between 8th and 13th | 0 | 0 | 0 | 140 spaces between 8th and 13th during peak hours | 70 spaces between 8th and 13th during peak hours | 0 |
| **Impacts on Community Amenities (trail)** | *14* | **Impacts to Rio Grande Multimodal Trail (experience of user, noise, visual)** | No Impacts | No Impacts | High Impacts | Moderate Impacts | Moderate Impacts | No Impacts | No Impacts | High Impacts |
| **Construction Challenges/Duration** | *15* | **Construction Impacts (including maintenance of traffic and trail impacts)/years for construction** | No Impacts | No Impacts | High Impacts | Moderate Impacts | Moderate Impacts | No Impacts | No Impacts | High Impacts |
| **Ridership (see separate memo)** | *16* | **Expected BRT Ridership** (General estimate based on stations and access to Downtown as well as BRT travel time and reliability) | 1 | 2 | 3 | 3 | 3 | 2 | 2 | 2 |
| | | **TOTAL SCORE** | 30 | 34 | 38 | 34 | 34 | 34 | 35 | 37 |
| | | | No Build | Grand Ave | Rio Grande | Rio Hybrid | Rio Hybrid Peak | Grand 2 lanes peak | Grand 1 lane peak | Rio Peak |
| | | **Scoring: Red=1, Yellow=2, Green=3 with higher total scores representing best alternatives** | | | | | | | | |

## Screening Results Summary

The intent of the alternatives analysis is to provide an unbiased evaluation of the various alignment options for the BRT extension from the 27th Street station/PnR to downtown Glenwood Springs and a technical recommendation. The Level 1 screening reduced the number of viable BRT extension alignment options and added several variations on the basic alignments. The Level 2 screening, with a finer grain evaluation using three times as many criteria as Level 1, draws the following conclusion:

- With equal weighting of all criteria, either the Grand Avenue or the Rio Grande Corridor alignment would provide a good option for the BRT extension.
- However, despite its higher construction cost, the Rio Grande Corridor would provide significantly more benefits in terms of better travel time and reliability, lower service hours and O&M costs, and higher ridership.
- Extending the BRT service to the West Glenwood Springs park-n-ride will allow future extensions to other communities along the I-70 corridor as needed.

With input from various stakeholders, RFTA and the City will determine the preferred alternative to carry forward to the next steps of refinement and implementation.


# Appendix H – Conceptual Design, Cost Estimates, and BRT Implementation

move


# GLENWOOD SPRINGS MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY (MOVE)

## Conceptual Design, Cost Estimates, and BRT Implementation

May 2021

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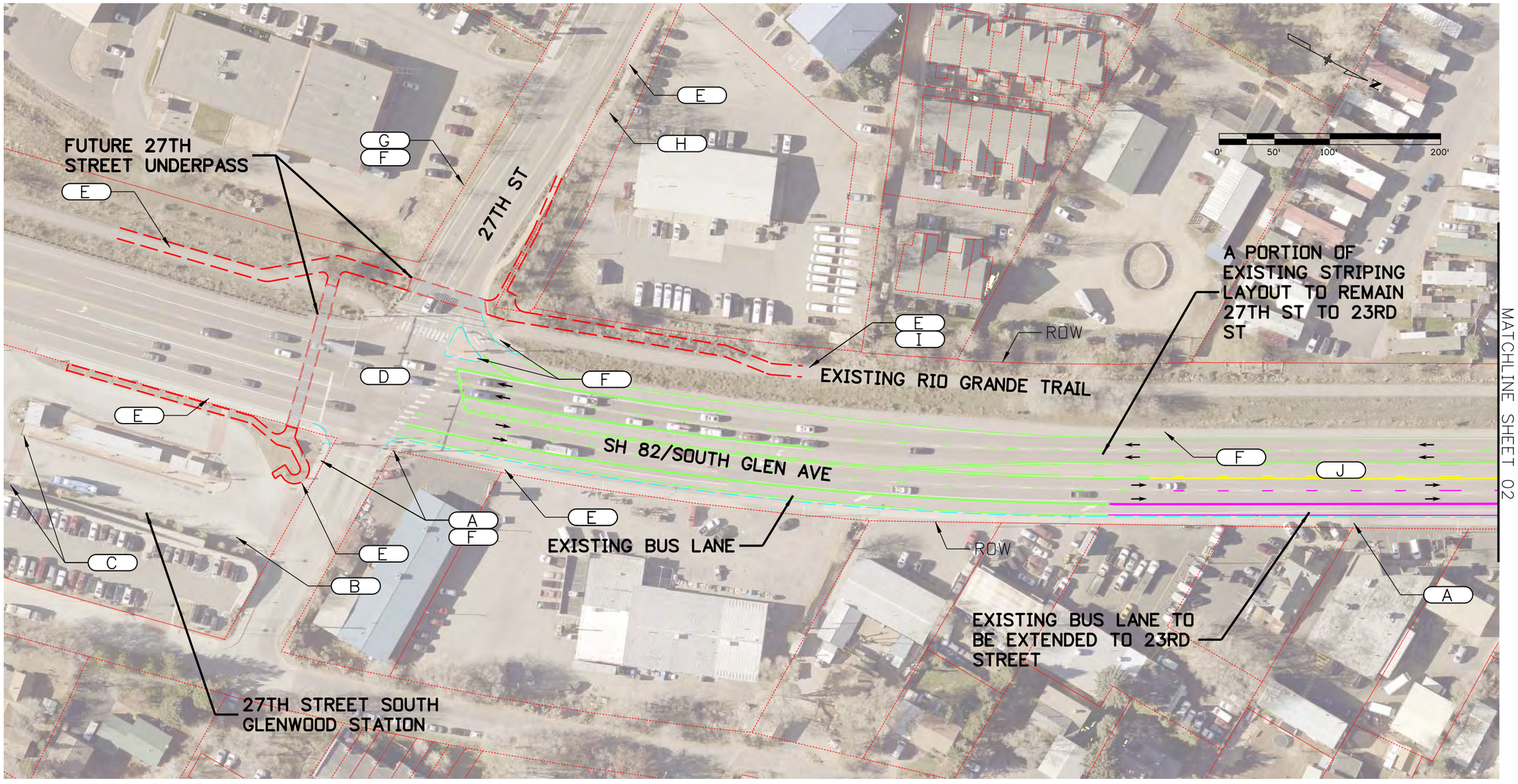
GLENWOOD SPRINGS COLORADO

RFTA

# TABLE OF CONTENTS

# Conceptual Design

The conceptual designs for both the Rio Grande Corridor BRT and Grand Ave BRT recommendations are included on the following pages. Following the conceptual designs for the BRT alignment options is a concept for an in-line station in West Glenwood on the south side of Wulfsohn Road.




## CORRIDOR ELEMENTS

- (A) IMPROVE SIDEWALKS ALONG GRAND AVENUE TO BE ADA COMPLIANT AND CONTINUOUS
- (B) PROVIDE A FORMAL "KISS & RIDE" AREA IN THE VICINITY OF THE TRANSIT STATION
- (C) IMPROVE CONNECTION BETWEEN BUS STATION AND OVERFLOW PARKING LOTS
- (D) PROVIDE TRANSIT SIGNAL PRIORTY TECHNOLOGY TO TRAFFIC SIGNAL
- (E) ADD WAYFINDING SIGNS TO DIRECT TRAIL USERS TO 27TH STREET RFTA STATION, RIO GRANDE & ATKINSON TRAIL
- (F) ADD SIGNS AT INTERSECTIONS TO WARN VEHICLES TO LOOK FOR BOTH PEDESTRIANS AND CYCLISTS CROSSING
- (G) PROVIDE SIDEWALK CONNECTION FROM SOUTH GRAND AVENUE TO SOUTH GLEN AVENUE
- (H) PROVIDE 10 FEET WIDE SIDEWALK TO ACCOMODATE BOTH PEDERSTRAINS AND BICYCLES
- (J) INCORPORATE THE RIGHT-IN / RIGHT-OUT AND ACCESS CLOSURES ON GRAND AVENUE THAT ARE IN THE SH-82 ACCESS CONTROL PLAN

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File Name: GA-RD_SHEET01.dgn
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GRAND AVENUE BRT
ALIGNMENT ALTERNATIVES

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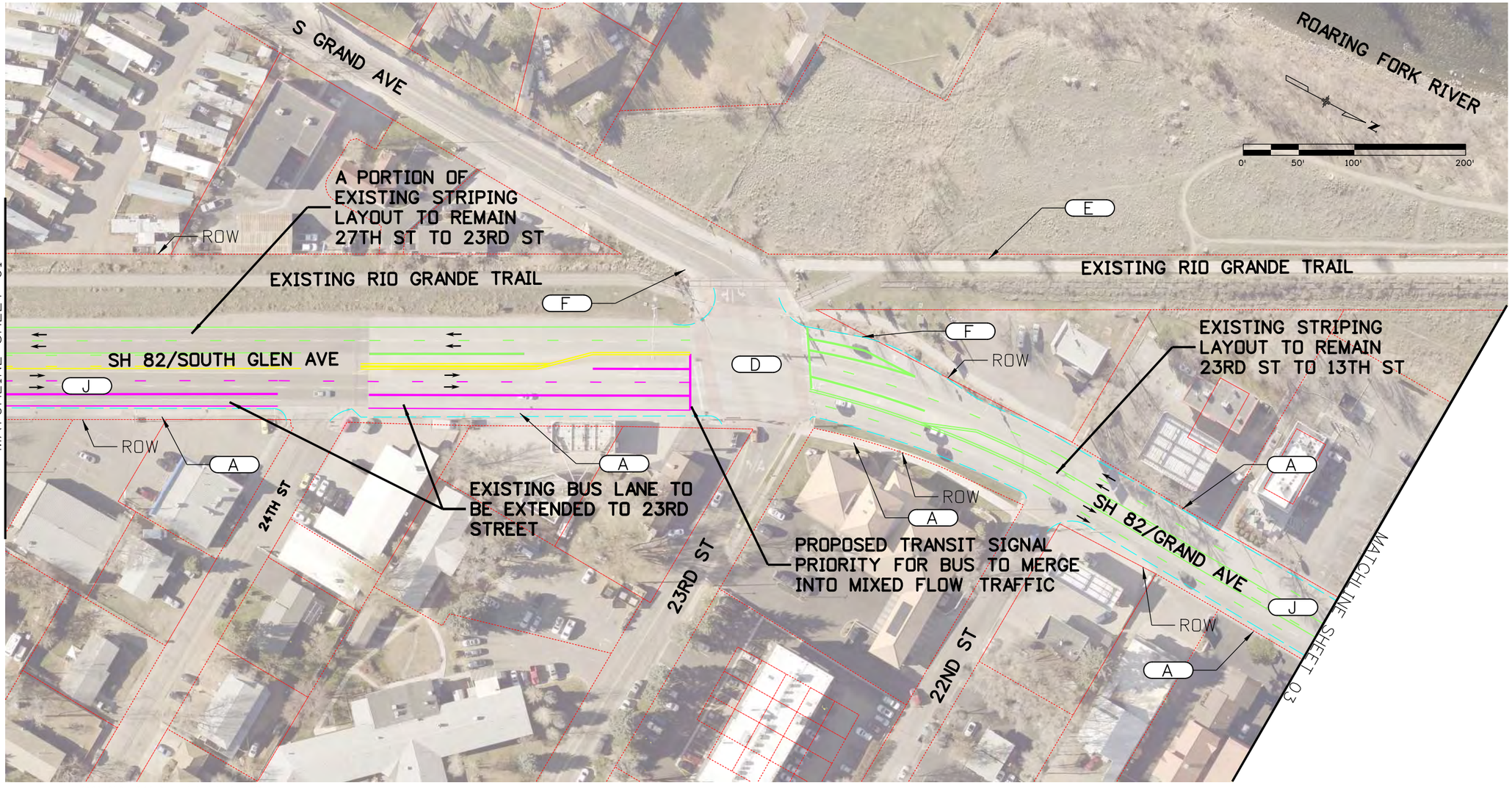
Detailer:
Subset:
Structure Numbers
Subset Sheets: of

Project No./Code

Sheet Number 01




## CORRIDOR ELEMENTS

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- (F) ADD SIGNS AT INTERSECTIONS TO WARN VEHICLES TO LOOK FOR BOTH PEDESTRIANS AND CYCLISTS CROSSING
- (J) INCORPORATE THE RIGHT-IN / RIGHT-OUT AND ACCESS CLOSURES ON GRAND AVENUE THAT ARE IN THE SH-82 ACCESS CONTROL PLAN

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GRAND AVENUE BRT
ALIGNMENT ALTERNATIVES

Designer:
Detailer:
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Subset Sheets: of

Project No./Code

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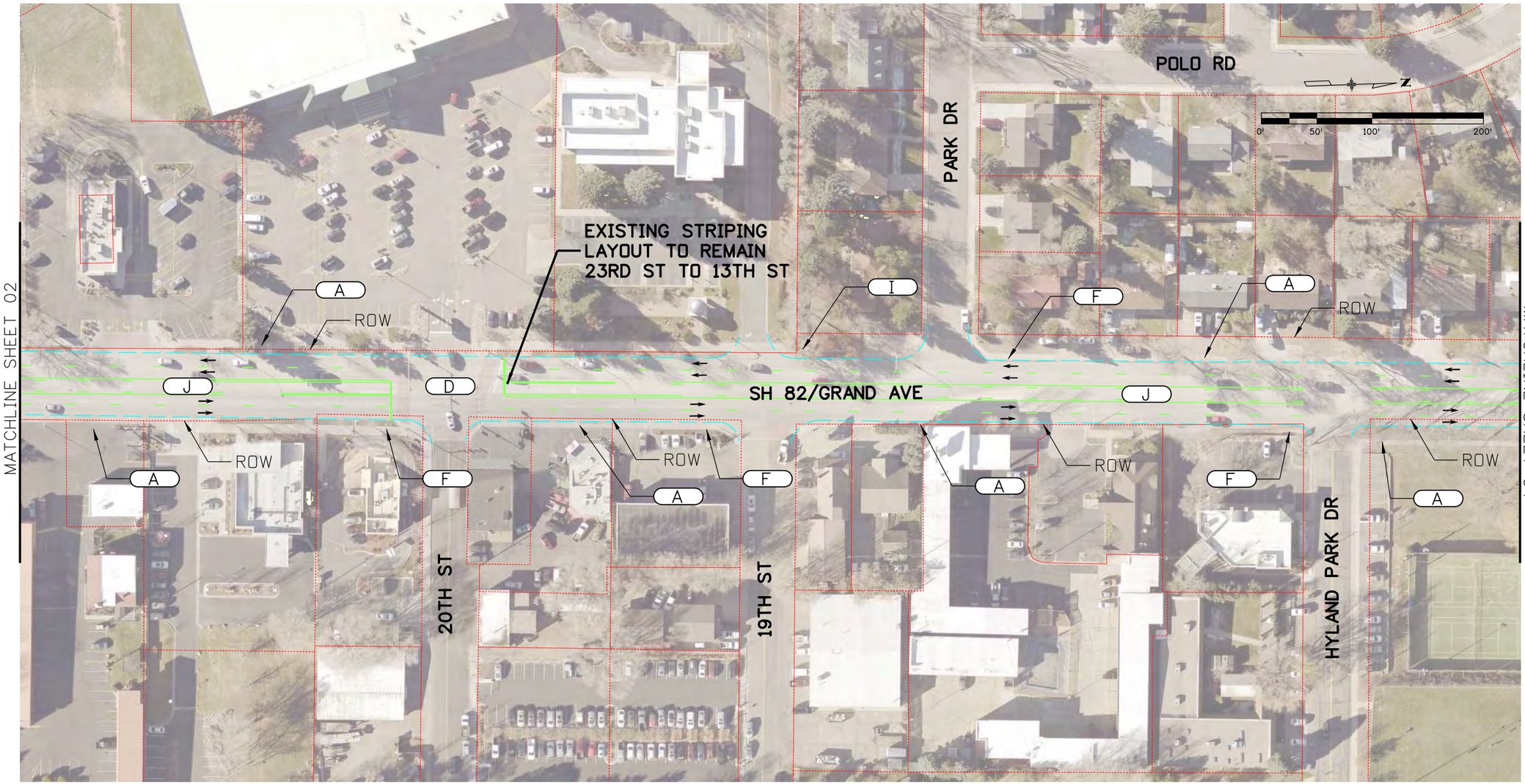


## CORRIDOR ELEMENTS

- (A) IMPROVE SIDEWALKS ALONG GRAND AVENUE TO BE ADA COMPLIANT AND CONTINUOUS
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- (J) INCORPORATE THE RIGHT-IN / RIGHT-OUT AND ACCESS CLOSURES ON GRAND AVENUE THAT ARE IN THE SH-82 ACCESS CONTROL PLAN

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GRAND AVENUE BRT
ALIGNMENT ALTERNATIVES

Designer:
Detailer:
Subset:
Structure Numbers
Subset Sheets: of

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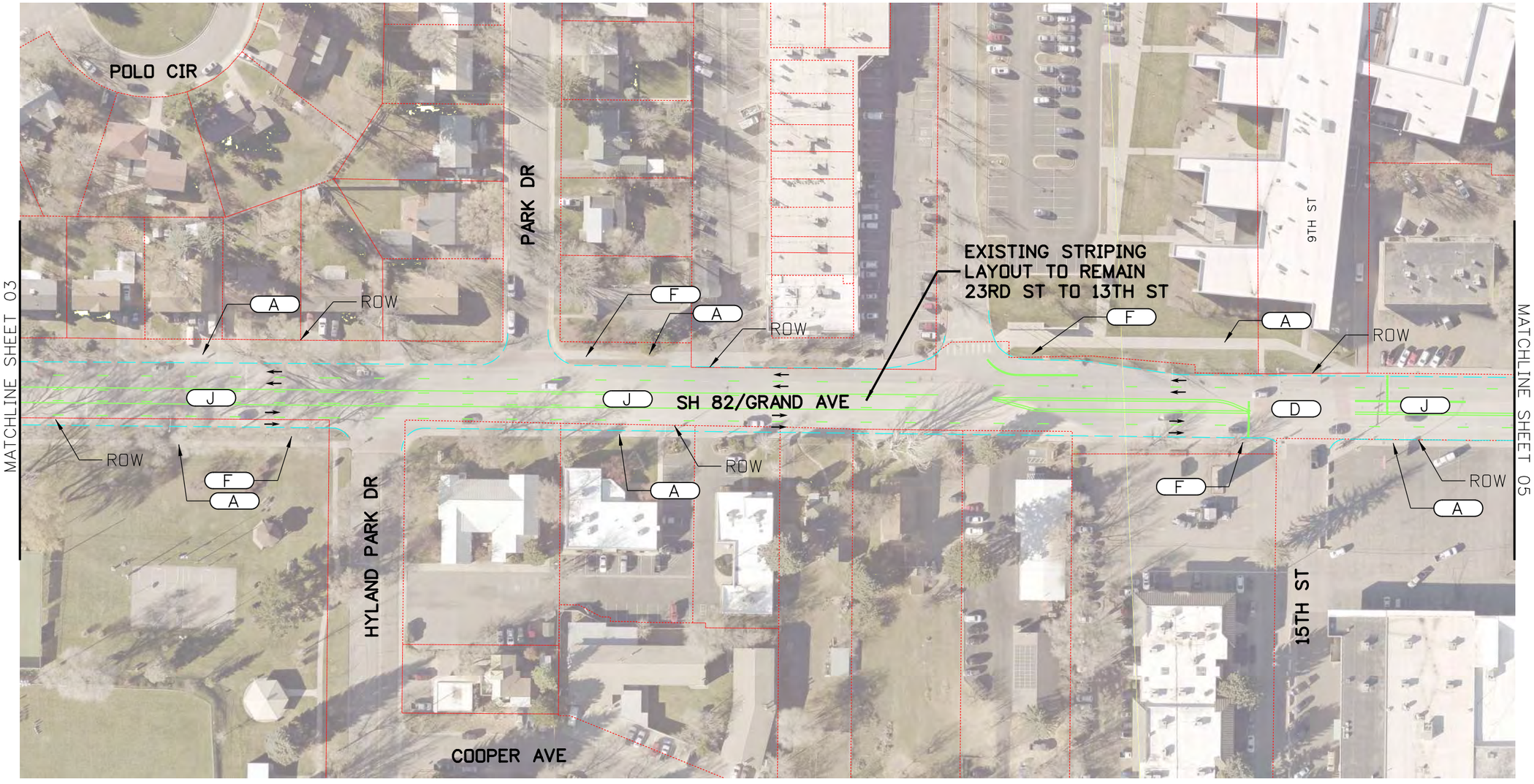


## CORRIDOR ELEMENTS

- (A) IMPROVE SIDEWALKS ALONG GRAND AVENUE TO BE ADA COMPLIANT AND CONTINUOUS
- (D) PROVIDE TRANSIT SIGNAL PRIORTY TECHNOLOGY TO TRAFFIC SIGNAL
- (F) ADD SIGNS AT INTERSECTIONS TO WARN VEHICLES TO LOOK FOR BOTH PEDESTRIANS AND CYCLISTS CROSSING
- (J) INCORPORATE THE RIGHT-IN / RIGHT-OUT AND ACCESS CLOSURES ON GRAND AVENUE THAT ARE IN THE SH-82 ACCESS CONTROL PLAN

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GRAND AVENUE BRT
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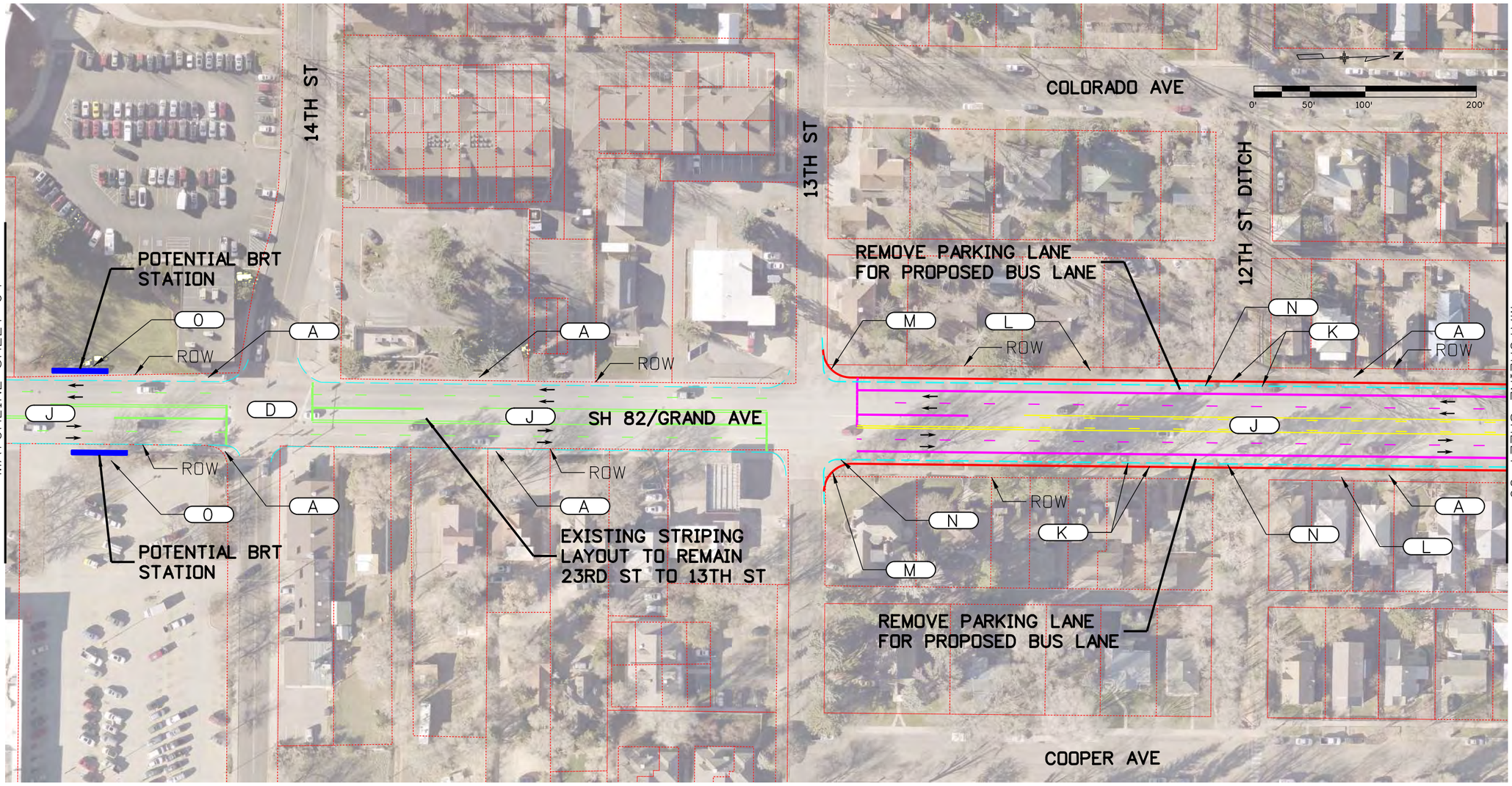


## CORRIDOR ELEMENTS

- (A) IMPROVE SIDEWALKS ALONG GRAND AVENUE TO BE ADA COMPLIANT AND CONTINUOUS
- (D) PROVIDE TRANSIT SIGNAL PRIORTY TECHNOLOGY TO TRAFFIC SIGNAL
- (J) INCORPORATE THE RIGHT-IN / RIGHT-OUT AND ACCESS CLOSURES ON GRAND AVENUE THAT ARE IN THE SH-82 ACCESS CONTROL PLAN
- (K) REMOVE AND RELOCATE CURB AND GUTTER
- (L) EVALUATE EXISTING SIDEWALK FOR ADA COMPLIANCE
- (M) PROVIDE ADA ACCESSIBILE RAMPS AT RECONSRTRUCTED CURB RETURNS
- (N) REMOVE AND RELOCATE CATCH BASIN TO NEW CURB ALIGNMENT
- (O) PROVIDE SAFE, SECURE BICYCLE PARKING/STORAGE AT PROPOSED BRT STATION

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GRAND AVENUE BRT
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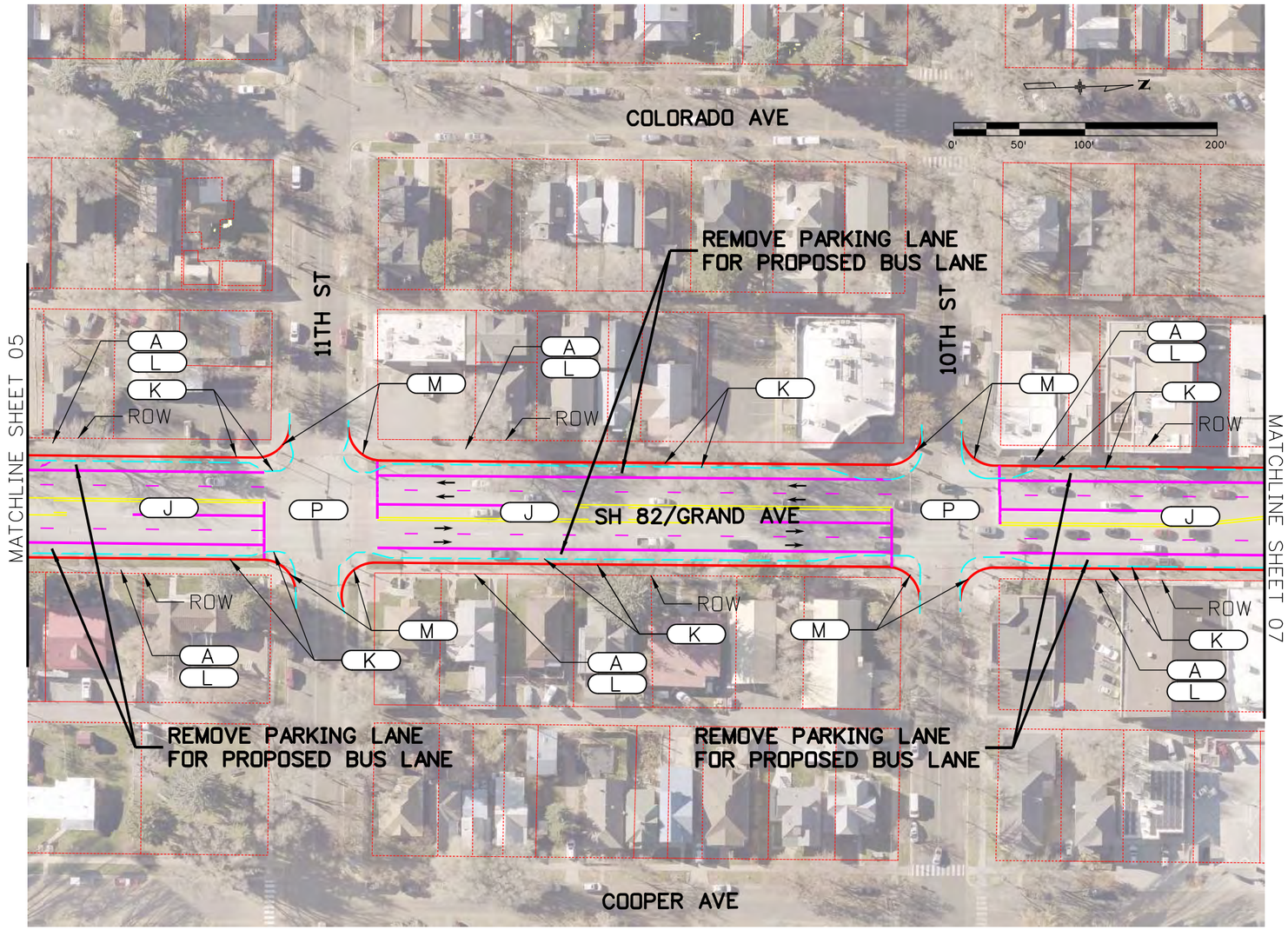


## CORRIDOR ELEMENTS

- (A) IMPROVE SIDEWALKS ALONG GRAND AVENUE TO BE ADA COMPLIANT AND CONTINUOUS
- (J) INCORPORATE THE RIGHT-IN / RIGHT-OUT AND ACCESS CLOSURES ON GRAND AVENUE THAT ARE IN THE SH-82 ACCESS CONTROL PLAN
- (K) REMOVE AND RELOCATE CURB AND GUTTER
- (L) EVALUATE EXISTING SIDEWALK FOR ADA COMPLIANCE
- (M) PROVIDE ADA ACCESSIBILE RAMPS AT RECONSRTRUCTED CURB RETURNS
- (P) REMOVE AND REPLACE TRAFFIC SIGNAL PROVIDE TRANSIT SIGNAL PRIORTY TECHNOLOGY TO TRAFFIC SIGNAL

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GRAND AVENUE BRT
ALIGNMENT ALTERNATIVES

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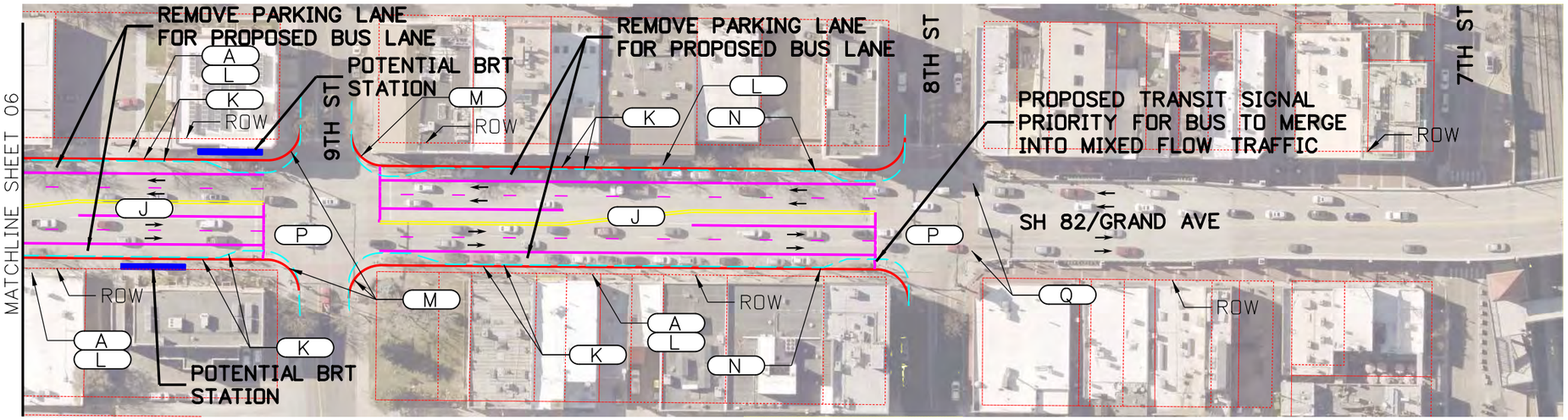
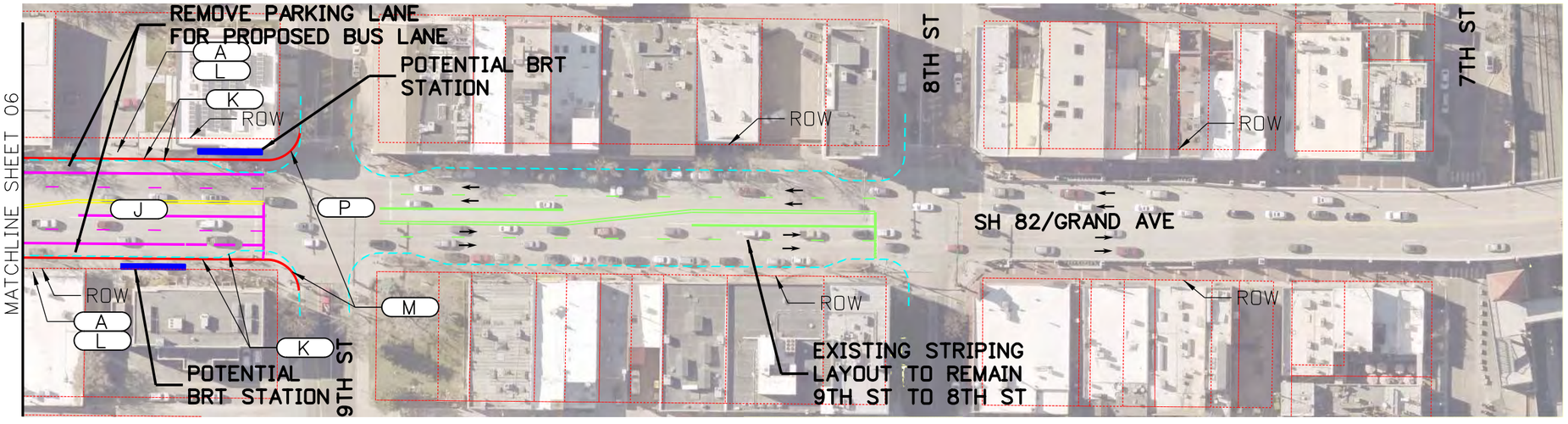



OPTION 1 - PROPOSED BUS LANE ENDS AT 8TH STREET. BRT BUSES MAY UTILIZE SH 82/GRAND AVENUE OVER THE RIVER TO/FROM WEST GLENWOOD SPRINGS




OPTION 2 - PROPOSED BUS LANE ENDS AT 9TH STREET. BRT BUSES MAY UTILIZE 9TH STREET OR 8TH STREET TO/FROM WEST GLENWOOD SPRINGS

0' 50' 100' 200'

## CORRIDOR ELEMENTS

- (A) IMPROVE SIDEWALKS ALONG GRAND AVENUE TO BE ADA COMPLIANT AND CONTINUOUS
- (J) INCORPORATE THE RIGHT-IN / RIGHT-OUT AND ACCESS CLOSURES ON GRAND AVENUE THAT ARE IN THE SH-82 ACCESS CONTROL PLAN
- (K) REMOVE AND RELOCATE CURB AND GUTTER
- (L) EVALUATE EXISTING SIDEWALK FOR ADA COMPLIANCE
- (M) PROVIDE ADA ACCESSIBILE RAMPS AT RECONSRTRUCTED CURB RETURNS
- (N) REMOVE AND RELOCATE CATCH BASIN TO NEW CURB ALIGNMENT
- (O) PROVIDE SAFE, SECURE BICYCLE PARKING/STORAGE AT PROPOSED BRT STATION
- (P) REMOVE AND REPLACE TRAFFIC SIGNAL PROVIDE TRANSIT SIGNAL PRIORTY TECHNOLOGY TO TRAFFIC SIGNAL
- (Q) REMOVE NORTH LEG CROSSWALK

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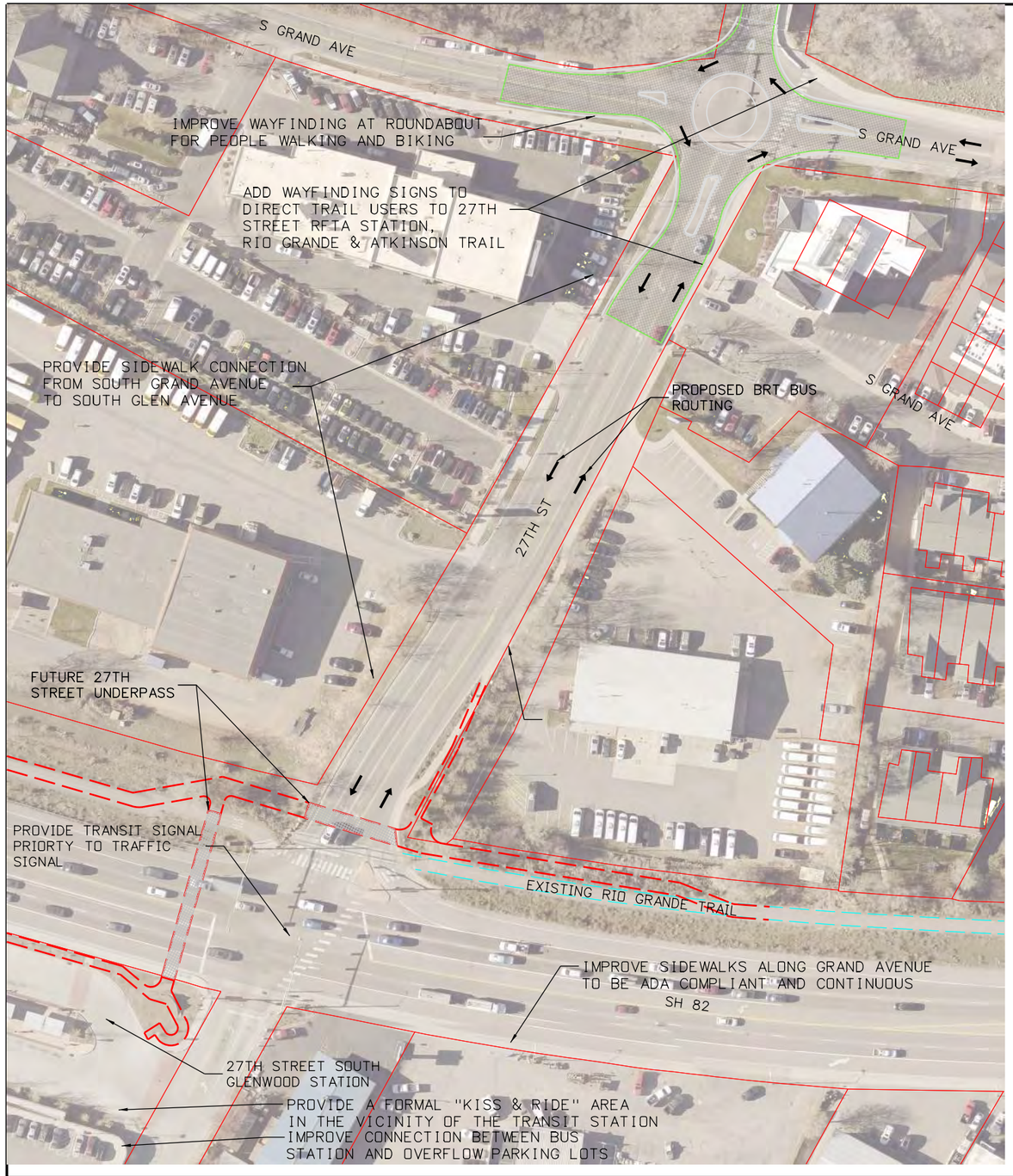


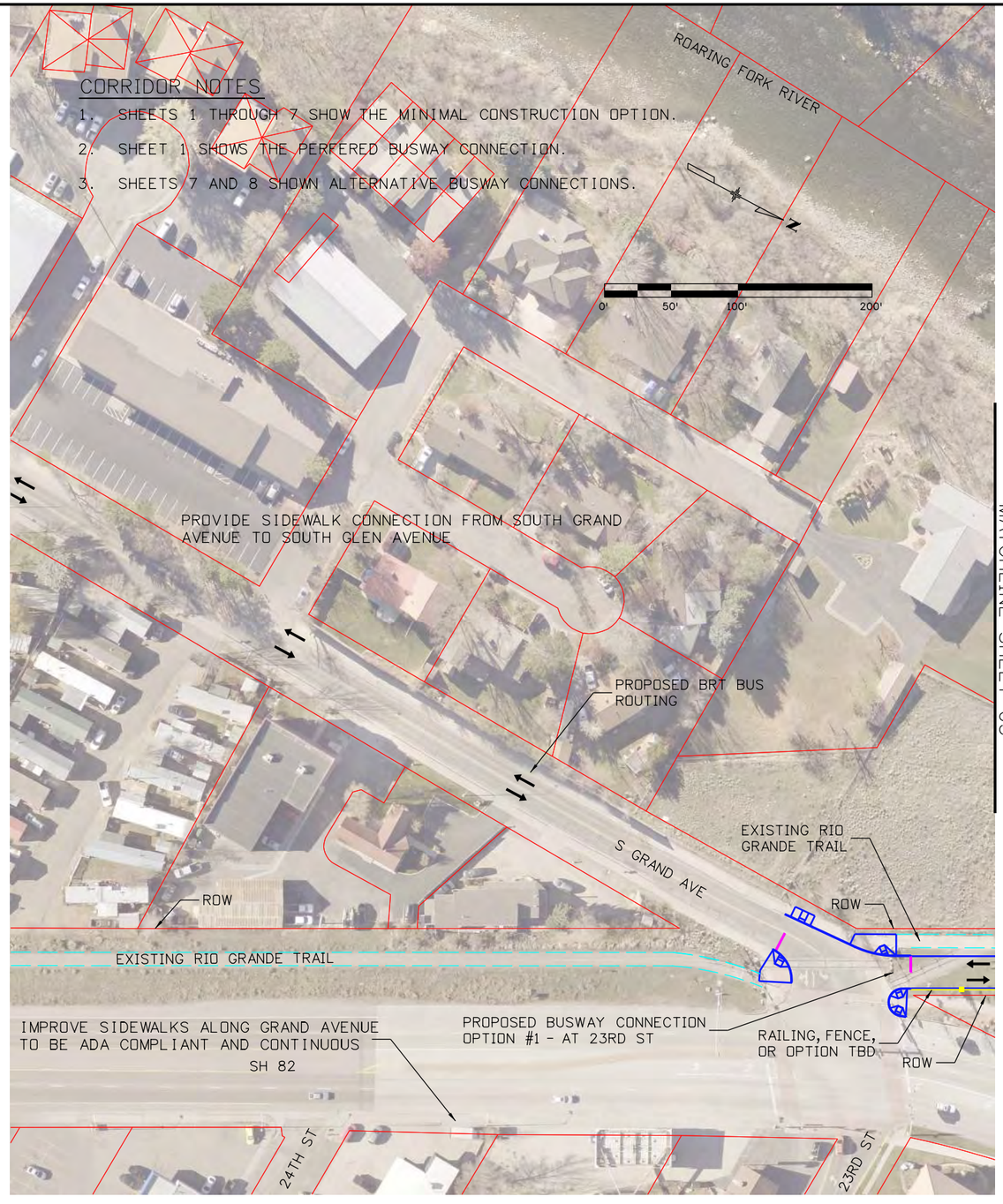


MATCHLINE SHEET 03

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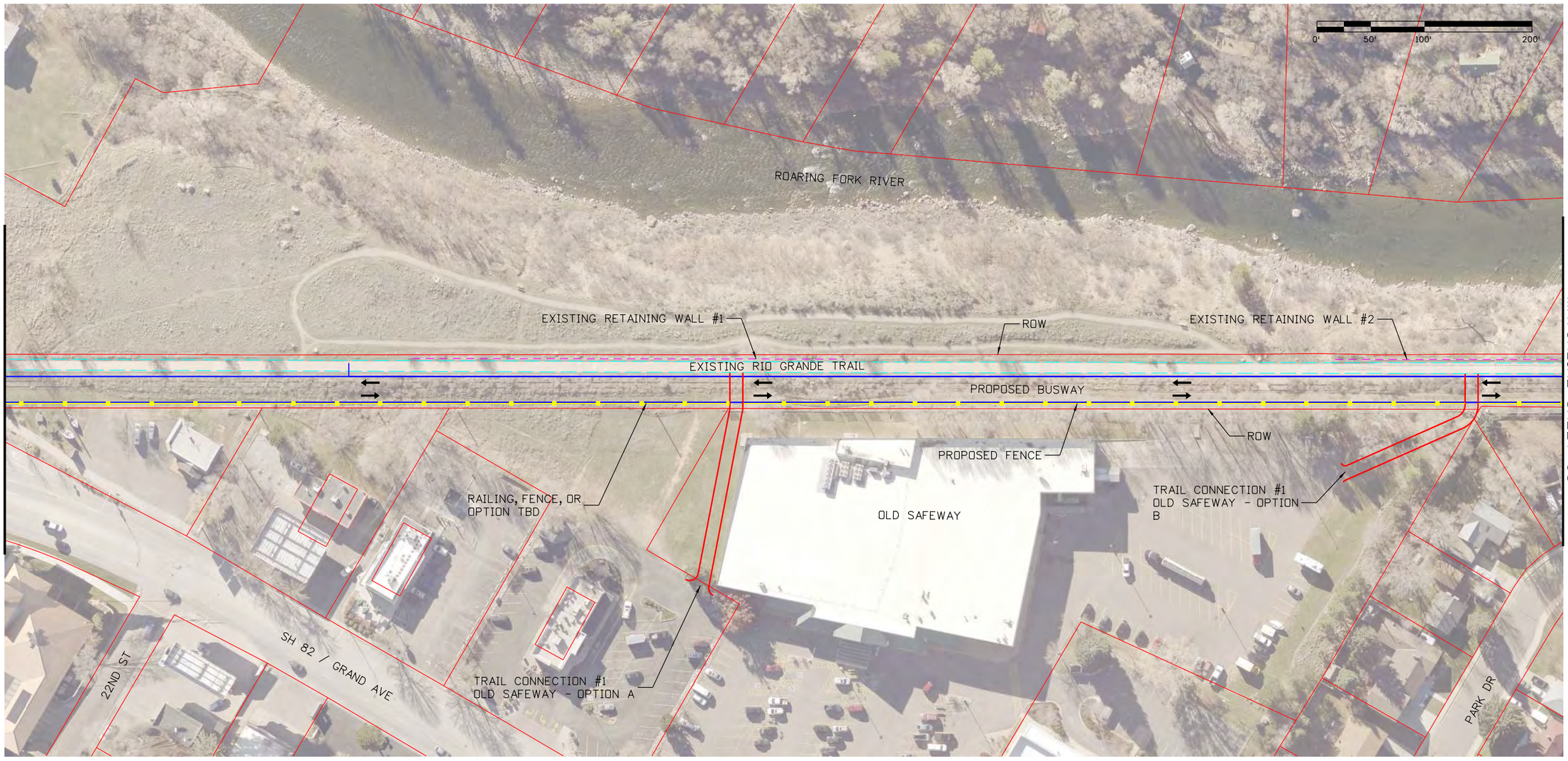


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CORRIDOR BUSWAY

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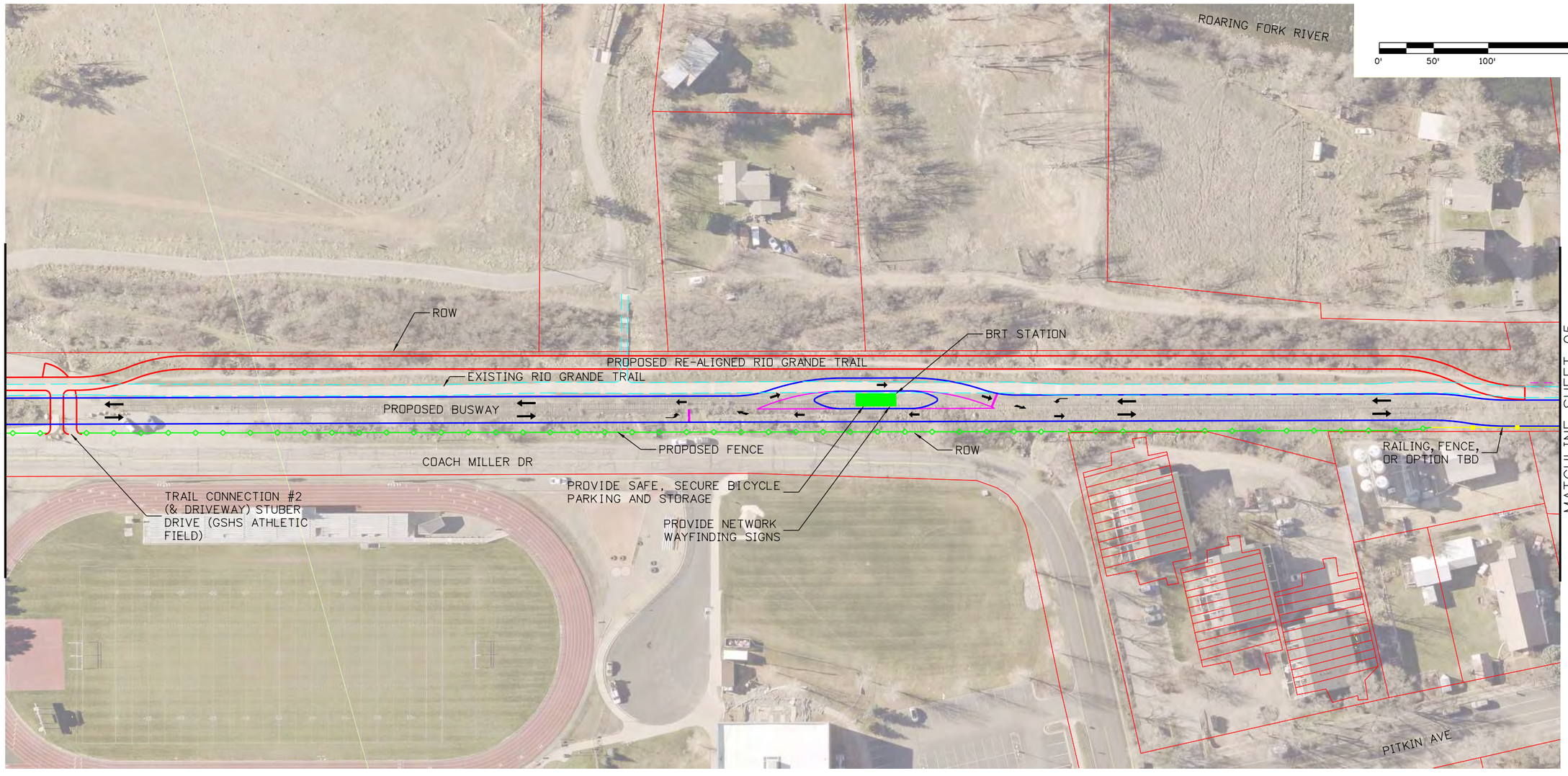


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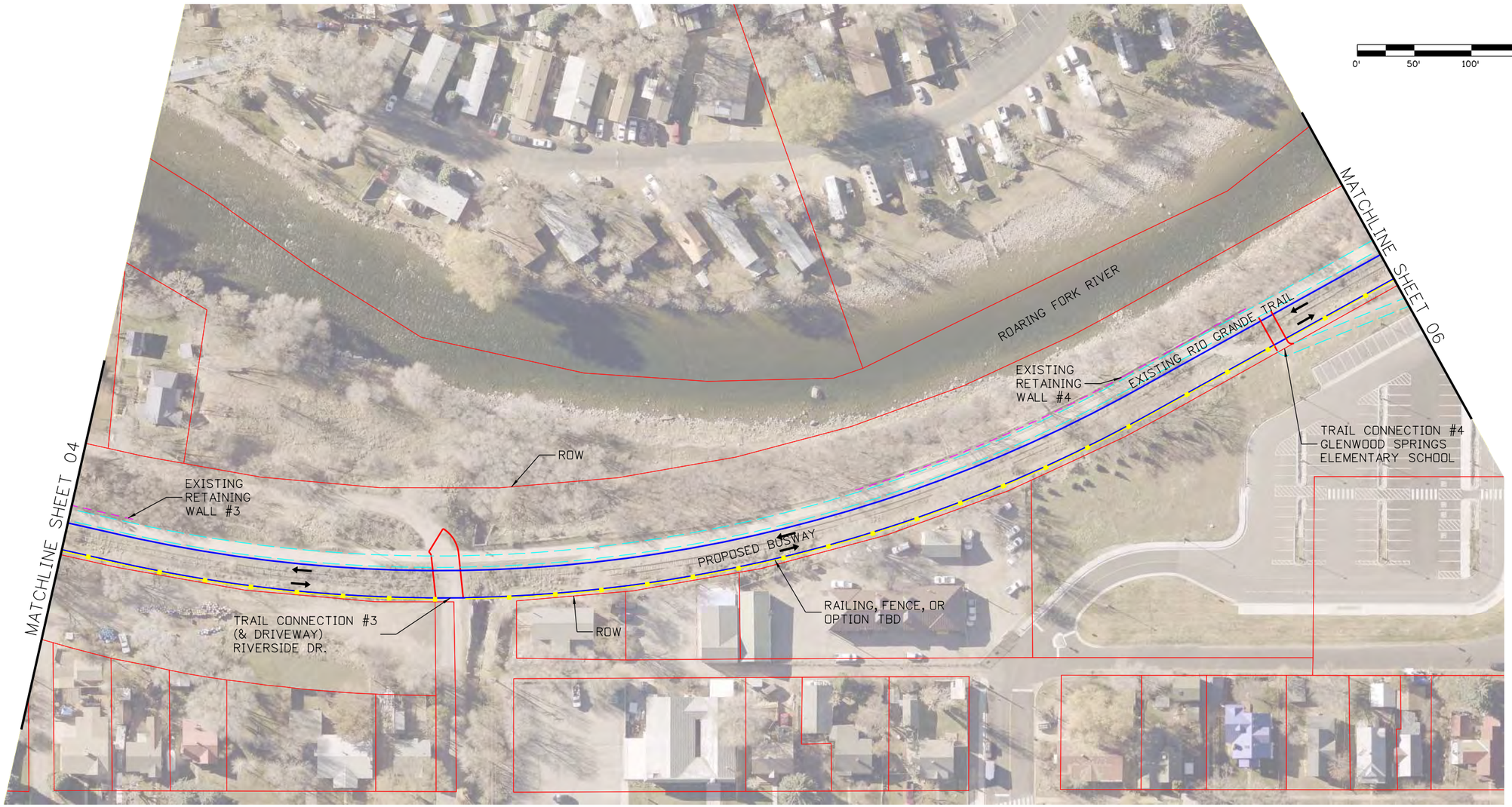


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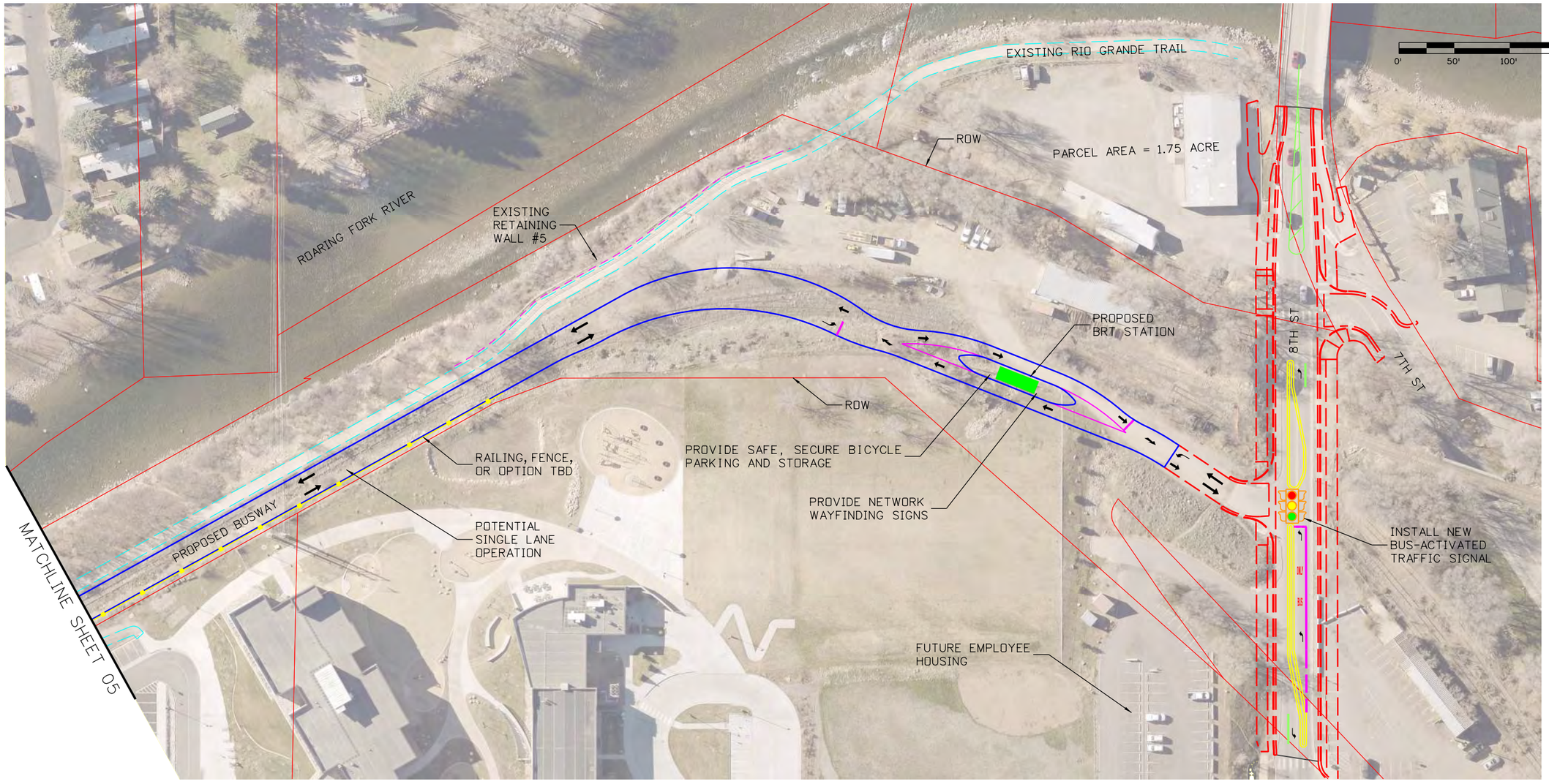


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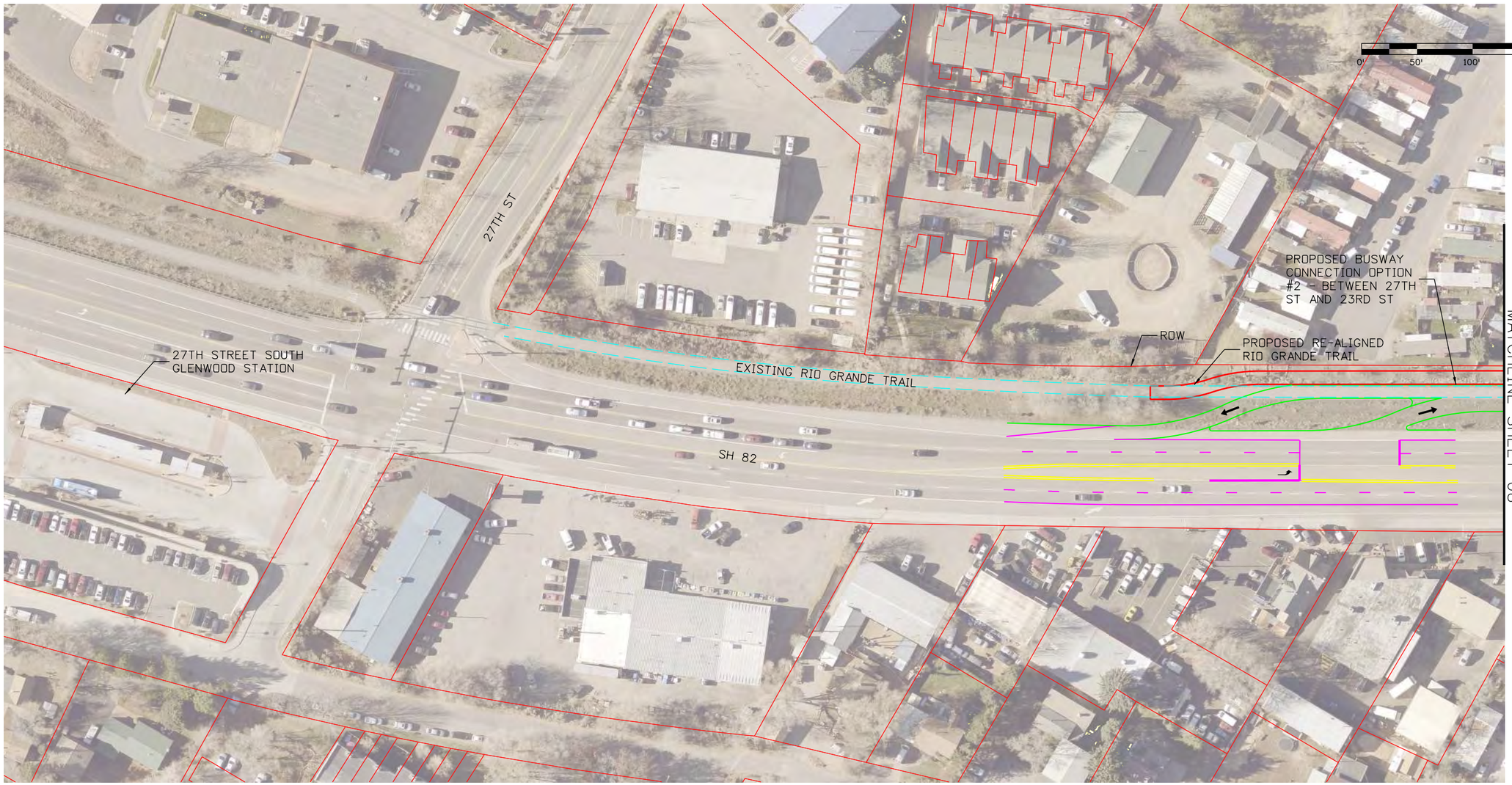


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RIO GRANDE CORRIDOR BUSWAY

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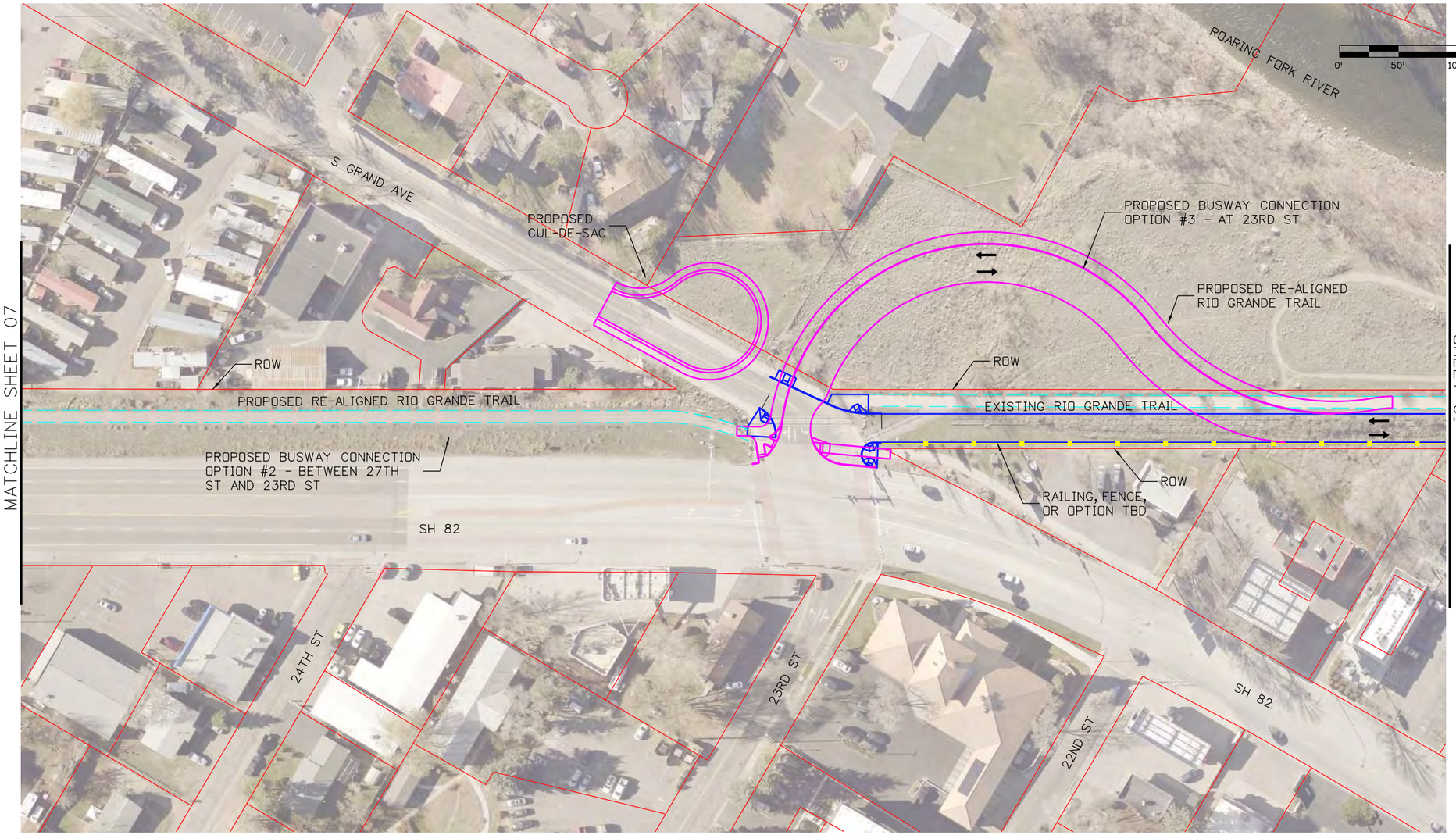


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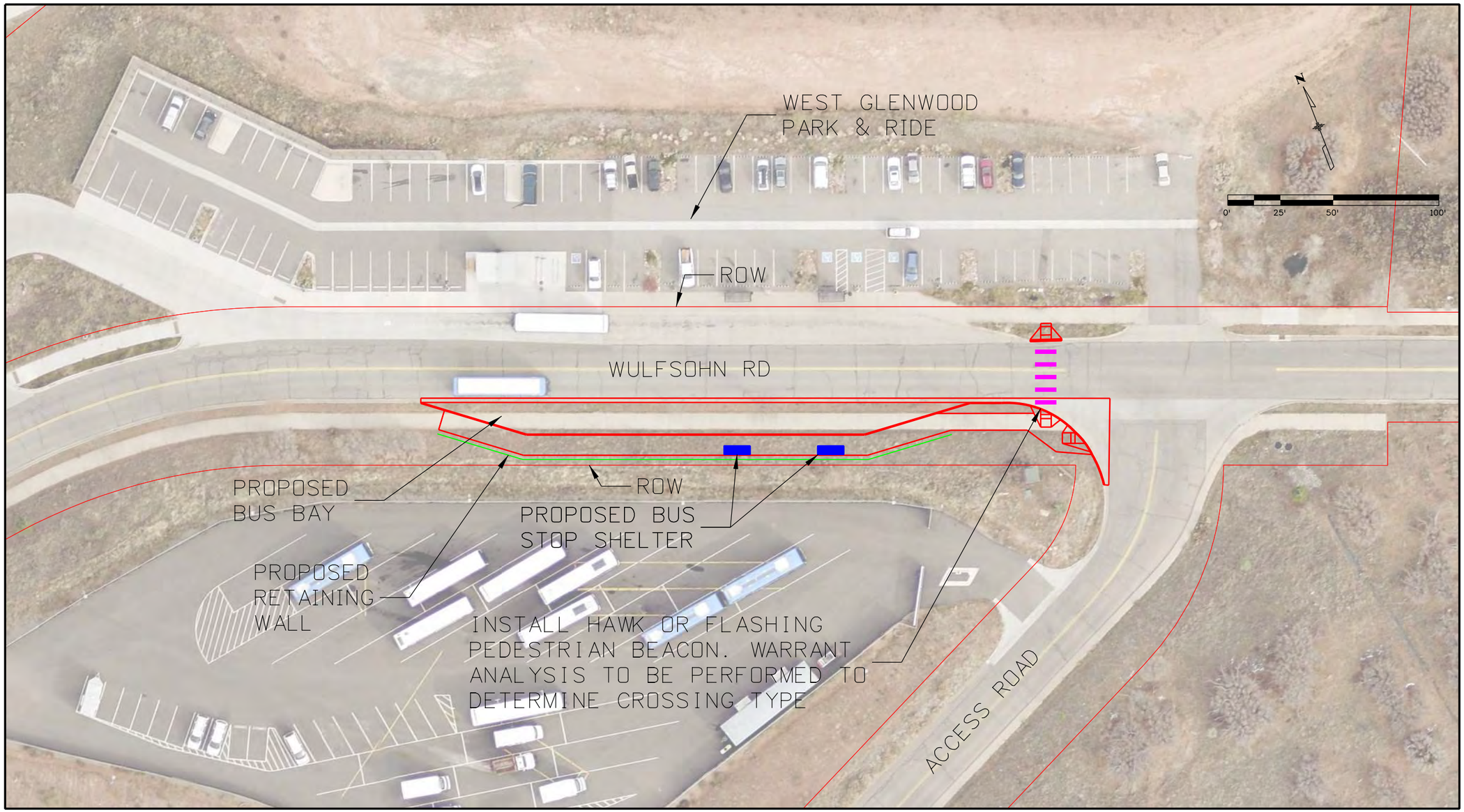


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WEST GLENWOOD IN-LINE STATION IMPROVEMENTS

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## Typical Sections

The following figures show typical sections for both the Rio Grande Corridor BRT and Grand Ave BRT improvements.

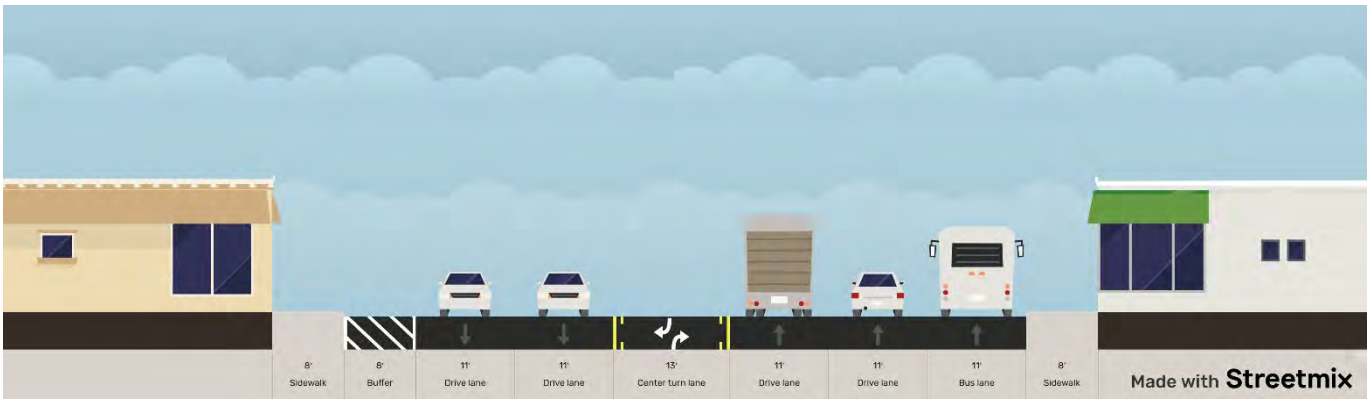



Figure 1 - Grand Avenue Typical Section 2: 27th Street to 23rd Street

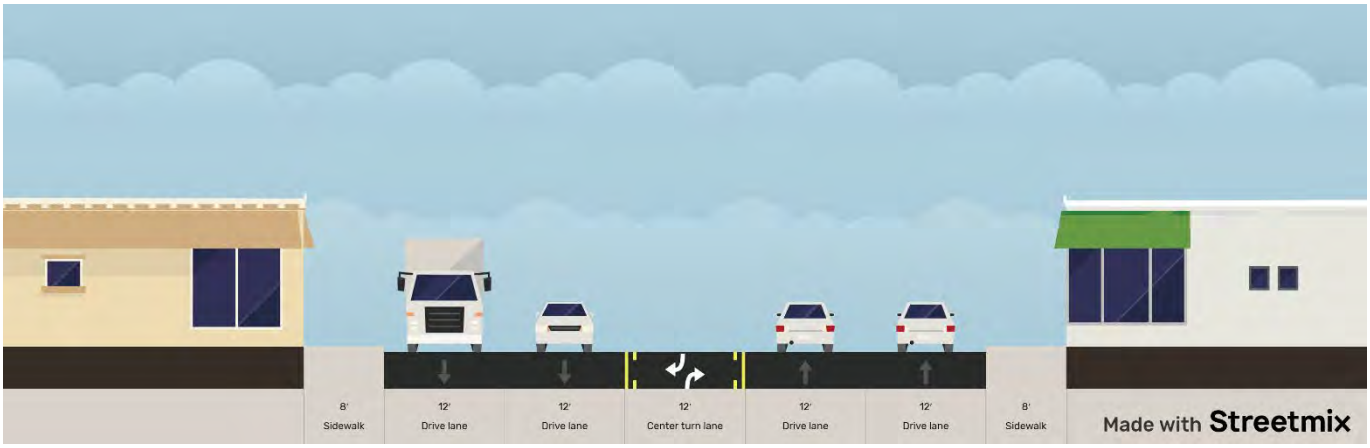



Figure 2 - Grand Avenue Typical Section 3: 23rd Street to 13th Street

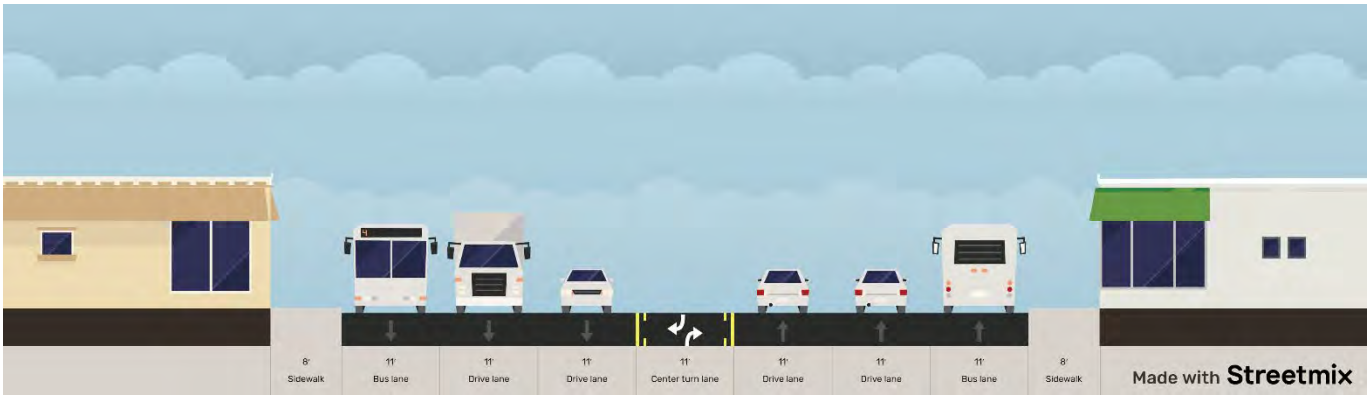
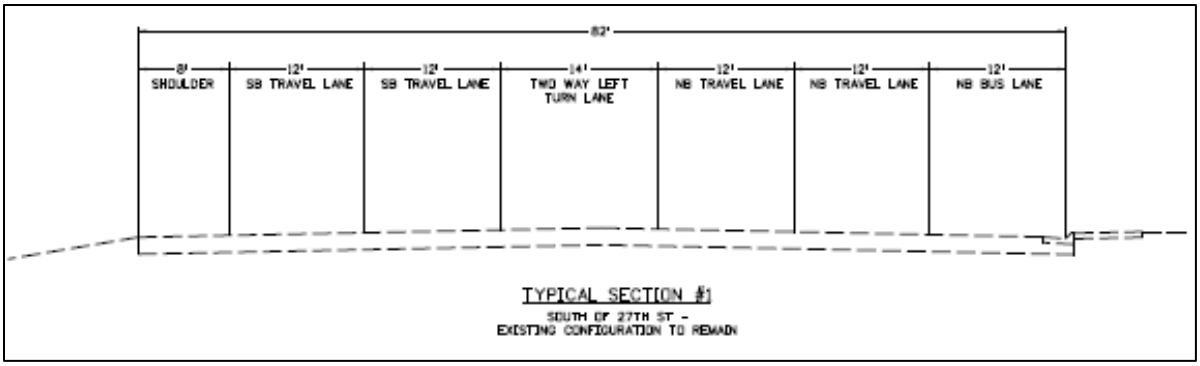
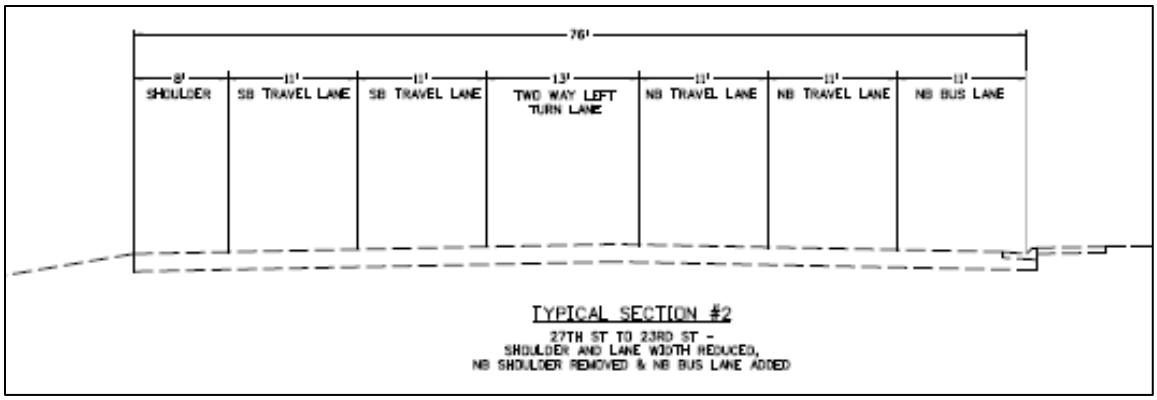
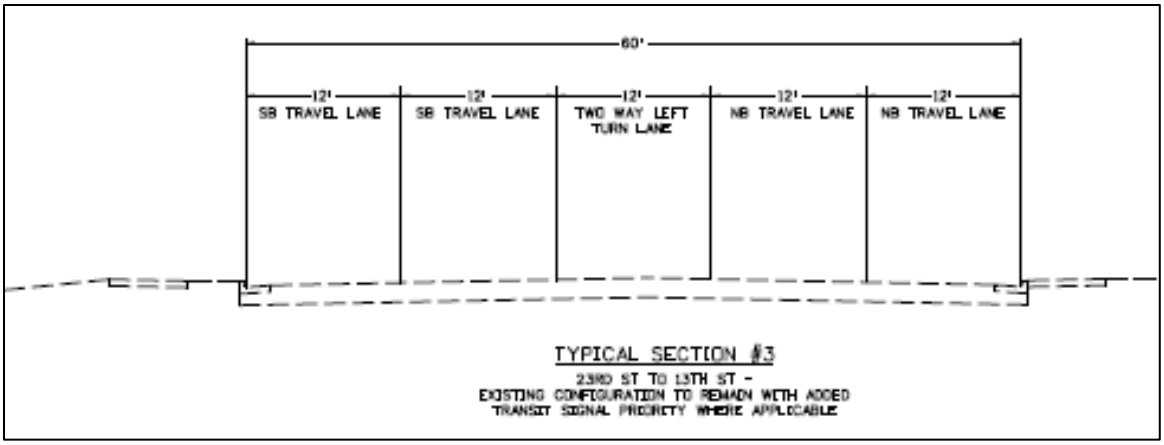



Figure 3 - Grand Avenue Typical Section 4: 13th Street to 8th Street



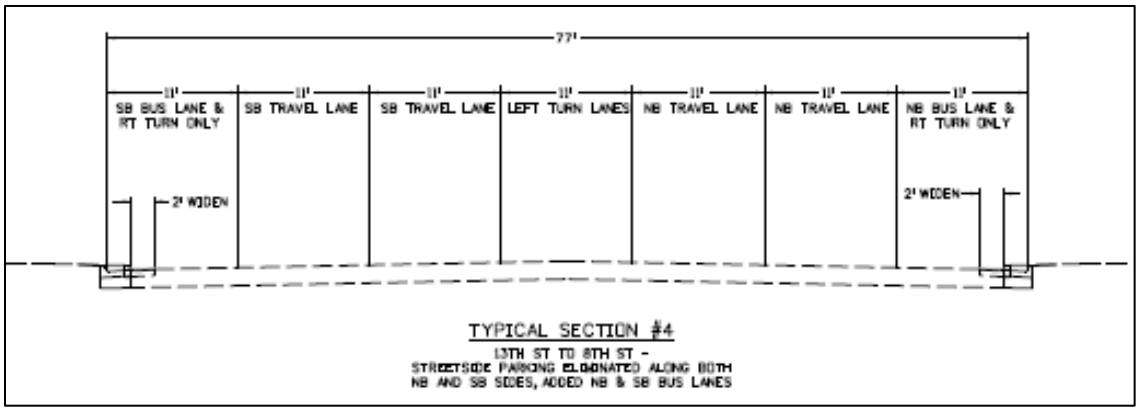




Figure 4 - Grand Avenue Typical Sections

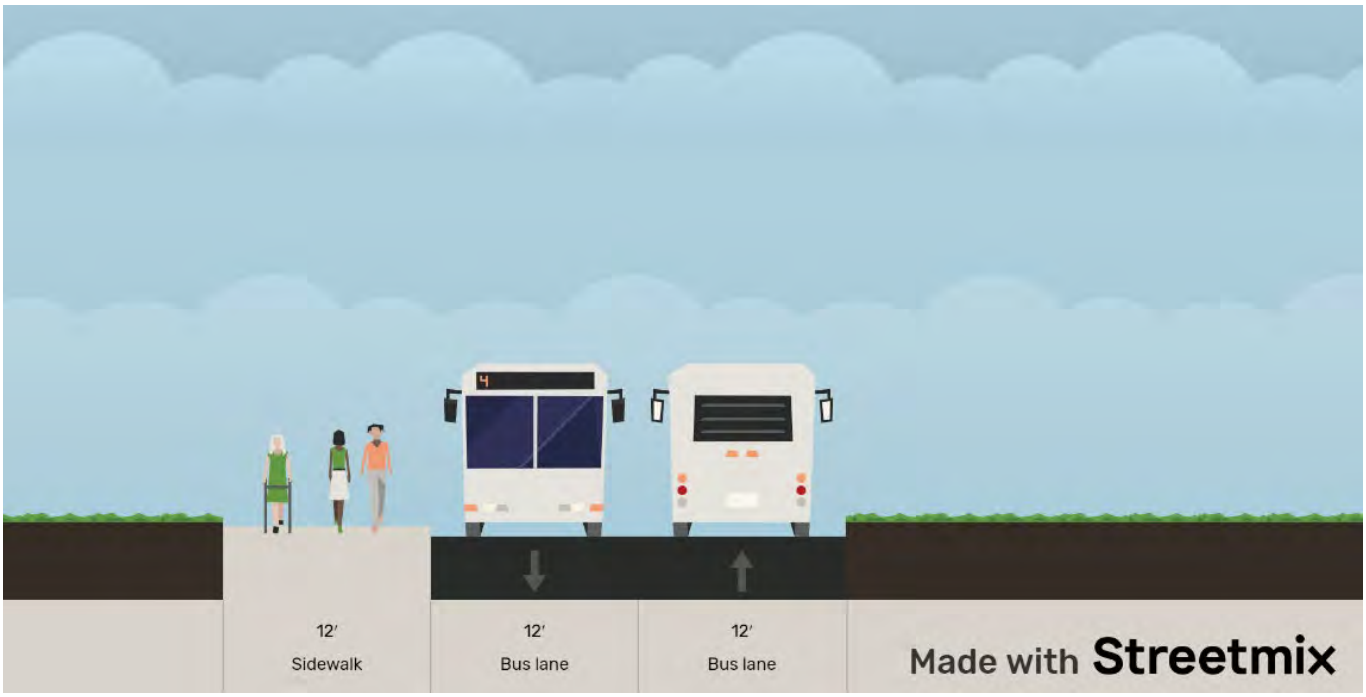



Figure 5 - Rio Grande Corridor Typical Section #1: 23rd to 27th Streets

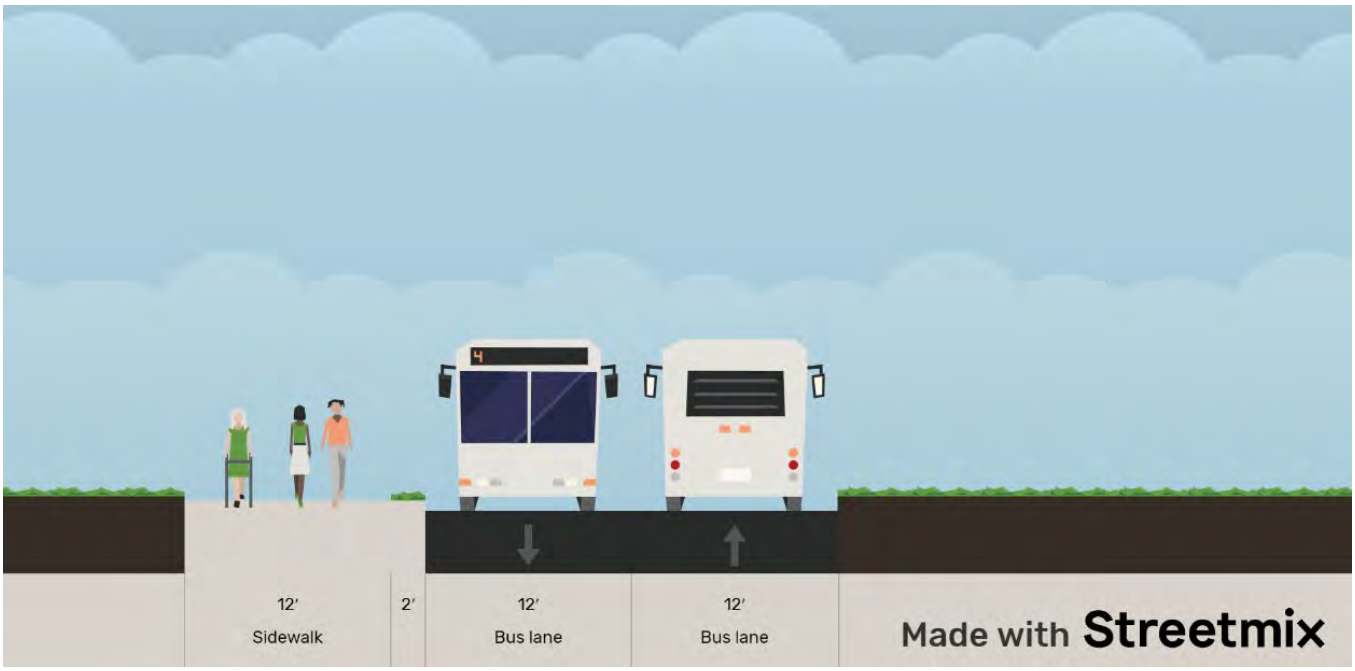



Figure 6 - Rio Grande Corridor Typical Section #2: 23rd Street to Safeway Site

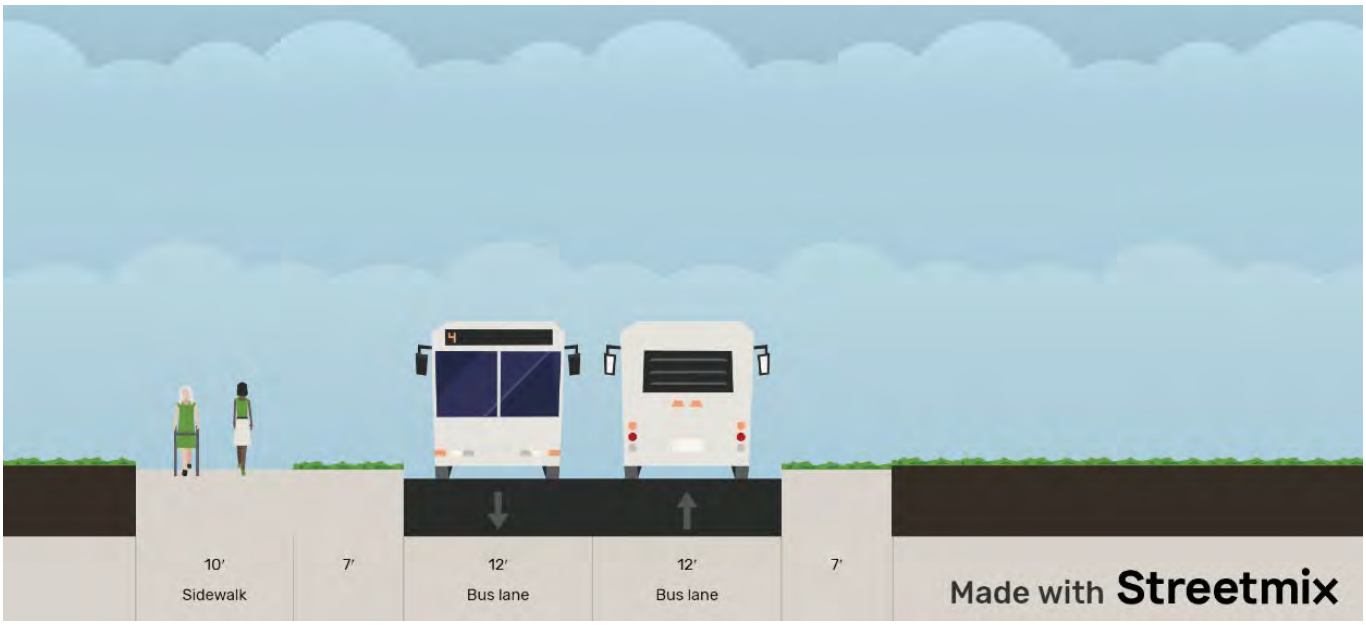



Figure 7 - Rio Grande Corridor Typical Section #3: West of Park Drive Neighborhood

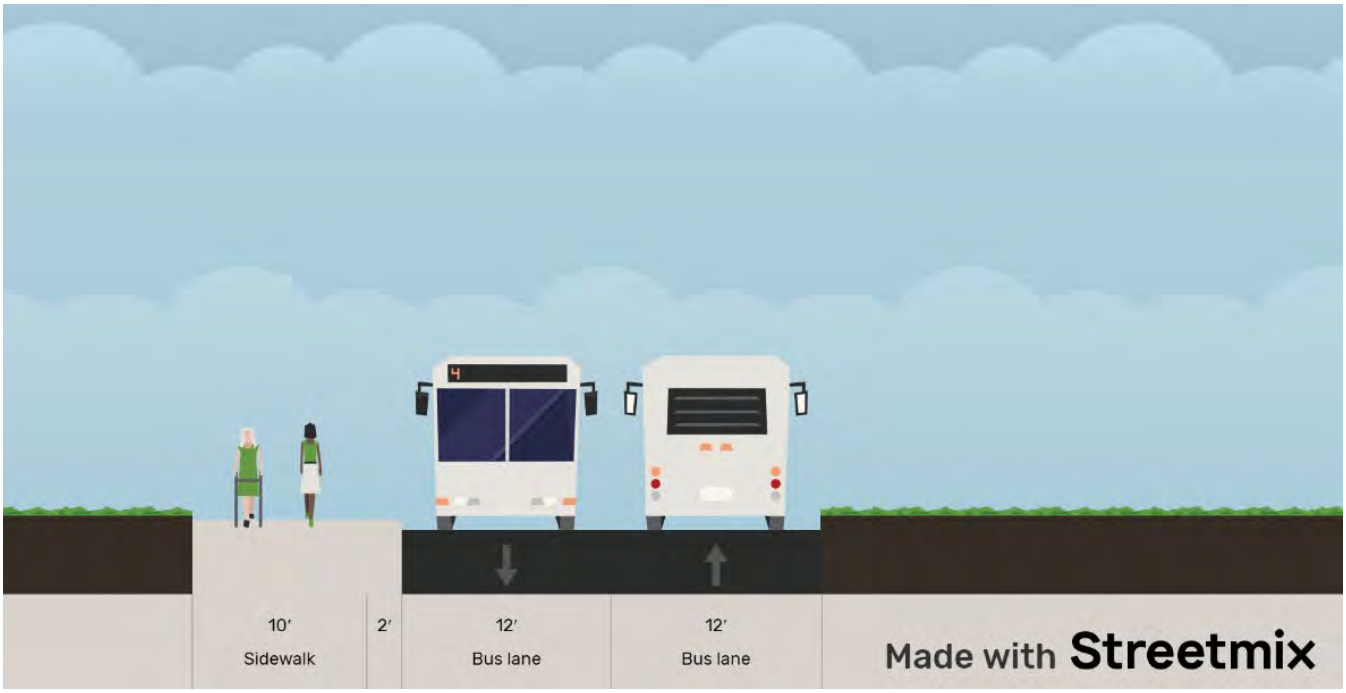
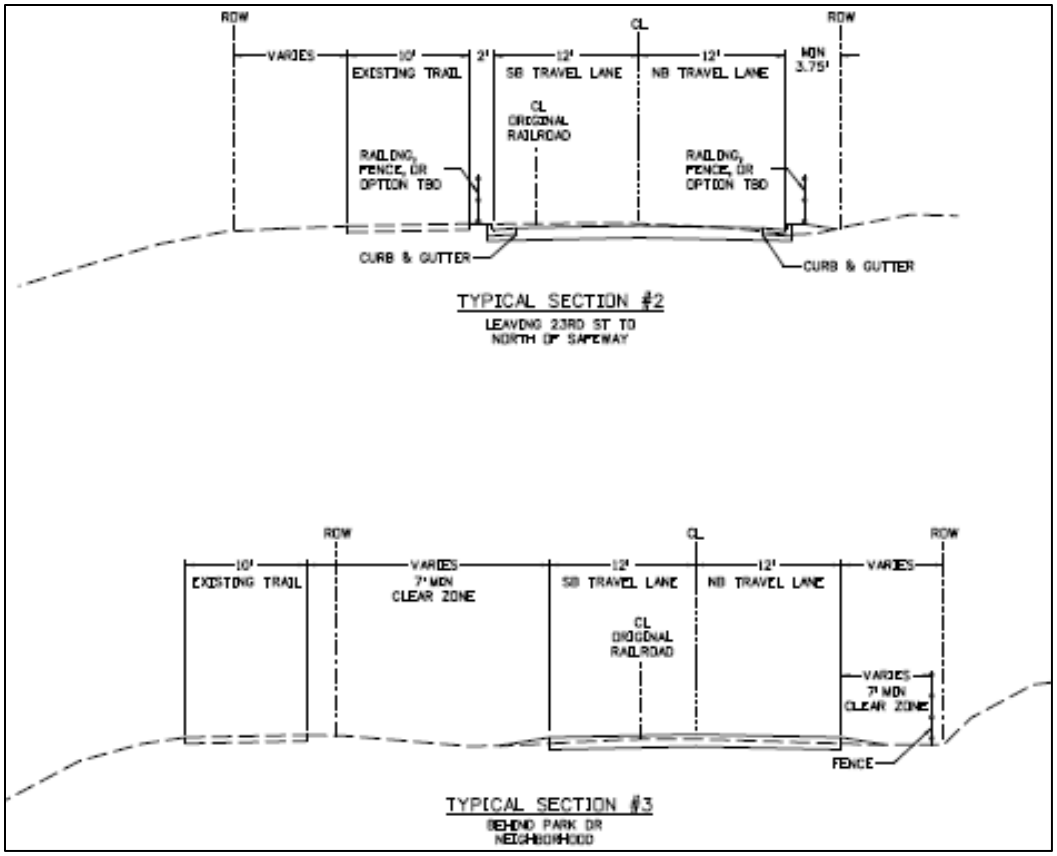



Figure 8 - Rio Grande Corridor Typical Section #4: West of Glenwood Springs High School and Elementary School



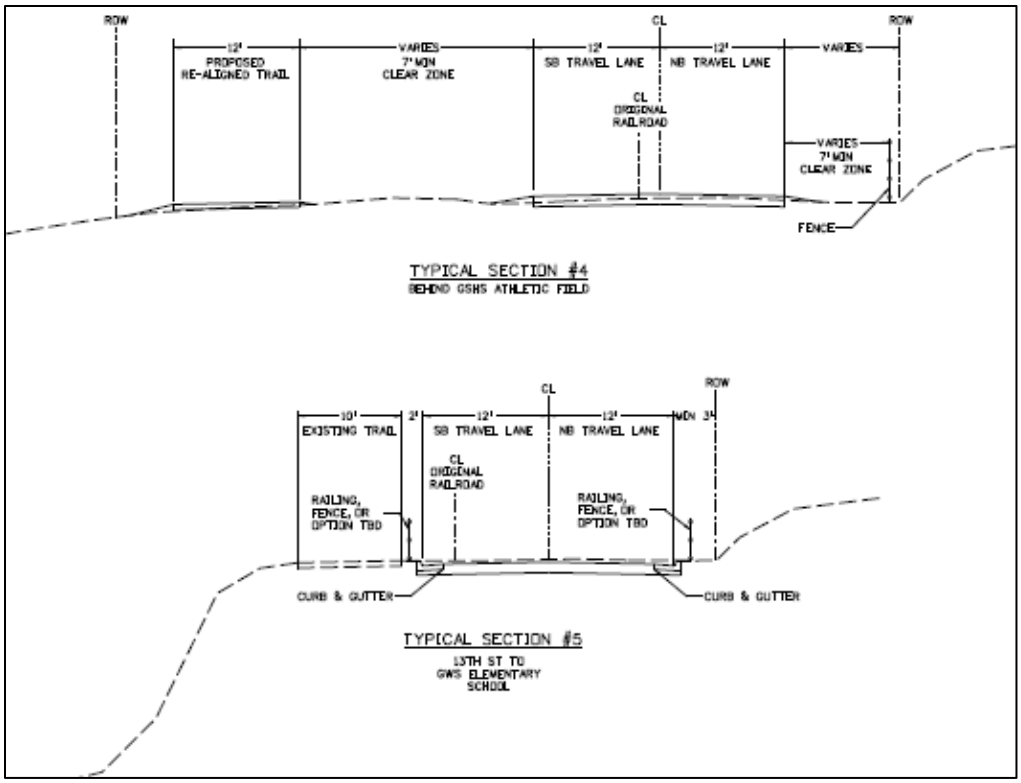




Figure 9 - Rio Grande Corridor Typical Sections

# Implementation and Phasing

The recommended improvements for each mode are categorized into three phases that are based on implementation timeframe and relationship to the primary BRT extension alternatives. The phases are described as followed:

- **Phase 1 Improvements: Low/No Cost Immediate Recommendations:** These improvements are estimated to be lower in cost compared to the other recommendations and are also independent of the primary BRT alternatives, so easiest to implement in the near term.
- **Phase 2 Improvements: Higher Cost Recommendations:** Higher cost improvements that are independent of the BRT alignment alternatives. These improvements are implemented in the short and medium term.
- **Phase 3 Improvements: Recommendations Needed for BRT Extension:** These were developed to optimize the BRT alignment alternatives and are projects by mode that are best to be implemented with the proposed BRT extension improvements.

## BRT Extension Implementation (Phase 3 Improvements) Next Steps

The BRT extension implementation next steps involve confirmation of a locally preferred alternative (LPA) between the Rio Grande Corridor and Grand Ave BRT alignment options. The LPA will have RFTA, City of Glenwood Springs, Colorado Department of Transportation (CDOT), Garfield County, and community support. From there project development begins with preliminary engineering of the BRT elements including multimodal integration, and environmental evaluation of the following resources from a National Environmental Policy Act (NEPA) standpoint. Note that NEPA evaluation is only required if Federal funding is pursued.

- Land Use and Zoning
- Land/Property Acquisition, Relocation, Leases and Easements
- Environmental Justice
- Cultural, Historic and Archaeological Resources
- Visual/Aesthetics
- Park and Recreation Resources
- Noise and Vibration
- Air Quality
- Hazardous Materials
- Farmland
- Floodplains
- Water Resources and Water Quality
- Wetlands and Waters of the U.S.
- Threatened and/or Endangered Species
- Natural and Biological Resources
- Traffic and Parking
- Utilities
- Construction Impacts
- Public Outreach and Agency Coordination
- Safety and Security
- State and Local Permits, Policies and Ordinances

Project Development includes:

- Complete travel demand forecasting, traffic analysis and transit ridership forecasts
- Complete NEPA process and required technical studies in coordination with lead Federal agency (FTA or FHWA) for approval
- Advance preliminary engineering to approximately 30% plans, constructability reviews and cost estimates
- Develop financial plan, funding positioning and funding applications
- Stakeholder and public outreach

After project development, the project moves into final design including finalizing the year of expenditure (YOE) capital cost estimates. The construction bid process can then begin. Once a contractor is selected, the project will go into construction, testing, commissioning and finally revenue operations. The recommended phasing, costs, and example funding sources are listed in the following **Table 1** and the complete cost estimates for both the Rio Grande Corridor and Grand Avenue BRT recommendations are shown in **Appendix A.**

TABLE 1 – BRT EXTENSION IMPLEMENTATION RECCOMENDATIONS

| | IMPROVEMENT | DESCRIPTION & KEY IMPLEMENTATION STRATEGIES | ESTIMATED COST | RECOMMENDED IMPLEMENTATION TIMELINE | EXAMPLES OF POTENTIAL FUNDING SOURCES |
|---|---|---|---|---|---|
| **PHASE 3 IMPROVEMENTS - RECOMMENDATIONS NEEDED FOR BRT EXTENSION (Grand Avenue BRT Extension Alignment)** | | | | | |
| 3-1 | Preliminary Engineering, Final Design, Survey | If the Grand Avenue BRT Extension is the locally preferred alternative (LPA), preliminary engineering of the BRT elements including multimodal integration, and environmental evaluation will be the first steps in advancing the LPA. Additional stakeholder outreach will continue during this step. This step also includes finalizing the cost estimate and developing a financial plan, funding positioning and funding applications. Final design and survey complete this task. | $245,000 - $265,000 *(approximately 10% of total cost)* | Short-Term | City general funds, Destination 2040 |
| 3-2 | Construction | After the procurement and bid process and a contractor is selected, the project can move into construction, testing, commissioning, and revenue operations. | $3,330,000 (Option 1)*<br>$3,060,000 (Option 2)*<br>**see details in Appendix A* | Medium-Term | Colorado Multimodal Options Fund, City general funds, Destination 2040 |

| | IMPROVEMENT | DESCRIPTION & KEY IMPLEMENTATION STRATEGIES | ESTIMATED COST | RECOMMENDED IMPLEMENTATION TIMELINE | EXAMPLES OF POTENTIAL FUNDING SOURCES |
|---|---|---|---|---|---|
| **PHASE 3 IMPROVEMENTS - RECOMMENDATIONS NEEDED FOR BRT EXTENSION (Rio Grande Corridor BRT Extension Alignment)** | | | | | |
| 3-3 | Preliminary Engineering, NEPA, Final Design, Survey | If the Rio Grande Corridor BRT Extension is the locally preferred alternative (LPA), preliminary engineering of the BRT elements including multimodal integration, and environmental evaluation of resources from a NEPA standpoint will be the first steps in advancing the LPA. Additional stakeholder outreach will continue during this step. This step also includes finalizing the cost estimate and developing a financial plan, funding positioning and funding applications. Final design and survey complete this task. | $1,360,000 *(approximately 10% of total cost)* | Short-Term | City general funds, Destination 2040 |
| 3-4 | Construction | After the procurement and bid process and a contractor is selected, the project can move into construction, testing, commissioning, and revenue operations. | $16,321,800* **see details in Appendix A* | Medium-Term | RAISE Grant, Federal Formula Grant, City general funds, Destination 2040, Colorado Connect Initiative, Colorado Multimodal Options Fund |

# APPENDIX A

# Cost Estimates

# GRAND AVENUE CORRIDOR TRANSITWAY

# BUS RAPID TRANSIT – CONCEPTUAL PLAN

## Engineer's ROM Estimate

## April 2021

## Table Contents

**Executive Summary**

The work consists of bi-directional bus lanes on Grand Avenue located within the City of Glenwood Springs, CO.

The purpose of the cost estimate is to identify likely costs to be allocated to an outside contractor to support the construction of this bi-directional bus transitway and associated activities.

**Option Descriptions in this cost estimate:**
Option 1-Proposed bus lane ends at 8th Street. BRT buses may utilize the Grand Avenue bridge or 8th Street to/from West Glenwood Springs.
Option 2-Proposed bus lane ends at 9th Street and BRT buses utilize 9th or 8th Street to/ from West Glenwood Springs.

The probable cost of the Grand Avenue Corridor Transitway Civil Package Submittal:

- Base plus Option 1: $3,600,000
- Base plus Option 2: $3,300,000

Costs include 15% markup/contingency, escalation of 3%/year from 2021 to 2026 and 30% soft costs.

**Basis of Estimate**

This Estimate is based on the Grand Ave Bus Lane Exhibit-R2.pdf dated 01/27/2021.

**Scope of Work**

The Work Includes:

1. Mobilization
2. Demolition and removal of existing pavement, and associated vegetation in the immediate area.
3. Installation of 160 LF x 14 LF bus pads at stations
4. Installation of bus stations
5. Landscaping
6. Lighting
7. General conditions
8. Local labor rates
9. Quality control testing and survey
10. Project closeout

**Exclusions**

- Liquidated damages due to delay
- Owner Controlled Insurance Program (OCIP)

- Schedule acceleration
- Costs associated with LEED (Leadership in Energy and Environmental Design)
- Cost escalation beyond the assumed construction schedule
- Operations and maintenance expenses
- Retaining walls, new or existing
- Utility relocations or conflicts
- Fencing
- ROW including TCE's
- Pavement rehabilitation

**Assumptions**

- Soft Costs (as noted below)
  - Project Development and Engineering
  - Project Management for Design and Construction
  - Construction Administration & Management
  - Professional Liability and other Non-Construction Costs
  - Legal; Permits; Review Fees by other agencies, cities, etc.
  - Surveys, Testing, Investigation, Inspection
  - Startup

**Construction Schedule**

The proposed construction dates reflected in the schedule have been adapted:

- Estimated Project Duration: 8 Months
- Mid-point of Construction April 2026

**Procurement Method**

Experience shows fewer bidders may result in higher bids, and conversely more bidders may result in lower bids. Therefore, it is important to obtain as many bids as possible.

The following table provides a general guideline for probable impacts due to number of bids:

| | |
|---|---|
| 1 bid | +21% to +40% |
| 2-3 bids | +6% to +20% |
| 4-5 bids | -5% to +5% |

| | |
|---|---|
| 6-7 bids | -8% to -6% |
| 8 or more bids | -15% to -9% |

**Basis of Quantities**

Wherever possible, this estimate has been based upon the actual measurement of different items of work.

**Basis of Direct Cost Pricing**

- The unit prices used in the direct cost estimate section are composite unit prices with include costs for labor, equipment, material (including applicable sales taxes).
- Subcontractor's overhead and profit is included in each line item unit cost, where applicable.
- Labor costs are based on the State of Colorado prevailing wages, where applicable.
- In pricing the estimate, we have made references to the following sources for cost data:
  - Historical cost data of similar projects
  - Vendor pricing (if available)
- Based on the above cost sources, our analysis of the project specific requirements and our judgment of the current market conditions, we have determined the unit costs specifically for this project.

**Markups**

Markups are added in the Summary to cover the following needed costs:

**Prime Bidder Markups**

| | |
|---|---|
| Fee (Markup, Margin) | 15% |
| No fee on Soft Costs and Escalation Bid Items | |
| Bonds | 0.5% |
| Insurance | 1.5% |
| Escalation (Labor, Material, Sub) to 2026 | 3.0% for 5 years |

**Items Impacting Costs**

The following is a list of some items that may affect the cost estimate:

- Modifications to the scope of work or assumptions included in this estimate.

- Unforeseen conditions such as hazardous material other than what has been assumed
- Special phasing requirements
- Restrictive technical specifications or excessive contract conditions
- Any other non-competitive bid situations
- COVID-19 working conditions & health contracts

**Limitations**

- The estimate has been prepared using accepted practices and it represents our opinion of probable procurement costs. It is intended to be a determination of fair market value for the project construction. It is not a prediction of low bid. Since we have no control over market conditions and other factors which may affect the bid prices, we cannot and do not warrant nor guarantee that bids or ultimate procurement costs will not vary from the cost estimate.
- It should be noted that the cost estimate is a "snapshot in time" and that the reliability of this opinion of probable procurement cost will inherently degrade over time.
- Client acknowledges that our service is consistent with and limited to the standard of care applicable to such services, which is that we provide our services consistent with the professional skill and care ordinarily provided by consultants practicing in the same or similar locality under the same or similar circumstances.
- Parsons does not guarantee that the indicative cost estimates will match eventual actual costs of the bids received or contract.
- The estimate is Class 4 Estimate by AACE Estimate Classification (see table).
- This cost estimate should be updated with additional design detail during preliminary engineering and final design.

**COST ESTIMATE MATRIX FOR THE BUILDING AND GENERAL CONSTRUCTION INDUSTRIES**

| | *Primary Characteristic* | *Secondary Characteristic* | | |
|---|---|---|---|---|
| **ESTIMATE CLASS** | **MATURITY LEVEL OF PROJECT DEFINITION DELIVERABLES** Expressed as % of complete definition | **END USAGE** Typical purpose of estimate | **METHODOLOGY** Typical estimating method | **EXPECTED ACCURACY RANGE** Typical variation in low and high ranges at an 80% confidence interval |
| **Class 5** | 0% to 2% | Functional area, or concept screening | SF or $m^2$ factoring, parametric models, judgment, or analogy | L: -20% to -30%<br>H: +30% to +50% |
| **Class 4** | 1% to 15% | or Schematic design or concept study | Parametric models, assembly driven models | L: -10% to -20%<br>H: +20% to +30% |
| **Class 3** | 10% to 40% | Design development, budget authorization, feasibility | Semi-detailed unit costs with assembly level line items | L: -5% to -15%<br>H: +10% to +20% |
| **Class 2** | 30% to 75% | Control or bid/tender, semi-detailed | Detailed unit cost with forced detailed take-off | L: -5% to -10%<br>H: +5% to +15% |
| **Class 1** | 65% to 100% | Check estimate or pre bid/tender, change order | Detailed unit cost with detailed take-off | L: -3% to -5%<br>H: +3% to +10% |

**Table 1 – Cost Estimate Classification Matrix for Building and General Construction Industries**

**Abbreviations used in the Estimate:**

CY = Cubic Yard
EA = Each
TN = Ton
LS = Lump Sum
LF = Linear Foot
SY = Square Yard

**Estimate Summary:**

4/21/2021

**RFTA - GRAND AVE CORRIDOR BUS ROUTE**

CD Gidlof 808.368.9847

| Base Estimate | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Item** | **Description** | **Status** | **Bid Quantity** | **Unit** | **Unit Price** | **Bid Total** | |
| | **Construction Costs** | | | | | | |
| 1000000 | CLEAR & GRUB | U | 1 | LS | $ 45,000 | $ 45,000 | remove large trees |
| 2000000 | DEMO & REMOVALS | U | 1 | LS | $ 93,679 | $ 93,679 | |
| 3000000 | EROSION CONTROL | U | 1 | LS | $ 36,340 | $ 36,340 | |
| 4000000 | EARTHWORK | U | 332 | CY | $ 71 | $ 23,561 | |
| 4500000 | AGGREGATES | U | 332 | TN | $ 65 | $ 21,570 | |
| 5000000 | DRAINAGE (Catch Basin Reconstruction) | U | 2 | EA | $ 3,000 | $ 6,000 | |
| 6000000 | FLATWORK (Curb & Gutter) | U | 5,764 | LF | $ 30 | $ 172,920 | |
| 6000000 | FLATWORK (Curb Return) | U | 284 | SY | $ 235 | $ 66,844 | |
| 7000000 | ASPHALT PAVEMENT (Subcontract) | U | 1,216 | TN | $ 186 | $ 226,176 | |
| 8000000 | BUS APPROACH PAD - CONCRETE (160 LF x 14 LF x 1 LF) | U | 166 | CY | $ 600 | $ 99,556 | |
| 9000000 | STRIPING | U | 16,416 | LF | $ 3 | $ 41,040 | |
| 10000000 | SIGNING | U | 40 | EA | $ 2,050 | $ 82,000 | |
| 10050000 | SIGNAL REBUILD (10th St - 4 ea & 11th St - 4 ea) | U | 8 | EA | $ 20,000 | $ 160,000 | $20K per pole |
| 11000000 | MAINTENANCE OF TRAFFIC | U | 1 | LS | $ 25,000 | $ 25,000 | |
| 12000000 | UTILITIES - LIGHTING/ELECTRIC RELOCATION | U | 1 | LS | $ 100,000 | $ 100,000 | |
| 13000000 | LANDSCAPING | U | 1 | LS | $ 60,244 | $ 60,244 | replace with potted small trees |
| 15000000 | BRT STATION (13th Street) | U | 2 | EA | $ 100,000 | $ 200,000 | |
| | | | **Construction Cost Subtotal ==========>** | | | **$ 1,500,000** | |
| 17000000 | ESCALATION TO 2021 to 2026 (3%/year) | | 1 | LS | 16% | $ 238,911 | |
| 16000000 | SOFT COSTS (30% OF BID SUBTOTAL PLUS ESCALATION) | | 1 | LS | 30% | $ 521,679 | |
| | | | **Total ==========>** | | | **$ 2,300,000** | |

| Option 1 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Item** | **Description** | **Status** | **Bid Quantity** | **Unit** | **Unit Price** | **Bid Total** | |
| | **Construction Costs** | | | | | | |
| 1000000 | CLEAR & GRUB | U | 1 | LS | $ 11,250 | $ 11,250 | remove large trees |
| 2000000 | DEMO & REMOVALS | U | 1 | LS | $ 36,659 | $ 36,659 | |
| 3000000 | EROSION CONTROL | U | 1 | LS | $ 14,221 | $ 14,221 | |
| 4000000 | EARTHWORK | U | 332 | CY | $ 71 | $ 23,561 | |
| 4500000 | AGGREGATES | U | 332 | TN | $ 65 | $ 21,570 | |
| 5000000 | DRAINAGE (Catch Basin Reconstruction) | U | 3 | EA | $ 3,000 | $ 9,000 | |
| 6000000 | FLATWORK (Curb & Gutter) | U | 1,468 | LF | $ 30 | $ 44,040 | |
| 6000000 | FLATWORK (Curb Return) | U | 14 | SY | $ 235 | $ 3,342 | |
| 7000000 | ASPHALT PAVEMENT (Subcontract) | U | 476 | TN | $ 186 | $ 88,508 | |
| 8000000 | BUS APPROACH PAD - CONCRETE (160 LF x 14 LF x 1 LF) | U | 166 | CY | $ 600 | $ 99,556 | |
| 9000000 | STRIPING | U | 6,424 | LF | $ 3 | $ 16,060 | |
| 10000000 | SIGNING | U | 10 | EA | $ 2,050 | $ 20,500 | |
| 10050000 | SIGNAL REBUILD Grand Ave (8th St - 2 ea & 9th St - 4 ea) | U | 6 | EA | $ 20,000 | $ 120,000 | $20K per pole |
| 11000000 | MAINTENANCE OF TRAFFIC | U | 1 | LS | $ 5,000 | $ 5,000 | |
| 12000000 | UTILITIES - LIGHTING/ELECTRIC | U | 1 | LS | $ 10,000 | $ 10,000 | |
| 13000000 | LANDSCAPING | U | 1 | LS | $ 23,575 | $ 23,575 | replace with potted small trees |
| 15000000 | BRT STATION (13th Street) | U | 2 | EA | $ 100,000 | $ 200,000 | |
| | | | **Construction Cost Subtotal ==========>** | | | **$ 800,000** | |
| 17000000 | ESCALATION TO 2021 to 2026 (3%/year) | | 1 | LS | 16% | $ 127,419 | |
| 16000000 | SOFT COSTS (30% OF BID SUBTOTAL PLUS ESCALATION) | | 1 | LS | 30% | $ 278,229 | |
| | | | **Total ==========>** | | | **$ 1,300,000** | |

| Option 2 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Item** | **Description** | **Status** | **Bid Quantity** | **Unit** | **Unit Price** | **Bid Total** | |
| | **Construction Costs** | | | | | | |
| 1000000 | CLEAR & GRUB | U | 1 | LS | $ 11,250 | $ 11,250 | remove large trees |
| 2000000 | DEMO & REMOVALS | U | 1 | LS | $ 10,911 | $ 10,911 | |
| 3000000 | EROSION CONTROL | U | 1 | LS | $ 4,233 | $ 4,233 | |
| 4000000 | EARTHWORK | U | 332 | CY | $ 71 | $ 23,561 | |
| 4500000 | AGGREGATES | U | 332 | TN | $ 65 | $ 21,570 | |
| 5000000 | DRAINAGE (Catch Basin Reconstruction) | U | 0 | EA | $ 3,000 | $ - | |
| 6000000 | FLATWORK (Curb & Gutter) | U | 474 | LF | $ 30 | $ 14,220 | |
| 6000000 | FLATWORK (Curb Return) | U | 7 | SY | $ 235 | $ 1,671 | |
| 7000000 | ASPHALT PAVEMENT (Subcontract) | U | 142 | TN | $ 186 | $ 26,343 | |
| 8000000 | BUS APPROACH PAD - CONCRETE (160 LF x 14 LF x 1 LF) | U | 166 | CY | $ 600 | $ 99,556 | |
| 9000000 | STRIPING | U | 1,912 | LF | $ 3 | $ 4,780 | |
| 10000000 | SIGNING | U | 10 | EA | $ 2,050 | $ 20,500 | |
| 10050000 | SIGNAL REBUILD Grand Ave (9th St - 2 ea) | U | 2 | EA | $ 20,000 | $ 40,000 | $20K per pole |
| 11000000 | MAINTENANCE OF TRAFFIC | U | 1 | LS | $ 5,000 | $ 5,000 | |
| 12000000 | UTILITIES - LIGHTING/ELECTRIC | U | 1 | LS | $ 10,000 | $ 10,000 | |
| 13000000 | LANDSCAPING | U | 1 | LS | $ 7,017 | $ 7,017 | replace with potted small trees |
| 15000000 | BRT STATION (13th Street) | U | 2 | EA | $ 100,000 | $ 200,000 | |
| | | | **Construction Cost Subtotal ==========>** | | | **$ 600,000** | |
| 17000000 | ESCALATION TO 2021 to 2026 (3%/year) | | 1 | LS | 16% | $ 95,564 | |
| 16000000 | SOFT COSTS (30% OF BID SUBTOTAL PLUS ESCALATION) | | 1 | LS | 30% | $ 208,672 | |
| | | | **Total ==========>** | | | **$ 1,000,000** | |

Note: All costs include 15% markup

| | **Cost Summary** | | | | | |
|---|---|---|---|---|---|---|
| | | | | | **Base Estimate** | **$ 2,300,000** |
| | | | | | **Option 1** | **$ 1,300,000** |
| | | | | | **Total** | **$ 3,600,000** |
| | | | | | | |
| | | | | | **Base Estimate** | **$ 2,300,000** |
| | | | | | **Option 2** | **$ 1,000,000** |
| | | | | | **Total** | **$ 3,300,000** |

# RIO GRANDE CORRIDOR TRANSITWAY

# BUS RAPID TRANSIT – CONCEPTUAL PLAN

## Engineer's ROM Estimate

## February 4, 2021

## Table Contents

**Executive Summary**

The work consists of new bi-directional bus lanes, including partial realignment of the existing Rio Grande Trail located within the City of Glenwood Springs, CO.

The purpose of the Civil Design Cost Estimate is to identify likely costs to be allocated to an outside contractor to support the construction of this bi-directional bus transitway and associated activities.

The probable cost of the Rio Grande Corridor Transitway Civil Package Submittal is: Seventeen Million, Six Hundred Eighty-Two Thousand Dollars and Zero Cents.

**Basis of Estimate**

This Estimate is based on the Rio_Brande_Busway_Plan_Sheets_3 Concept Plans dated 06/17/2020 and RFTA_BuswayTYP_ Alt#1 dated 06/15/2020.

**Scope of Work**

The Work Includes:

1. Mobilization
2. Demo and removal of existing trail features, existing railroad track and ballast, pavement, and associated vegetation in the immediate area.
3. Installation of bi-directional 12’ bus lanes with soft shoulders
4. Installation of two bus Stations
5. Landscaping
6. Lighting
7. General Site Conditions & Management
8. Updated Labor Rates for the area
9. All necessary quality control testing and survey.
10. Project closeout

**Exclusions**

- Liquidated damages due to delay
- Owner Controlled Insurance Program (OCIP)
- Schedule acceleration
- Costs associated with LEED (Leadership in Energy and Environmental Design)
- Cost escalation beyond the assumed construction schedule
- Operations and Maintenance expenses
- Retaining Walls, New or Existing.
- Utility Relocations or Conflicts

**Assumptions**

- 20 Inch thick existing railroad track ballast to be removed
- No salvage credit on existing railroad track metals
- Track ballast & ties as hazardous material (creosote ties, oils, diesel fuel spills in area)
- Landscaping budget of $650,000
- Utility & lighting budget of $2,500,000
- Assumed $1,000,000 budget for unknown scope
- Soft Costs (as noted below)
    - Project Development
    - Engineering (not applicable to Small Starts)
    - Project Management for Design and Construction
    - Construction Administration & Management
    - Professional Liability and other Non-Construction Costs
    - Legal; Permits; Review Fees by other agencies, cities, etc.
    - Surveys, Testing, Investigation, Inspection
    - Startup

**Construction Schedule**

The proposed construction dates reflected in the schedule have been adapted:

Estimated Project Duration: 8 Months

**Procurement Method**

Experience shows fewer bidders may result in higher bids, and conversely more bidders may result in lower bids. Therefore, it is important to obtain as many bids as possible.

The following table provides a general guideline for probable impacts due to number of bids:

| | |
|---|---|
| 1 bid | +21% to +40% |
| 2-3 bids | +6% to +20% |
| 4-5 bids | -5% to +5% |
| 6-7 bids | -8% to -6% |
| 8 or more bids | -15% to -9% |

**Basis of Quantities**

Wherever possible, this estimate has been based upon the actual measurement of different items of work.

**Basis of Direct Cost Pricing**

- The unit prices used in the direct cost estimate section are composite unit price with include costs for labor, equipment, material (including applicable sales taxes).
- Subcontractor's overhead and profit is included in each line item unit cost, where applicable.
- Labor costs are based on the State of Colorado prevailing wages, where applicable.
- In pricing the estimate, we have made references to the following sources for cost data:
  - Historical cost data of similar projects
  - Vendor pricing (if available)
- Based on the above cost sources, our analysis of the project specific requirements and our judgement of the current market conditions, we have determined the unit costs specifically for this project.

**Markups**

Markups are added in the Summary to cover the following needed costs:

**Prime Bidder Markups**

| | |
|---|---|
| Fee (Markup, Margin) | 15% |
| No fee on Soft Costs and Escalation Bid Items | |
| Bonds | 0.5% |
| Insurance | 1.5% |
| Escalation (Labor, Material, Sub) to 2026 | 3.0% for 6 years |

**Items Impacting Costs**

The following is a list of some items that may affect the cost estimate:

- Modifications to the scope of work or assumptions included in this estimate.
- Unforeseen conditions such as hazardous material other than what has been assumed
- Special phasing requirements
- Restrictive technical specifications or excessive contract conditions
- Any other non-competitive bid situations
- COVID-19 Working Conditions & Health Contracts

**Limitations**

- The estimate has been prepared using accepted practices and it represents our opinion of probable procurement costs. It is intended to be a determination of fair market value for the project construction. It is not a prediction of low bid. Since we have no control over market conditions and other factors which may affect the bid prices, we cannot and do not warrant nor guarantee that bids or ultimate procurement costs will not vary from the cost estimate.
- It should be noted that the cost estimate is a "snapshot in time" and that the reliability of this opinion of probable procurement cost will inherently degrade over time.

- Client acknowledges that our service is consistent with and limited to the standard of care applicable to such services, which is that we provide our services consistent with the professional skill and care ordinarily provided by consultants practicing in the same or similar locality under the same or similar circumstances.
- Parsons does not guarantee that the indicative cost estimates will match eventual actual costs of the bids received or contract.
- The estimate is Class 4 Estimate by AACE Estimate Classification (see table).

**COST ESTIMATE MATRIX FOR THE BUILDING AND GENERAL CONSTRUCTION INDUSTRIES**

| | *Primary Characteristic* | *Secondary Characteristic* | | |
|---|---|---|---|---|
| **ESTIMATE CLASS** | **MATURITY LEVEL OF PROJECT DEFINITION DELIVERABLES** Expressed as % of complete definition | **END USAGE** Typical purpose of estimate | **METHODOLOGY** Typical estimating method | **EXPECTED ACCURACY RANGE** Typical variation in low and high ranges at an 80% confidence interval |
| **Class 5** | 0% to 2% | Functional area, or concept screening | SF or $m^2$ factoring, parametric models, judgment, or analogy | L: -20% to -30%<br>H: +30% to +50% |
| **Class 4** | 1% to 15% | or Schematic design or concept study | Parametric models, assembly driven models | L: -10% to -20%<br>H: +20% to +30% |
| **Class 3** | 10% to 40% | Design development, budget authorization, feasibility | Semi-detailed unit costs with assembly level line items | L: -5% to -15%<br>H: +10% to +20% |
| **Class 2** | 30% to 75% | Control or bid/tender, semi-detailed | Detailed unit cost with forced detailed take-off | L: -5% to -10%<br>H: +5% to +15% |
| **Class 1** | 65% to 100% | Check estimate or pre bid/tender, change order | Detailed unit cost with detailed take-off | L: -3% to -5%<br>H: +3% to +10% |

**Table 1 – Cost Estimate Classification Matrix for Building and General Construction Industries**

**Abbreviations used in the Estimate:**

CY = Cubic Yard
EA = Each
TN = Ton
LS = Lump Sum
LF = Linear Foot
SY = Square Yard

## Estimate Summary:

02/03/2021 16:12
T21-01 RFTA - RIO GRANDE CORRIDOR BUS ROUTE
*** Chris Parr

**BID TOTALS**

| Biditem | Description | Status - Rnd | Quantity | Units | Unit Price | Bid Total |
|---|---|---|---|---|---|---|
| 1000000 | CLEAR & GRUB | U | 1.000 | LS | 45,000.00 | 45,000.00 |
| 2000000 | DEMO & REMOVALS | U | 1.000 | LS | 1,010,750.49 | 1,010,750.49 |
| 3000000 | EROSION CONTROL | U | 1.000 | LS | 60,000.00 | 60,000.00 |
| 4000000 | EARTHWORK | U | 6,433.000 | CY | 71.00 | 456,743.00 |
| 4500000 | AGGREGATES | U | 10,998.000 | TN | 65.00 | 714,870.00 |
| 5000000 | DRAINAGE | U | 1,200.000 | LF | 235.00 | 282,000.00 |
| 6000000 | FLATWORK | U | 5,330.000 | SY | 235.00 | 1,252,550.00 |
| 7000000 | ASPHALT PAVEMENT | U | 12,023.000 | TN | 186.00 | 2,236,278.00 |
| 8000000 | BUS APPROACH PAD - CONCRETE | U | 640.000 | SY | 160.00 | 102,400.00 |
| 9000000 | STRIPING | U | 20,328.000 | LF | 2.50 | 50,820.00 |
| 10000000 | SIGNING | U | 40.000 | EA | 2,050.00 | 82,000.00 |
| 10050000 | SIGNALING | U | 1.000 | EA | 375,000.00 | 375,000.00 |
| 11000000 | MAINTENANCE OF TRAFFIC | U | 1.000 | LS | 25,000.00 | 25,000.00 |
| 12000000 | UTILITIES - LIGHTING/ELECTRIC | U | 1.000 | LS | 2,500,000.00 | 2,500,000.00 |
| 13000000 | LANDSCAPING | U | 1.000 | LS | 650,000.00 | 650,000.00 |
| 14000000 | FENCING | U | 5,972.000 | LF | 77.00 | 459,844.00 |
| 15000000 | BRT STATION | U | 2.000 | EA | 500,000.00 | 1,000,000.00 |
| 16000000 | SOFT COSTS | | 1.000 | LS | 4,080,495.09 | 4,080,495.09 |
| 17000000 | ESCALATION | | 1.000 | LS | 2,298,249.42 | 2,298,249.42 |

Bid Total ========> $17,682,000.00

| Bid# / Client# / Bid Description | Quantity | Unit | Manhours / Trucking | Direct Labor | Perm Matl | Constr Matl | Equip-ment | Sub-Contr | Direct Total | Indirect Charge | Total Cost | Total Cost Unit Price | Markup | Balanced Bid Total | Balanced Bid Unit Price | | Bid Price | Bid Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000000<br>CLEAR & GRUB | 1.00 | LS | | | | | | 30,000 | 30,000 | 8,491 | 38,491 | 38,491.16 | 5,774<br>15.0 % | 44,265 | 44,264.83 | U | 45,000.00 | 45,000.00 |
| 2000000<br>DEMO & REMOVALS | 1.00 | LS | 2,634<br>2,633.68 | 98,462 | | 323,703 | 48,489 | 191,780 | 662,434 | 187,494 | 849,928 | 849,928.16 | 127,489<br>15.0 % | 977,417 | 977,417.39 | U | 1,010,750.49 | 1,010,750.49 |
| 3000000<br>EROSION CONTROL | 1.00 | LS | 104<br>104.00 | 3,389 | | 2,440 | 760 | 33,880 | 40,469 | 11,454 | 51,924 | 51,923.76 | 7,789<br>15.0 % | 59,712 | 59,712.32 | U | 60,000.00 | 60,000.00 |
| 4000000<br>EARTHWORK | 6,433.00 | CY | 1,570<br>0.24 | 66,037 | | 84,726 | 33,631 | 126,120 | 310,514 | 87,887 | 398,401 | 61.93 | 59,760<br>15.0 % | 458,161 | 71.22 | U | 71.00 | 456,743.00 |
| 4500000<br>AGGREGATES | 10,998.00 | TN | 1,823<br>0.17 | 76,886 | 239,756 | | 53,726 | 109,980 | 480,348 | 135,957 | 616,305 | 56.04 | 92,446<br>15.0 % | 708,751 | 64.44 | U | 65.00 | 714,870.00 |
| 5000000<br>DRAINAGE | 1,200.00 | LF | 1,680<br>1.40 | 66,369 | 77,085 | | 37,442 | 8,560 | 189,456 | 53,623 | 243,079 | 202.57 | 36,462<br>15.0 % | 279,541 | 232.95 | U | 235.00 | 282,000.00 |
| 6000000<br>FLATWORK | 5,330.00 | SY | | | | | | 842,595 | 842,595 | 238,487 | 1,081,082 | 202.83 | 162,162<br>15.0 % | 1,243,244 | 233.25 | U | 235.00 | 1,252,550.00 |
| 7000000<br>ASPHALT PAVEMENT | 12,023.00 | TN | | | | | | 1,517,875 | 1,517,875 | 429,617 | 1,947,492 | 161.98 | 292,124<br>15.0 % | 2,239,616 | 186.28 | U | 186.00 | 2,236,278.00 |
| 8000000<br>BUS APPROACH PAD - CONCRETE | 640.00 | SY | | | | | | 69,000 | 69,000 | 19,530 | 88,530 | 138.33 | 13,279<br>15.0 % | 101,809 | 159.08 | U | 160.00 | 102,400.00 |
| 9000000<br>STRIPING | 20,328.00 | LF | | | | | | 32,144 | 32,144 | 9,098 | 41,241 | 2.03 | 6,186<br>15.0 % | 47,428 | 2.33 | U | 2.50 | 50,820.00 |
| 10000000<br>SIGNING | 40.00 | EA | | | | | | 56,000 | 56,000 | 15,850 | 71,850 | 1,796.25 | 10,778<br>15.0 % | 82,628 | 2,065.69 | U | 2,050.00 | 82,000.00 |
| 10050000<br>SIGNALING | 1.00 | EA | | | | | | 250,000 | 250,000 | 70,760 | 320,760 | 320,759.64 | 48,114<br>15.0 % | 368,874 | 368,873.59 | U | 375,000.00 | 375,000.00 |
| 11000000<br>MAINTENANCE OF TRAFFIC | 1.00 | LS | | | | 17,266 | | | 17,266 | 4,887 | 22,152 | 22,152.43 | 3,323<br>15.0 % | 25,475 | 25,475.29 | U | 25,000.00 | 25,000.00 |
| 12000000<br>UTILITIES - LIGHTING/ELECTRIC | 1.00 | LS | | | | | | 1,700,000 | 1,700,000 | 481,166 | 2,181,166 | 2,181,165.53 | 327,175<br>15.0 % | 2,508,340 | 2,508,340.36 | U | 2,500,000.00 | 2,500,000.00 |
| 13000000<br>LANDSCAPING | 1.00 | LS | | | | | | 450,000 | 450,000 | 127,367 | 577,367 | 577,367.35 | 86,605<br>15.0 % | 663,972 | 663,972.45 | U | 650,000.00 | 650,000.00 |

| Bid# / Client# / Bid Description | Quantity | Unit | Trucking Manhours | Direct Labor | Perm Matl | Constr Matl | Equip-ment | Sub-Contr | Direct Total | Indirect Charge | Total Cost | Total Cost Unit Price | Markup | ------Balanced Bid------ Total | Unit Price | | Bid Price | Bid Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14000000 FENCING | 5,972.00 | LF | | | | | | 312,620 | 312,620 | 88,484 | 401,104 | 67.16 | 60,166 15.0% | 461,269 | 77.24 | U | 77.00 | 459,844.00 |
| 15000000 BRT STATION | 2.00 | EA | | | | | | 700,000 | 700,000 | 198,127 | 898,127 | 449,063.49 | 134,719 15.0% | 1,032,846 | 516,423.02 | U | 500,000.00 | 1,000,000.00 |
| 16000000 SOFT COSTS | 1.00 | LS | | | | | | 4,080,495 | 4,080,495 | | 4,080,495 | 4,080,495.09 | | 4,080,495 | 4,080,495.09 | | 4,080,495.09 | 4,080,495.09 |
| 17000000 ESCALATION | 1.00 | LS | | 171,833 | 67,034 | 90,580 | 2,717 | 1,966,086 | 2,298,249 | | 2,298,249 | 2,298,249.42 | | 2,298,249 | 2,298,249.42 | | 2,298,249.42 | 2,298,249.42 |
| Totals: | | | 7,810 | 482,974 | 383,874 | 518,714 | 176,765 | 12,477,134 | 14,039,464 | 2,168,279 | 16,207,743 | | 1,474,349 | 17,682,093 | | | | 17,682,000.00 |

Code between Balanced Bid & Bid Price: U=Unbalanced, F=Frozen, C=Closing Biditem (item to absorb unbalancing differences).
bracketed numbers represent ad usted quantities
in ront o the Biditem indicates a Non-Additi e item

Markup % is sho n as a percentage o cost

| | | Addon Costs Not Spread | | | | Dollars Not Spread | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 20000000 | INDIRECT | 540,587 | 1,581,594 | 36,348 | 9,750 | 2,168,279 | | | | |
| 20000010 | Pro ect Sta | 405,892 | | | | 405,892 | | | | |
| 20000020 | Pro ect Sta Costs | | 120 | 36,348 | | 36,468 | | | | |
| 20000030 | Pro ect Cra t Costs | | 22,428 | | | 22,428 | | | | |
| 20000040 | Pro ect Support Cre s/Equip | | | | | | | | | |
| 20000050 | Marine | | | | | | | | | |
| 20000060 | High ay/Bridge | | | | | | | | | |
| 20000070 | Tunnel | | | | | | | | | |
| 20000080 | Airport | | | | | | | | | |
| 20000090 | Site Storage Facilities - Yar | | | | | | | | | |
| 20000100 | Yard/Warehouse Rentals | | | | | | | | | |
| 20000110 | Yards/Warehouse Establish | | | | | | | | | |
| 20000120 | Yard/Warehouse Remo als | | | | | | | | | |
| 20000130 | Pro ect O ice E pense, Initi | | 22,500 | | | 22,500 | | | | |
| 20000140 | Pro ect O ice E pense, Tim | | 76,800 | | | 76,800 | | | | |
| 20000150 | O ners O ice E pense | | 4,000 | | | 4,000 | | | | |
| 20000160 | Design E penses | | | | | | | | | |
| 20000170 | Construction Engineering & | | 2,502 | | | 2,502 | | | | |
| 20000180 | Temporary Site Costs | | 19,275 | | | 19,275 | | | | |

| Bid# | Client# / Bid Description | Quantity | Unit / Manhours | Trucking | Direct Labor | Perm Matl | Constr Matl | Equip-ment | Sub-Contr | Direct Total | Indirect Charge | Total Cost | Total Cost Unit Price | Markup | ------Balanced Bid------ Total | Unit Price | Bid Price | Bid Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20000190 | Equipment Maintenance | | | | | | 21,906 | | | 21,906 | | | | | | | | |
| 20000200 | Shop Facility Purchase | | | | | | | | | | | | | | | | | |
| 20000210 | Shop Facility Install/Remo | | | | | | | | | | | | | | | | | |
| 20000220 | Fuel Depot Install/Remo e | | | | | | 3,986 | | | 3,986 | | | | | | | | |
| 20000230 | Mechanic & Lube Labor/Eq | | | | | | 17,920 | | | 17,920 | | | | | | | | |
| 20000240 | Equipment Time Span/MOB | | | | | | 30,000 | | | 30,000 | | | | | | | | |
| 20000250 | Support Equipment | | | | | | | | | | | | | | | | | |
| 20000260 | Sa ety E penses | | | | | | 3,503 | | | 3,503 | | | | | | | | |
| 20000270 | Sur ey E penses | | | | | | 14,000 | | 9,750 | 23,750 | | | | | | | | |
| 20000280 | QA/QC E penses | | | | 115,376 | | 9,560 | | | 124,936 | | | | | | | | |
| 20000290 | Bonds/Insurance/LOC s/Ta e | | | | | | 340,000 | | | 340,000 | | | | | | | | |
| 20000300 | DRB-Partnering/Legal/Permi | | | | | | 15,000 | | | 15,000 | | | | | | | | |
| 20000310 | Labor Ad ustments | | | | 19,319 | | | | | 19,319 | | | | | | | | |
| 20000330 | Risk & Contingency | | | | | | 1,000,000 | | | 1,000,000 | | | | | | | | |
| 20000340 | Pro ect Finance | | | | | | | | | | | | | | | | | |
| INDIRECT TOTALS | | | | | 540,587 | | 1,581,594 | 36,348 | 9,750 | 2,168,279 | | | | | | Subtotal | | |
| Markup on Resource Costs | | | | | | | | | | | | | | 1,474,349 | | | | |
| TOTAL | OB | | 7,810 | | 1,023,562 | 383,874 | 2,100,308 | 213,113 | 12,486,884 | 16,207,743 | | 16,207,743 | | 1,474,349 | 17,682,093 | | | 17,682,000.00 |

Spread Indirects On TOTAL COST Spread Markups On TOTAL COST Spread Addons&Bonds On DO NOT SPREAD

-----Estimate Notes-----
Bid Date: O ner: Engineering Firm:
Estimator in Charge:

Desired Bid i speci ied 0.00 Sort: Hold Acct: N Subitem: N NonAdd: N
Last Summary on 02/03/2021 at 4:09 PM.
Last Spread on 02/03/2021 at 4:09 PM.

## Estimate Labor Report:

**LABOR USE REPORT**

| RESOURCE | DESCRIPTION | QUAN | | RATE | BASE | BURDEN | TOTAL |
|---|---|---|---|---|---|---|---|
| LF | Laborer, Foreman - | 271.44 | MH | 19.14 | 5,406.04 | 3,085.12 | 8,491.16 |
| LG | Laborer, General - G | 1,907.36 | MH | 19.14 | 38,537.43 | 21,758.86 | 60,296.29 |
| LGC | Laborer, Grade Chec | 936.20 | MH | 19.14 | 19,045.76 | 10,699.03 | 29,744.79 |
| LPL | Laborer, Pipelayer - | 280.00 | MH | 19.14 | 5,895.12 | 3,228.91 | 9,124.03 |
| ODZ | Operator, Dozer <D | 153.68 | MH | 26.78 | 4,527.11 | 2,804.34 | 7,331.45 |
| OEX2 | Operator, Excavatr 3 | 663.62 | MH | 19.40 | 13,802.89 | 11,271.33 | 25,074.22 |
| OF | Operator, Foreman - | 1,458.43 | MH | 35.96 | 55,795.59 | 28,485.69 | 84,281.28 |
| OLDR2 | Operator, Loader 6c | 937.36 | MH | 21.93 | 21,971.86 | 16,281.87 | 38,253.73 |
| OMG | Operator, Motor Gra | 402.88 | MH | 23.05 | 9,802.71 | 7,050.40 | 16,853.11 |
| ORL | Operator, Roller/Co | 208.32 | MH | 22.72 | 5,021.43 | 3,638.69 | 8,660.12 |
| OSCR | Operator, Scraper - | 72.28 | MH | 20.60 | 1,571.75 | 1,237.63 | 2,809.38 |
| TRLR | Teamster, Trailer D | 32.00 | MH | 31.37 | 1,003.84 | 558.62 | 1,562.46 |
| TWT | Teamster, Water Trk | 486.75 | MH | 21.00 | 10,813.39 | 7,847.01 | 18,660.40 |
| | **Grand Total** | | | | **193,194.92** | **117,947.50** | **311,142.42** |

## Estimate Permanent Material Report:

| Biditem | Activity | Resource | Sel Vendor | Quantity | Unit | Unit Cost | Tax/OT % | Pcs/W | Total | Esc % |
|---|---|---|---|---|---|---|---|---|---|---|
| 17000000 | 90018000.30 | 2*DP01 | | 316,841.200 | PM$ | 0.194 | 109.00 | 1.00 | 67,033.78 | 100.00 |
| Subtotal: | 2*DP01 | | | 316,841.200 | PM$ | 0.194 | 109.00 | | 67,033.78 | 100.00 |
| | Permanent Materials | | | | | | | | | |
| 4500000 | 36004000 | 2AGG01 | | 10,998.000 | TON | 20.000 | 109.00 | 1.00 | 239,756.40 | 100.00 |
| Subtotal: | 2AGG01 | | | 10,998.000 | TON | 20.000 | 109.00 | | 239,756.40 | 100.00 |
| | ABC (CL 6) (Spec) | | | | | | | | | |
| 5000100 | 5000100.1 | 2AGGS01 | | 840.000 | TN | 20.000 | 109.00 | 1.00 | 18,312.00 | 100.00 |
| 5000200 | 5000200.1 | 2AGGS01 | | 12.000 | TN | 20.000 | 109.00 | 1.00 | 261.60 | 100.00 |
| 5000300 | 5000300.1 | 2AGGS01 | | 4.000 | TN | 20.000 | 109.00 | 1.00 | 87.20 | 100.00 |
| Subtotal: | 2AGGS01 | | | 856.000 | TN | 20.000 | 109.00 | | 18,660.80 | 100.00 |
| | Aggregate - Bedding | | | | | | | | | |
| 5000100 | 5000100.1 | 2DHD12 | | 1,200.000 | LF | 18.000 | 109.00 | 1.00 | 23,544.00 | 100.00 |
| Subtotal: | 2DHD12 | | | 1,200.000 | LF | 18.000 | 109.00 | | 23,544.00 | 100.00 |
| | 12" hdpe pIPE | | | | | | | | | |
| 5000200 | 5000200.1 | 2PDCB01 | | 12.000 | EA | 1,500.000 | 109.00 | 1.00 | 19,620.00 | 100.00 |
| Subtotal: | 2PDCB01 | | | 12.000 | EA | 1,500.000 | 109.00 | | 19,620.00 | 100.00 |
| | Catch Basin Type 1 | | | | | | | | | |
| 5000300 | 5000300.1 | 2PDMC48 | | 4.000 | EA | 3,500.000 | 109.00 | 1.00 | 15,260.00 | 100.00 |
| Subtotal: | 2PDMC48 | | | 4.000 | EA | 3,500.000 | 109.00 | | 15,260.00 | 100.00 |
| | Manhole - 48" Complete | | | | | | | | | |

COST TYPE TOTAL 383,874.98

REPORT TOTAL 383,874.98

*Cost Types Selected: Permanent Materials*

Subtotal selected vendor, quantity, units, and unit price only display if they are the same for all line items in the subtotal.

## Estimate Construction Material Report:

| Biditem | Activity | Resource | Sel Vendor | Quantity | Unit | Unit Cost | Tax/OT % | Pcs/W | Total | Esc % |
|---|---|---|---|---|---|---|---|---|---|---|
| 17000000 | 90018000.30 | 3*DCO1 | | 428,134.520 | CON$ | 0.194 | 109.00 | 1.00 | 90,579.99 | 100.00 |
| Subtotal: | 3*DCO1 | | | 428,134.520 | CON$ | 0.194 | 109.00 | | 90,579.99 | 100.00 |
| | Construction Materials | | | | | | | | | |
| 20000030 | 90001000.800 | 3*DH02 | | 7,810.320 | MNHR | 0.250 | 109.00 | 1.00 | 2,128.31 | 100.00 |
| Subtotal: | 3*DH02 | | | 7,810.320 | MNHR | 0.250 | 109.00 | | 2,128.31 | 100.00 |
| | Craft Drug Testing | | | | | | | | | |
| 20000260 | 90012000.300 | 3*DH05 | | 7,810.320 | HR | 0.200 | 109.00 | 1.00 | 1,702.65 | 100.00 |
| Subtotal: | 3*DH05 | | | 7,810.320 | HR | 0.200 | 109.00 | | 1,702.65 | 100.00 |
| | Safety Supplies | | | | | | | | | |
| 2000300 | 2000300.4 | 3DF01 | | 26.000 | LD | 2,000.000 | 109.00 | 1.00 | 56,680.00 | 100.00 |
| 2000300 | 2000300.7 | 3DF01 | | 4,744.000 | TN | 50.000 | 109.00 | 1.00 | 258,548.00 | 100.00 |
| Subtotal: | 3DF01 | | | | | | 109.00 | | 315,228.00 | 100.00 |
| | DISPOSAL FEES | | | | | | | | | |
| 4000000 | 4000000.1 | 3DF04 | | 5,182.000 | CY | 15.000 | 109.00 | 1.00 | 84,725.70 | 100.00 |
| Subtotal: | 3DF04 | | | 5,182.000 | CY | 15.000 | 109.00 | | 84,725.70 | 100.00 |
| | Disposal Fee for Spoils | | | | | | | | | |
| 2000100 | 2000100.3 | 3DF10 | | 73.000 | TON | 25.000 | 109.00 | 1.00 | 1,989.25 | 100.00 |
| Subtotal: | 3DF10 | | | 73.000 | TON | 25.000 | 109.00 | | 1,989.25 | 100.00 |
| | Disposal Fees, Asphalt | | | | | | | | | |
| 3000000 | 1000300.2 | 3EC02 | | 3,388.000 | LF | 0.420 | 109.00 | 1.00 | 1,551.03 | 100.00 |
| Subtotal: | 3EC02 | | | 3,388.000 | LF | 0.420 | 109.00 | | 1,551.03 | 100.00 |
| | Silt Fence w/Posts | | | | | | | | | |
| 3000000 | 1000300.2 | 3EC06 | | 408.000 | LF | 2.000 | 109.00 | 1.00 | 889.44 | 100.00 |
| Subtotal: | 3EC06 | | | 408.000 | LF | 2.000 | 109.00 | | 889.44 | 100.00 |
| | Straw Bales | | | | | | | | | |
| 2000300 | 2000300.0 | 3STSW08 | | 345.000 | MH | 10.000 | 109.00 | 1.00 | 3,760.50 | 100.00 |
| Subtotal: | 3STSW08 | | | 345.000 | MH | 10.000 | 109.00 | | 3,760.50 | 100.00 |
| | Oxygen & Acetylene | | | | | | | | | |
| 2000300 | 2000300.0 | 3STSW20 | | 1.000 | LS | 2,500.000 | 109.00 | 1.00 | 2,725.00 | 100.00 |
| Subtotal: | 3STSW20 | | | 1.000 | LS | 2,500.000 | 109.00 | | 2,725.00 | 100.00 |
| | Oxygen, Cutting Torch | | | | | | | | | |
| 11000000 | 11000000.2 | 3TEMPBRCD01 | | 24.000 | EA | 500.000 | 109.00 | 1.00 | 13,080.00 | 100.00 |
| Subtotal: | 3TEMPBRCD01 | | | 24.000 | EA | 500.000 | 109.00 | | 13,080.00 | 100.00 |
| | Barricade - Type 3 | | | | | | | | | |
| 11000000 | 11000000.2 | 3TEMPSIGN01 | | 96.000 | SF | 40.000 | 109.00 | 1.00 | 4,185.60 | 100.00 |
| Subtotal: | 3TEMPSIGN01 | | | 96.000 | SF | 40.000 | 109.00 | | 4,185.60 | 100.00 |
| | Const. Sign - Class A | | | | | | | | | |

COST TYPE TOTAL 522,545.47

REPORT TOTAL 522,545.47

| Biditem | Activity | Resource | Sel Vendor | Quantity | Unit | Unit Cost | Tax/OT % | Pcs/W | Total | Esc % |
|---|---|---|---|---|---|---|---|---|---|---|

*Cost Types Selected: Construction Materials*

Subtotal selected vendor, quantity, units, and unit price only display if they are the same for all line items in the subtotal.

Estimate Subcontract Report:

| Biditem | Activity | Resource | Sel Vendor | Quantity | Unit | Unit Cost | Tax/OT % | Pcs/W | Total | Esc % |
|---|---|---|---|---|---|---|---|---|---|---|
| 15000000 | 15000000 | 4BRTSTATION | | 2.000 | EA | 350,000.000 | 100.00 | 1.00 | 700,000.00 | 100.00 |
| Subtotal: | 4BRTSTATION | | | 2.000 | EA | 350,000.000 | 100.00 | | 700,000.00 | 100.00 |
| | Station Shelter | | | | | | | | | |
| 8000000 | 8000000.1 | 4CP10M | | 1.000 | LS | 5,000.000 | 100.00 | 1.00 | 5,000.00 | 100.00 |
| Subtotal: | 4CP10M | | | 1.000 | LS | 5,000.000 | 100.00 | | 5,000.00 | 100.00 |
| | CONCRETE PAVEMENT SUB MOB | | | | | | | | | |
| 8000000 | 8000000.1 | 4CP10N | | 640.000 | SY | 100.000 | 100.00 | 1.00 | 64,000.00 | 100.00 |
| Subtotal: | 4CP10N | | | 640.000 | SY | 100.000 | 100.00 | | 64,000.00 | 100.00 |
| | PCC Pavmt 11" Non-Reinf | | | | | | | | | |
| 3000000 | 1000300.1 | 4ER12 | | 13,552.000 | LF | 2.500 | 100.00 | 1.00 | 33,880.00 | 100.00 |
| Subtotal: | 4ER12 | | | 13,552.000 | LF | 2.500 | 100.00 | | 33,880.00 | 100.00 |
| | Silt Fence | | | | | | | | | |
| 14000000 | 1001940 | 4FENCE01 | | 5,972.000 | LF | 45.000 | 100.00 | 1.00 | 268,740.00 | 100.00 |
| Subtotal: | 4FENCE01 | | | 5,972.000 | LF | 45.000 | 100.00 | | 268,740.00 | 100.00 |
| | FENCING SUB | | | | | | | | | |
| 14000000 | 1001940 | 4FENCE04 | | 4.000 | EA | 2,500.000 | 100.00 | 1.00 | 10,000.00 | 100.00 |
| Subtotal: | 4FENCE04 | | | 4.000 | EA | 2,500.000 | 100.00 | | 10,000.00 | 100.00 |
| | INSTALL FENCE GATE | | | | | | | | | |
| 6000200 | 6000200.2 | 4FLAT01 | | 1.000 | LS | 5,000.000 | 100.00 | 1.00 | 5,000.00 | 100.00 |
| Subtotal: | 4FLAT01 | | | 1.000 | LS | 5,000.000 | 100.00 | | 5,000.00 | 100.00 |
| | Flatwork Sub Mob | | | | | | | | | |
| 6000200 | 6000200.2 | 4FLAT05 | | 1,675.000 | LF | 35.000 | 100.00 | 1.00 | 58,625.00 | 100.00 |
| Subtotal: | 4FLAT05 | | | 1,675.000 | LF | 35.000 | 100.00 | | 58,625.00 | 100.00 |
| | C & G - Type 2 II-B | | | | | | | | | |
| 6000400 | 32402008 | 4FLAT10 | | 4,882.000 | SY | 75.000 | 100.00 | 1.00 | 366,150.00 | 100.00 |
| 6000500 | 32402008 | 4FLAT10 | | 2,102.000 | SY | 75.000 | 100.00 | 1.00 | 157,650.00 | 100.00 |
| Subtotal: | 4FLAT10 | | | 6,984.000 | SY | 75.000 | 100.00 | | 523,800.00 | 100.00 |
| | Driveway - 6" | | | | | | | | | |
| 6000100 | 6000100 | 4FLATW01 | | 3,002.000 | SY | 85.000 | 100.00 | 1.00 | 255,170.00 | 100.00 |
| Subtotal: | 4FLATW01 | | | 3,002.000 | SY | 85.000 | 100.00 | | 255,170.00 | 100.00 |
| | FLATWORK | | | | | | | | | |
| 16000000 | 16000000 | 4FTASOFT | | 1.000 | LS | 4,080,495.090 | 100.00 | 1.00 | 4,080,495.09 | 100.00 |
| Subtotal: | 4FTASOFT | | | 1.000 | LS | 4,080,495.090 | 100.00 | | 4,080,495.09 | 100.00 |
| | FTA SOFT COSTS | | | | | | | | | |
| 4000000 | 4000000.1 | 4HAUL-HR | | 972.000 | HR | 120.000 | 100.00 | 1.00 | 116,640.00 | 100.00 |
| 4000000 | 4000000.2 | 4HAUL-HR | | 79.000 | HR | 120.000 | 100.00 | 1.00 | 9,480.00 | 100.00 |
| Subtotal: | 4HAUL-HR | | | 1,051.000 | HR | 120.000 | 100.00 | | 126,120.00 | 100.00 |
| | HAULING - HR | | | | | | | | | |
| 5000100 | 5000100.1 | 4HAUL-TN | | 840.000 | | 10.000 | 100.00 | 1.00 | 8,400.00 | 100.00 |
| 5000200 | 5000200.1 | 4HAUL-TN | | 12.000 | | 10.000 | 100.00 | 1.00 | 120.00 | 100.00 |
| 5000300 | 5000300.1 | 4HAUL-TN | | 4.000 | | 10.000 | 100.00 | 1.00 | 40.00 | 100.00 |
| Subtotal: | 4HAUL-TN | | | 856.000 | | 10.000 | 100.00 | | 8,560.00 | 100.00 |
| | Haul - Ton | | | | | | | | | |
| 2000100 | 2000100.3 | 4HAULDUMP | | 10.000 | HR | 120.000 | 100.00 | 1.00 | 1,200.00 | 100.00 |

| Biditem | Activity | Resource | Sel Vendor | Quantity | Unit | Unit Cost | Tax/OT % | Pcs/W | Total | Esc % |
|---|---|---|---|---|---|---|---|---|---|---|
| 2000200 | 2000200.3 | 4HAULDUMP | | 92.000 | HR | 120.000 | 100.00 | 1.00 | 11,040.00 | 100.00 |
| 2000300 | 2000300.4 | 4HAULDUMP | | 52.000 | HR | 120.000 | 100.00 | 1.00 | 6,240.00 | 100.00 |
| 2000300 | 2000300.7 | 4HAULDUMP | | 1,318.000 | HR | 120.000 | 100.00 | 1.00 | 158,160.00 | 100.00 |
| 2000400 | 2000400.3 | 4HAULDUMP | | 22.000 | HR | 120.000 | 100.00 | 1.00 | 2,640.00 | 100.00 |
| Subtotal: | 4HAULDUMP | | | 1,494.000 | HR | 120.000 | 100.00 | | 179,280.00 | 100.00 |
| | Haul to Dump | | | | | | | | | |
| 4500000 | 36004000 | 4HAULTON | | 10,998.000 | TON | 10.000 | 100.00 | 1.00 | 109,980.00 | 100.00 |
| Subtotal: | 4HAULTON | | | 10,998.000 | TON | 10.000 | 100.00 | | 109,980.00 | 100.00 |
| | Haull Aggs - Ton | | | | | | | | | |
| 2000200 | 2000200.3 | 4HDC | | 363.000 | CY | 15.000 | 100.00 | 1.00 | 5,445.00 | 100.00 |
| 2000400 | 2000400.3 | 4HDC | | 87.000 | CY | 15.000 | 100.00 | 1.00 | 1,305.00 | 100.00 |
| Subtotal: | 4HDC | | | 450.000 | CY | 15.000 | 100.00 | | 6,750.00 | 100.00 |
| | Dump Fee Conc/Demo, Cy | | | | | | | | | |
| 13000000 | 13000000.3 | 4LAND01 | | 1.000 | LS | 225,000.000 | 100.00 | 1.00 | 225,000.00 | 100.00 |
| Subtotal: | 4LAND01 | | | 1.000 | LS | 225,000.000 | 100.00 | | 225,000.00 | 100.00 |
| | Landscaping Budget | | | | | | | | | |
| 7000000 | 7000000.1 | 4PAVE | | 12,023.000 | TN | 125.000 | 100.00 | 1.00 | 1,502,875.00 | 100.00 |
| Subtotal: | 4PAVE | | | 12,023.000 | TN | 125.000 | 100.00 | | 1,502,875.00 | 100.00 |
| | PAVEMENT SUB | | | | | | | | | |
| 7000000 | 7000000.1 | 4PAVE1 | | 1.000 | LS | 15,000.000 | 100.00 | 1.00 | 15,000.00 | 100.00 |
| Subtotal: | 4PAVE1 | | | 1.000 | LS | 15,000.000 | 100.00 | | 15,000.00 | 100.00 |
| | PAVEMENT SUB MOB | | | | | | | | | |
| 2000100 | 2000100.0 | 4SAW01 | | 26.000 | LF | 2.500 | 100.00 | 1.00 | 65.00 | 100.00 |
| 2000200 | 2000200.0 | 4SAW01 | | 26.000 | LF | 5.000 | 100.00 | 1.00 | 130.00 | 100.00 |
| 2000400 | 2000400.0 | 4SAW01 | | 111.000 | LF | 5.000 | 100.00 | 1.00 | 555.00 | 100.00 |
| Subtotal: | 4SAW01 | | | 163.000 | LF | | 100.00 | | 750.00 | 100.00 |
| | Sawcut | | | | | | | | | |
| 2000100 | 2000100.0 | 4SAW01M | | 1.000 | LS | 5,000.000 | 100.00 | 1.00 | 5,000.00 | 100.00 |
| Subtotal: | 4SAW01M | | | 1.000 | LS | 5,000.000 | 100.00 | | 5,000.00 | 100.00 |
| | Sawcut Mob | | | | | | | | | |
| 13000000 | 13000000.2 | 4SEEDPERM01 | | 1.000 | LS | 225,000.000 | 100.00 | 1.00 | 225,000.00 | 100.00 |
| Subtotal: | 4SEEDPERM01 | | | 1.000 | LS | 225,000.000 | 100.00 | | 225,000.00 | 100.00 |
| | Roadside Mix | | | | | | | | | |
| 10050000 | 10000000.1 | 4SIGNAL | | 1.000 | EA | 250,000.000 | 100.00 | 1.00 | 250,000.00 | 100.00 |
| Subtotal: | 4SIGNAL | | | 1.000 | EA | 250,000.000 | 100.00 | | 250,000.00 | 100.00 |
| | SIGNAL SUB | | | | | | | | | |
| 10000000 | 10000000.2 | 4SIGNING | | 40.000 | EA | 150.000 | 100.00 | 1.00 | 6,000.00 | 100.00 |
| Subtotal: | 4SIGNING | | | 40.000 | EA | 150.000 | 100.00 | | 6,000.00 | 100.00 |
| | SIGNING SUB | | | | | | | | | |
| 10000000 | 10000000.2 | 4SIGNSTA | | 2.000 | EA | 25,000.000 | 100.00 | 1.00 | 50,000.00 | 100.00 |
| Subtotal: | 4SIGNSTA | | | 2.000 | EA | 25,000.000 | 100.00 | | 50,000.00 | 100.00 |
| | Station Signing | | | | | | | | | |
| 1000000 | 1000100.2 | 4SITECIVIL24 | | 2.000 | AC | 15,000.000 | 100.00 | 1.00 | 30,000.00 | 100.00 |
| Subtotal: | 4SITECIVIL24 | | | 2.000 | AC | 15,000.000 | 100.00 | | 30,000.00 | 100.00 |
| | CLEARING SUB | | | | | | | | | |

| Biditem | Activity | Resource | Sel Vendor | Quantity | Unit | Unit Cost | Tax/OT % | Pcs/W | Total | Esc % |
|---|---|---|---|---|---|---|---|---|---|---|
| 9000000 | 1001100 | 4STRIPE01 | | 13,552.000 | LF | 1.200 | 100.00 | 1.00 | 16,262.40 | 100.00 |
| Subtotal: | 4STRIPE01 | | | 13,552.000 | LF | 1.200 | 100.00 | | 16,262.40 | 100.00 |
| | 4" Solid White | | | | | | | | | |
| 9000000 | 1001100 | 4STRIPE01M | | 1.000 | LS | 5,000.000 | 100.00 | 1.00 | 5,000.00 | 100.00 |
| Subtotal: | 4STRIPE01M | | | 1.000 | LS | 5,000.000 | 100.00 | | 5,000.00 | 100.00 |
| | Striping Mob | | | | | | | | | |
| 9000000 | 1001100 | 4STRIPE02 | | 11.000 | EA | 250.000 | 100.00 | 1.00 | 2,750.00 | 100.00 |
| Subtotal: | 4STRIPE02 | | | 11.000 | EA | 250.000 | 100.00 | | 2,750.00 | 100.00 |
| | Arrow Striping | | | | | | | | | |
| 9000000 | 1001100 | 4STRIPE06 | | 6,776.000 | LF | 1.200 | 100.00 | 1.00 | 8,131.20 | 100.00 |
| Subtotal: | 4STRIPE06 | | | 6,776.000 | LF | 1.200 | 100.00 | | 8,131.20 | 100.00 |
| | 4" Skip Lines | | | | | | | | | |
| 17000000 | 90018000.300 | 4SUB | | 10,129,241.000 | DSD | 0.194 | 100.00 | 1.00 | 1,966,085.68 | 100.00 |
| Subtotal: | 4SUB | | | 10,129,241.000 | DSD | 0.194 | 100.00 | | 1,966,085.68 | 100.00 |
| | SUB ESCALATION | | | | | | | | | |
| 20000270 | 90013000.200 | 4SURV06 | | 39.000 | HR | 250.000 | 100.00 | 1.00 | 9,750.00 | 100.00 |
| Subtotal: | 4SURV06 | | | 39.000 | HR | 250.000 | 100.00 | | 9,750.00 | 100.00 |
| | Survey Subcontract | | | | | | | | | |
| 14000000 | 1001940.0 | 4TEMPFENCE | | 6,776.000 | LF | 5.000 | 100.00 | 1.00 | 33,880.00 | 100.00 |
| Subtotal: | 4TEMPFENCE | | | 6,776.000 | LF | 5.000 | 100.00 | | 33,880.00 | 100.00 |
| | TEMPORARY FENCE | | | | | | | | | |
| 12000000 | 12000000 | 4UTILITIES | | 1.000 | LS | 1,700,000.000 | 100.00 | 1.00 | 1,700,000.00 | 100.00 |
| Subtotal: | 4UTILITIES | | | 1.000 | LS | 1,700,000.000 | 100.00 | | 1,700,000.00 | 100.00 |
| | MISC UTILITIES | | | | | | | | | |

| | |
|---|---|
| COST TYPE TOTAL | 12,486,884.37 |
| REPORT TOTAL | 12,486,884.37 |

*Cost Types Selected: Subcontractor*

Subtotal selected vendor, quantity, units, and unit price only display if they are the same for all line items in the subtotal.

## Rio Grande Corridor Supplemental Cost Estimate to Include:

1. Burying all overhead utilities.
2. Installing new uniform fence on the east side of the busway where houses exist.
3. Changing the asphalt paving for the busway to concrete and adding curb and gutter.
4. Increasing the landscape allowance by 35% for landscape improvements.

T21-01 R1 RFTA - RIO GRANDE CORRIDOR BUS ROUTE

BID TOTALS

| Biditem | Description | Status | Bid Quantity | Unit | Bid Price | Bid Total | Variance | Original Estimate |
|---|---|---|---|---|---|---|---|---|
| 1000000 | CLEAR & GRUB | U | 1 | LS | 45,000 | 45,000 | | 45,000 |
| 2000000 | DEMO & REMOVALS | U | 1 | LS | 1,010,750 | 1,010,750 | | 1,010,750 |
| 3000000 | EROSION CONTROL | U | 1 | LS | 60,000 | 60,000 | | 60,000 |
| 4000000 | EARTHWORK | U | 6,433 | CY | 71 | 456,743 | | 456,743 |
| 4500000 | AGGREGATES | U | 10,998 | TN | 65 | 714,870 | | 714,870 |
| 5000000 | DRAINAGE | U | 1,200 | LF | 235 | 282,000 | | 282,000 |
| 6000000 | FLATWORK | U | 5,330 | SY | 235 | 1,252,550 | | 1,252,550 |
| 7000000 | CONCRETE PAVEMENT (Subcontract) | U | 9,452 | CY | 650 | 6,144,078 | 3,907,800 | 2,236,278 |
| 8000000 | BUS APPROACH PAD - CONCRETE | U | 640 | SY | 160 | 102,400 | | 102,400 |
| 9000000 | STRIPING | U | 20,328 | LF | 3 | 50,820 | | 50,820 |
| 10000000 | SIGNING | U | 40 | EA | 2,050 | 82,000 | | 82,000 |
| 10050000 | SIGNALING | U | 1 | EA | 375,000 | 375,000 | | 375,000 |
| 11000000 | MAINTENANCE OF TRAFFIC | U | 1 | LS | 25,000 | 25,000 | | 25,000 |
| 12000000 | UTILITIES - LIGHTING/ELECTRIC | U | 1 | LS | 2,500,000 | 2,500,000 | | 2,500,000 |
| 12000000 | UTILITIES - UNDERGROUND RELOCATION | U | 13,552 | LF | 250 | 3,388,000 | 3,388,000 | 0 |
| 13000000 | LANDSCAPING | U | 1 | LS | 877,500 | 877,500 | 227,500 | 650,000 |
| 14000000 | FENCING | U | 5,972 | LF | 77 | 459,844 | | 459,844 |
| 14000000 | FENCING at houses on eastside of busway | U | 10,437 | LF | 77 | 803,675 | 803,675 | 0 |
| 15000000 | BRT STATION | U | 2 | EA | 500,000 | 1,000,000 | | 1,000,000 |
| | | | Bid Subtotal ==========> | | | 19,630,231 | 8,326,975 | 11,303,255 |
| 17000000 | ESCALATION TO 2026 (3% FOR 6 YEARS) | | 1.000 | LS | 19.4% | 3,914,515 | 1,616,266 | 2,298,249 |
| 16000000 | SOFT COSTS (30% OF BID SUBTOTAL PLUS ESCALATION) | | 1.000 | LS | 30.0% | 7,063,499 | 2,983,004 | 4,080,495 |
| | | | Bid Total==========> | | | 30,608,245 | 12,926,245 | 17,682,000 |

Notes: 1. 77% of eastside busway is fenced in bid item 1400000.1
2. Bid item 7000000 includes curb & gutter and concrete paving


# Appendix I – Funding Plan

# GLENWOOD SPRINGS MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY (MOVE)

## Funding Plan

May 2021


PARSONS

GLENWOOD SPRINGS COLORADO

RFTA

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# Potential Funding Opportunities

Identifying funding sources for infrastructure elements can be difficult in good economic times. Following the impacts brought on by the COVID-19 pandemic, funding options available to municipalities and transit agencies may be expanded due to increased state and federal programs. However, the competition for those dollars – at either level – will likely be intense. This report identifies numerous potential funding sources that could be pursued for a variety of projects. Of the 34 identified, ten sources (three federal, three state, and four local) are recommended as they have been pursued in the past, align well with project priorities, and/or represent those that provide the best opportunities for successful funding pursuits.

The recommended improvements for each mode are described in their own technical appendices and are categorized into three phases that are based on implementation timeframe and relationship to the primary BRT extension alternatives. The phases are described as followed:

- **Phase 1 Improvements: Low/No Cost Immediate Recommendations:** These improvements are estimated to be lower in cost compared to the other recommendations and are also independent of the primary BRT alternatives, so easiest to implement in the near term.
- **Phase 2 Improvements: Higher Cost Recommendations:** Higher cost improvements that are independent of the BRT alignment alternatives. These improvements are implemented in the short and medium term.
- **Phase 3 Improvements: Recommendations Needed for BRT Extension:** These were developed to optimize the BRT alignment alternatives and are projects by mode that are best to be implemented with the proposed BRT extension improvements.

Recommended funding sources are identified in **Table 1.**

TABLE 1 - RECOMMENDED FUNDING SOURCES BY PHASE

| # | RECOMMENDED FUNDING SOURCES | SOURCE | AGENCY | PHASE 1 | PHASE 2 | PHASE 3 |
|---|---|---|---|---|---|---|
| 1 | Capital Investment Grant Program/New Starts/Small Starts | Federal | USDOT | | ✔ | ✔ |
| 2 | RAISE Grant | Federal | USDOT | ✔ | ✔ | ✔ |
| 3 | Formula Funding | Federal | USDOT | ✔ | ✔ | ✔ |
| 4 | Safe Routes to School | State | CDOT | ✔ | ✔ | ✔ |
| 5 | Statewide Multimodal Options Funds | State | CDOT | ✔ | ✔ | ✔ |
| 6 | FASTER Program | State | CDOT | ✔ | ✔ | ✔ |
| 7 | Destination 2040 | Local | RFTA | ✔ | ✔ | ✔ |
| 8 | City General Fund | Local | GWS | ✔ | ✔ | ✔ |
| 9 | Street Tax Fund | Local | GWS | ✔ | ✔ | |
| 10 | Bus Tax Fund | Local | GWS | ✔ | ✔ | |

## Recommended Funding Sources

### 1 CAPITAL INVESTMENT GRANT PROGRAM/NEW STARTS/SMALL STARTS

The Federal Transit Administration (FTA) Capital Investment Program funds roughly $2.3 billion each year for a variety of transit-focused projects. It is a multi-year, multi-step process that projects must follow to receive funds. There are two main project categories.

### New Starts

This category requires a total project cost of more than $300 million with a funding request of more than $100 million for a new fixed guideway system, extension to an existing system, or a fixed guideway BRT system.

### Small Starts

This category requires a total project cost of up to, but not more than, $300 million with a funding request of less than $100 million with similar project types in addition to a corridor-based BRT system. This Small Starts category is almost certainly the best Capital Investment Program option for RFTA and its project partners to pursue for future funding efforts.

Project funding pursuits are managed in coordination with Region 8 Federal Transit Administration staff. Justification criteria for project worthiness include:

- Mobility
- Environmental benefits
- Congestion relief
- Economic development
- Land use
- Cost effectiveness
- Local Financial Commitment

Requesting agencies must demonstrate an acceptable degree of local financial commitment, including evidence of stable and dependable local match funding sources. Projects typically require a 50% local match to be competitive for funding.

*Funds are programmed by the FTA and the US Department of Transportation (USDOT).*

Link: https://www.transit.dot.gov/funding/grant-programs/capital-investments/about-program

## 2 REBUILDING AMERICAN INFRASTRUCTURE WITH SUSTAINABILITY AND EQUITY (RAISE) DISCRETIONARY GRANT

The RAISE grant, formerly known as the Better Utilizing Investments to Leverage Development (BUILD) and Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant Programs, allows sponsors at the state and local levels to obtain funding for multi-modal, multi-jurisdictional projects that are more difficult to support through traditional USDOT funding programs. Recreational trails are an eligible project category among other active transportation and recreation categories. Projects are evaluated based on merit criteria that include safety, economic competitiveness, quality of life, environmental sustainability, state of good repair, innovation, and partnership. Grant applications (up to a maximum of $25M) are accepted annually mid-year and are highly competitive.

*Funds are programmed by the USDOT.*

Link: https://www.transportation. gov/RAISEgrants

## 3 FORMULA FUNDING

The Federal Highway Administration and Federal Transit Administration appropriate federal funds based upon formulas included in the FAST Act. These funds, reserved on a statutory basis for transit projects, are administered by CDOT. Funding opportunities include:

- Surface Transportation Program Funds are "flexible" as they can be used for a variety of projects, including transit. The program promotes this flexibility for transportation decisions to provide funding to best address State and local transportation needs.
- Formula Grants for Rural Areas (5311 funds) are administered through CDOT and provide capital, planning, and operating assistance to states to support public transportation in rural areas with populations less than 50,000. Funding is also provided for state and national training and technical assistance through the Rural Transportation Assistance Program. Eligible activities include planning, capital, operating, job access and reverse commute projects, and acquiring public transportation services. The federal share is 80% for capital projects, 50% for operating assistance, and 80% for ADA non-fixed route paratransit services. Each state must spend no less than 15% of its annual apportionment to develop and support intercity bus service.
- Bus and Bus Facilities Formula Program (5339) funds provide funding to states and transit agencies to replace, rehabilitate, and purchase buses and related equipment and to construct bus-related facilities. The Bus and Bus Facilities and Low or No Emissions Bus Discretionary Programs are part of these formula funds.

*Funds are programmed by USDOT.*

Link: https://www.transportation.gov/rural/routes/overview-funding-and-financing-usdot#:~:text=Formula%20Grant%20Funding%20Programs,%2C%20tribal%2C%20or%20agency%20discretion.

## 4 SAFE ROUTES TO SCHOOL (SRTS)

The SRTS program provides a source of funding for education, enforcement, evaluations, and infrastructure improvements (e.g., sidewalks, bike parking, etc.) that encourage elementary and middle school students to walk or bike to school. The Colorado Department of Transportation (CDOT) administers these programs using Federal Surface Transportation Block Grant Set-Aside funds and HSIP Program funds. Eligible entities include local governments, regional transportation authorities, transit authorities, natural resource or public land agencies, and school districts. Funds are available for SRTS programs that benefit elementary and middle school children in Kindergarten through 8th grade. Eligible projects must be within a 2-mile radius of the identified schools.

*Funds are programmed by CDOT.*

Link: https://www.codot.gov/inf_fy19srts_instructionsandguidelines.pdf

## 5 COLORADO MULTIMODAL OPTIONS FUND

The Colorado Multimodal Options Fund (MMOF) seeks to fund multimodal transportation projects and operations throughout the state to provide a complete and integrated multimodal transportation system:

- Benefits seniors by making aging in place more feasible for them;
- Benefits rural area residents by providing them with flexible public transportation services;
- Provides enhanced mobility for persons with disabilities; and
- Provides safe routes to schools for children.

Eligible projects are selected to receive local MMOF by the Regional Planning Commissions (RPC) of the 15 Transportation Planning Regions (TPRs).

*Funds are programmed by CDOT.*

Link: https://www.codot.gov/programs/planning/grants/mmof-local

## 6 FUNDING ADVANCEMENTS FOR SURFACE TRANSPORTATION AND ECONOMIC RECOVERY (FASTER)

The Funding Advancements for Surface Transportation and Economic Recovery (FASTER) Act allows the CDOT another tool to improve roadway safety, repair deteriorating bridges, and support and expand transit services through several vehicle registration fees and fines established or increased by the bill. These generate about $200 million annually for projects across Colorado. The bill also created both the High-Performance Transportation Enterprise (HPTE) and the Colorado Bridge Enterprise.

Three funding programs are included within the broader FASTER program:

### FASTER Safety Program

FASTER provides about $80 million annually in safety-focused funds. The 270 projects funded to date through this program throughout the state focused on pavement improvements, operations, intersection/interchange improvements, and shoulders & safety-related widening. These funds are competitively awarded annually.

*Funds are programmed by CDOT.*

### Colorado Bridge Enterprise (CBE)

The CBE operates as a government-owned business within CDOT to finance, repair, reconstruct, and place designated bridges across the state. About $100 million in funding is allocated annually to these critical bridge repair and replacement projects.

*Funds are programmed through the CBE and CDOT.*

### FASTER Transit Grants Program

FASTER allocates a $15 million set-aside, representing the first permanent infusion of state funds for transit. These funds are split between local transit grants ($5 million annually, competitively awarded by CDOT regional offices) and regional, interregional, and statewide projects ($10 million annually, competitively awarded by CDOT Division of Transit and Rail). Local recipients are required to provide a minimum 20% match.

*Funds are programmed through CDOT's Division of Transit and Rail (DTR).*

Link: https://www.codot.gov/projects/faster

### 7 DESTINATION 2040

In 2018, RFTA voters approved a 2.65 mill levy ballot measure to help fund strategic improvements to the region's transportation network. The Destination 2040 effort identified two dozen projects focused on three key themes:

- Improvements for Sustainability and Safety
- Improvements for Reducing Congestion and Improving Mobility
- Improvements for the Environment

While these projects are not fully funded, some funding derived from the mill levy increase is allocated to each component, including future phases of the BRT extension, parking improvements at 27th Street, and Downtown Transit Stations. The initial planning for multiple projects identified through the Destination 2040 effort is funded through this MOVE Study.

*Funds are programmed by RFTA.*

Link: https://www.rfta.com/2040roadmap/

### 8 CITY GENERAL FUND

The City could elect to earmark funds from general sources and allocate them to transportation projects.

Link: https://cogs.us/DocumentCenter/View/7081/2021-Budget

### 9 STREET TAX FUND

Glenwood Springs assesses a ½-cent sales tax to the maintain transportation facilities and plan new initiatives for vehicles and pedestrians. The tax was increased in 2006 and sunsets in 2026.

Link: https://www.ci.glenwood-springs.co.us/158/Sales-Tax

### 10 BUS TAX FUND

Glenwood Springs collects a voter-approved 2/10-cent sales tax with no sunset to support administration, operations, and capital improvements to the Ride Glenwood Springs transit system.

Link: https://www.ci.glenwood-springs.co.us/158/Sales-Tax

## Identified Funding Sources

24 other funding sources were identified, but not recommended for a variety of reasons. These funding sources:

1. Span each project phase;
2. Are from federal, state, local, and private sources; and
3. Are available to projects of varying scopes and complexities.

While they are not recommended to fund project elements, these funding sources should be periodically reevaluated to account for changing requirements, evaluation criteria, and competitiveness. Identified funding sources are identified in **Table 2**.

TABLE 2 - IDENTIFIED FUNDING SOURCES BY PHASE

| # | IDENTIFIED FUNDING SOURCES | SOURCE | AGENCY | PHASE 1 | PHASE 2 | PHASE 3 |
|---|---|---|---|---|---|---|
| 1 | Low or No Emission Vehicle (LoNo) Program | Federal | USDOT | | ✔ | ✔ |
| 2 | Recreation Economy for Rural Communities | Federal | EPA | | | ✔ |
| 3 | Connect Initiative | State | GOCO | | | ✔ |
| 4 | Non-Motorized Trails Grant | State | CPW | | ✔ | ✔ |
| 5 | Conservation Trust Fund | State | DOLA | | | ✔ |
| 6 | Highway Safety Improvement Program | State | CDOT | ✔ | ✔ | ✔ |
| 7 | Recreational Trails Program | State | CPW | | | ✔ |
| 8 | Transportation Alternatives | State | CDOT | ✔ | ✔ | ✔ |
| 9 | Highway Users Trust Fund | State | CDOT | ✔ | ✔ | ✔ |
| 10 | State General Fund | State | CDOT | ✔ | ✔ | ✔ |
| 11 | Special Purpose Taxes/A&I Fund | Local | GWS | ✔ | ✔ | |
| 12 | Bonding Authority | Local | GWS | | ✔ | ✔ |
| 13 | Special Assessments | Local | GWS | ✔ | ✔ | |
| 14 | Parking Revenues | Local | GWS | ✔ | ✔ | |
| 15 | SIDs/BIDs | Local | GWS | ✔ | ✔ | |
| 16 | Tax Increment Financing | Local | GWS | ✔ | ✔ | |
| 17 | Other Local Sources | Local | GWS | ✔ | ✔ | |
| 18 | Boettcher Foundation | Private | - | | ✔ | |
| 19 | Doppelt Family Trail Development Fund | Private | - | | | ✔ |
| 20 | Activating Places and Spaces Together | Private | - | | ✔ | ✔ |
| 21 | National Fish and Wildlife Foundation Acres for America | Private | - | | | ✔ |
| 22 | International Mountain Bicycling Association Trail Accelerator | Private | - | | | ✔ |
| 23 | People for Bikes Community Grant | *Private* | - | | ✔ | ✔ |
| 24 | AETNA Cultivating Health Community Grant | *Private* | - | ✔ | ✔ | ✔ |

## Identified Funding Sources

### 1 LOW OR NO EMISSION VEHICLE PROGRAM (LONO) – 5339(C)

The program provides funding to state and local governments for the lease or purchase of zero- and low-emission transit buses as well as the acquisition, construction, and/or leasing of required supporting facilities. Funding is allocated annually through a competitive procurement process.

The funding window typically comes up in Q1 of each calendar year. The 2021 funding window closed April 12, 2021. The next window is expected in early 2022.

*Funds are programmed by the FTA and USDOT.*

Link: https://www.transit.dot.gov/funding/grants/lowno

### 2 RECREATION ECONOMY FOR RURAL COMMUNITIES

The Environmental Protection Agency's Recreation Economy for Rural Communities program is a planning assistance program to help communities develop strategies and an action plan to revitalize their downtowns through outdoor recreation. Outdoor recreation activities have become increasingly popular across the United States and aid the conservation of natural lands and forests. This program enables communities to strategically invest in outdoor recreational opportunities that create jobs,

foster environmentally friendly community development, revitalize downtowns, and offer new opportunities for people to connect with the natural world. Eligible projects include:

- Ensuring local residents, including young people, have connections and opportunities related to nearby outdoor assets to foster community pride, good stewardship, and local economic benefits.
- Developing or expanding trail networks to attract overnight visitors and new businesses and foster use by local residents.
- Developing in-town amenities, such as broadband service; housing; or shops, restaurants, or breweries, to serve residents and attract new visitors and residents with an interest in nearby outdoor assets.
- Marketing Main Street as a gateway to nearby natural lands to capture and amplify outdoor recreation dollars.
- Developing a community consensus on the management of outdoor assets to reduce potential conflicts and ensure sustainable use of resources.

*Funds are programmed by the Environmental Protection Agency (EPA).*

Link: https://www.epa.gov/smartgrowth/recreation-economy-rural-communities-2019-application

## 3 COLORADO CONNECT INITIATIVE

GOCO's Connect Initiative is a five-year strategy aimed at increasing access to outdoor experiences through the construction of non-motorized trails of local, regional, and statewide significance. This program aims to increase access to the outdoors in Colorado communities by filling trail gaps, building new trails, and providing better walkable and bikeable access for youth and families. Applicants may request up to $2 million for trail construction projects. Eligible grantees include municipalities, counties, and Title 32 special park and recreation districts that receive Conservation Trust Fund monies from the Department of Local Affairs. Projects must be primarily for trail construction; however, land acquisitions may be considered with staff approval. There is no requirement for surface type. Projects that present an exciting opportunity to leverage partnerships and outside funding, connect important trail segments, and are shovel-ready may score more competitively.

*Funds are programmed by Great Outdoors Colorado (GOCO).*

Link: https://goco.org/grants/apply/connect-initiative-grants

## 4 NON-MOTORIZED TRAILS GRANT

Colorado Parks and Wildlife (CPW) funds several types of trail grants including large recreational trail grants, small recreational trail grants, trails planning, and trail support grants. This program is a partnership among Colorado Parks and Wildlife, Great Outdoors Colorado, the Colorado Lottery, the federal Recreational Trails Program, and the Land and Water Conservation Fund. To be eligible for the Non-Motorized Trails Grant, projects must include new trail or trailhead construction; maintenance, re-route, or reconstruction of existing trails; enhancements or upgrades to existing trailheads; trail and trailhead system planning; building and enhancing support organizations; or acquiring land or easements. Projects are required to have at least a 30% match, and all properties on which the funded projects take place must be under control of the grantee.

*Funds are programmed by Colorado Parks and Wildlife.*

Link: https://cpw.state.co.us/aboutus/Pages/TrailsGrantsNM.aspx

## 5 CONSERVATION TRUST FUND (CTF)

Colorado's Department of Local Affairs (DOLA) distributes Conservation Trust Funding to local governments, including counties, cities, towns, and Title 32 special districts that provide park and recreation services in their plans. These funds are the portion of Colorado Lottery proceeds constitutionally mandated to be distributed directly to local governments, based on population, for acquiring and maintaining parks, open space, and recreational facilities. CTF funds are distributed on a quarterly basis and can be used for numerous conservation and recreational uses, including developing parks and open space, and preserving floodplains, greenbelts, and scenic areas for any scientific, historic, scenic, or recreational use.

*Funds are programmed by DOLA.*

Link: https://cdola.colorado.gov/conservation-trust-fund-ctf

## 6 HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

The HSIP provides $2.4 billion nationally for projects and programs that help communities achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways, and walkways. Infrastructure and non-infrastructure projects are eligible for HSIP funds. Pedestrian and bicycle safety improvements, enforcement activities, traffic calming projects, and crossing treatments for active transportation users in school zones are all examples of eligible projects. To be eligible for the HSIP, all states must have developed a Strategic Highway Safety Plan (SHSP) that identifies projects or strategies to reduce identified safety problems and evaluate this SHSP on a regular basis. All HSIP projects must be consistent with the state's Strategic Highway Safety Plan (SHSP) of achieving zero deaths on Colorado roads. Funds are awarded on an annual basis from the Federal Highway Administration and CDOT.

*Funds are programmed by CDOT.*

Link: https://www.codot.gov/library/traffic/hsip

## 7 RECREATIONAL TRAILS PROGRAM (RTP)

The RTP provides funds to the States to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. The RTP is an assistance program of the Department of Transportation's Federal Highway Administration. Federal transportation funds can be used for any purposes that benefit recreation including hiking, bicycling, in-line skating, equestrian use, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving, or using other off-road motorized vehicles. These funds are available for both paved and unpaved trails but may not be used to improve roads for general passenger vehicle use or to provide shoulders or sidewalks along roads. Eligible projects must support the goals of the State Comprehensive Outdoor Recreation Plan and the Strategic Plan of the State Trails Program.

*Funds are programmed by Colorado Parks and Wildlife (CPW).*

Link: https://www.fhwa.dot.gov/environment/recreational_trails/

## 8 TRANSPORTATION ALTERNATIVES (TA)

The Fixing America's Surface Transportation (FAST) Act recently replaced the former Transportation Alternatives Program (TAP) with set-aside funds under the Surface Transportation Block Grant Program (STBG). For administrative purposes, the Federal Highway Administration (FHWA) refers to these funds as TA Set-Aside. Projects eligible for TA Set-Aside funds include on-and off-road active transportation facilities, improvements to non-driver access to transit, recreational trails, and safe routes to school.

*Funds are programmed by CDOT.*

Link: https://www.codot.gov/programs/planning/documents/grants/tap/TAP-guidelines.pdf

## 9 HIGHWAY USERS TRUST FUND

The Highway Users Trust Fund (HUTF) is the largest source of transportation funding, generating $1.8 billion in FY2016-2017 ($521 million federal, $1.3 billion state). Revenues come from federal fuel taxes (18.5 cents/gallon for gasoline and 24.4 cents/gallon for diesel) and state taxes (22 cents/gallon for gasoline, 20.5 cents/gallon for diesel), vehicle registration fees, and other sources such as license fees, fines, emissions inspection fees, and toll lanes.

*Funds are programmed through CDOT.*

Link: https://www.fhwa.dot.gov/policy/olsp/fundingfederalaid/07.cfm

## 10 STATE GENERAL FUND

The State General Assembly has provided funding opportunities in the past for transportation projects. Another mechanism passed in 2009 by the General Assembly creates a trigger of transfers from the Federal Fund to the HUTF when Colorado personal income grows 5 percent or more in a calendar year.

*Funds are programmed by CDOT.*

Link: https://leg.colorado.gov/content/budget

## 11 SPECIAL PURPOSE SALES TAXES/ACQUISITIONS AND IMPROVEMENTS (A&I) FUND

Temporary or permanent sales tax increases with funds dedicated to transportation projects could be instituted – with public approval – to develop funding sources. These have been used in the past and are popular funding mechanisms across the State. A local example in Glenwood Springs includes the one-cent Acquisitions and Improvements (A&I) Fund which was approved by voters in 2018. The tax collects millions of dollars annually that are available for a variety of projects throughout Downtown.

## 12 BONDING AUTHORITY

Bonds could be issued by the City or other bonding authority to finance transportation infrastructure. Glenwood Springs approved a bonding measure in 2018 in conjunction with the A&I Fund to finance one or more infrastructure investments in Downtown. These are, however, logistically complex and require voter approval. Tax revenues – such as those from sources like the A&I Fund – could be used to backstop these bonds.

## 13 SPECIAL ASSESSMENTS

Special assessments are additional property taxes that are self-imposed on properties close to a new transportation facility or services. They can be used as a dedicated annual revenue stream or even potentially bonded against. These are one of the most common mechanisms for value capture efforts for transportation projects.

## 14 PARKING REVENUES

While the exact amount of revenue forecast to be collected is currently unknown, parking revenues could play a central role in funding Phase 1 and Phase 2 improvements. Following infrastructure procurement (e.g., parking meters, kiosks, etc.), paying enforcement officers and other collection/monitoring expenses, any excess revenue should go back into transit and/or other multimodal improvements to ensure equity for adding a cost to parking in downtown Glenwood Springs.

## 15 SPECIAL IMPROVEMENT DISTRICTS (SIDS)/BUSINESS IMPROVEMENT DISTRICTS (BIDS)

Special Improvement Districts (SIDs) and Business Improvement Districts (BIDs) are special districts formed by property and/or business owners to raise money for local improvement projects. Projects are typically infrastructure-focused and provide a means of funding for public projects that the City cannot otherwise fund. These spread the cost of projects across all impacted property owners and owner assessments directly reflect the costs of the projects. They do take significant time to establish and can be cumbersome to get approved.

## 16 TAX INCREMENT FINANCING

Tax increment financing (TIF) leverages future tax gains to subsidize current improvements. The completion of a public project often results in an increase in the value of surrounding real estate, which generates additional tax revenue. Sidewalk and other streetscape improvements are typically popular uses of TIF funding.

## 17 OTHER LOCAL STRATEGIES

Other various local initiatives can be considered such as private contributions and service purchase agreements.

## 18 BOETTCHER FOUNDATION

The Boettcher Foundation champions excellence and invests in high-potential organizations that are developing new ideas that can drive Colorado forward. They support organizations and initiatives that strive to innovate, impact and improve the quality of life for Coloradans. They prioritize capital building or community infrastructure projects for Colorado through “a lens of rural depth.” Letters of Inquiry can be submitted any time of the year.

*Funds are programmed by the Boettcher Foundation.*

Link: www.boettcherfoundation.org

### 19 DOPPELT FAMILY TRAIL DEVELOPMENT FUND

Launched in 2015 by the Rails-to-Trails Conservancy (RTC), the Doppelt Family Trail Development Fund supports organizations and local governments that are implementing projects to build and improve multi-use trails. RTC awards approximately $85,000 per year to several qualifying projects through a competitive process. While applications for projects on rail-trails and rails-with-trails will be given preference, rail-trail designation is not a requirement. However, the trail must serve or plan to serve multiple user types, such as bicycling, walking, and hiking, and be considered a trail, greenway, multi-use trail, or shared use path. In addition, the program must advance trail development, help establish corridor connections, or improve current conditions on the trail. Grant applications are accepted annually in January.

*Funds are programmed by the Rails-to-Trails Conservancy.*

Link: https://www.railstotrails.org/ our-work/grants/doppelt/

### 20 ACTIVATING PLACES AND SPACES TOGETHER

This funding opportunity, administered by the Colorado Health Foundation, supports locally-defined, place-specific efforts to get people outdoors and actively engaged in their neighborhoods – together. The goal of the funding opportunity is to help activate existing infrastructure in public places that contributes to a community's overall health through residential usage and positive experiences. Grant funds support the costs associated with project planning and implementation, and provides technical assistance for community engagement, communications, and marketing, for up to one year. Eligible projects must reflect the Foundation's cornerstones of serving low-income Coloradan residents who have historically had less power or privilege and doing everything with the intent of creating health equity.

*Funds are programmed by the Colorado Health Foundation.*

Link: https://www.coloradohealth.org/funding-opportunities/funding-opportunity-activating-places-and-spaces-together

### 21 THE NATIONAL FISH AND WILDLIFE FOUNDATION ACRES FOR AMERICA GRANT PROGRAM

The Acres for America grant program is a joint public-private partnership between the National Fish and Wildlife Foundation and Walmart. This program works to conserve fish and wildlife habitat, protect public lands, provide access to outdoor recreation, and ensure the future of local economies that depend on outdoor recreation, forestry, or ranching. Eligible grantees include non-profit 501c organizations, state government agencies, local governments, municipal governments, Indian tribes, and education institutions.

*Funds are programmed by the National Fish and Wildlife Foundation.*

Link: https://www.nfwf.org/programs/acres-america

## 22 INTERNATIONAL MOUNTAIN BICYCLING ASSOCIATION (IMBA) TRAIL ACCELERATOR GRANT

IMBA provides Trail Accelerator Grants to help grow the quantity and quality of mountain bike trail communities. These grants provide a jump-start to communities that have the interest and political support to develop trail systems but need assistance to get projects up and running. A Trail Accelerator grant offers awardees professional trail planning and consultation services to launch their trail development efforts, which can often leverage additional investment from local, regional, and national partners.

*Funds are programmed by the International Mountain Bicycling Association.*

Link: https://www.imba.com/trails-for-all/trail-accelerator-grants

## 23 PEOPLE FOR BIKES COMMUNITY GRANT

The People For Bikes Community Grant Program supports bicycle infrastructure projects and targeted advocacy initiatives that make it easier and safer for people of all ages and abilities to ride. This program accepts grant applications from non-profit organizations that focus on bicycling, active transportation, or community development; city or county agencies or departments; and state or federal agencies working locally. Requests must support a specific project or program (i.e., grant funds cannot be used for general operating costs), such as:

- Bike paths, lanes, trails, and bridges
- Mountain bike facilities
- Bike parks and pump tracks
- BMX facilities
- End-of-trip facilities such as bike racks, bike parking, bike repair stations and bike storage

People For Bikes funds up to $10,000 for engineering and design work, construction costs including materials, labor, and equipment rental, and reasonable volunteer support costs. This program does not require a specific percentage match but does consider leverage and funding partnerships very carefully.

*Funds are programmed by People for Bikes.*

Link: https://peopleforbikes.org/grant-guidelines/

## 24 CULTIVATING HEALTHY COMMUNITIES (CHC) GRANT PROGRAM

The CHC grant program is geared specifically towards nonprofit organizations that work with underserved, low-income, and minority populations in the contiguous United States. CHC seeks to catalyze measurable improvements in community health outcomes by funding projects that address the social determinants of health and participants' physical, mental, and social well-being. Eligible projects must work to accomplish the following goals:

- Improve the walkability, bikeability, and use of public spaces in a community
- Increase collaboration between local law enforcement and community members to proactively address immediate public safety issues
- Decrease exposure to air and water contaminants
- Increase healthy behaviors, such as exercise and eating healthy foods

- Increase access to healthy foods through the development of new or enhanced retail options

*Funds are programmed by AETNA.*

Link: https://www.aetna-foundation.org/grants-partnerships/grants/cultivating-healthy-communities-rfp.html

## Additional Funding Sources

Other funding sources were identified but due to a variety of factors, are not recommended and/or are in the development phases and otherwise deemed unrecommended. A brief description of the funding program and rationale which deemed them unrecommended are included below.

### AMERICAN RESCUE PLAN (2021)

The American Rescue Plan, while focused on providing economic relief related to the COVID-19 pandemic, did include money for state and local governments, including more than $360 billion in emergency funding to ensure state and local governments can keep front line workers on the job and paid. It also included funding to supplement transit agency budgets to avoid further layoffs and service reductions.

**This program included significant funding for state and local governments but was not explicitly intended to fund infrastructure investment efforts.**

*Funds are programmed by various federal agencies, including USDOT.*

Link: https://www.congress.gov/bill/117th-congress/house-bill/1319

### AMERICAN JOBS PLAN (2021)

The American Jobs Plan is an investment in numerous aspects of infrastructure across the country. Currently estimated at $1.9 trillion, the plan will allocate approximately $621 billion to transportation, including:

- $115 billion to modernize bridges, highways, roads, and main streets that are in critical need of repair (including funding to improve air quality, limit greenhouse gas emissions, and reduce congestion). In addition to fixing the most economically significant large bridges in the country in need of reconstruction, it will also repair the worst 10,000 smaller bridges, including those provide critical connections to rural communities.
- $20 billion to improve road safety for all users, including increases to existing safety programs and a Safe Streets for All program to fund state and local “vision zero” plans and other improvements to reduce crashes and fatalities, especially for cyclists and pedestrians.
- $85 billion to modernize existing transit and help agencies expand their systems to meet rider demand. This would double federal funding for public transit, spend down the existing repair backlog, and bring bus, BRT, and rail to communities throughout the country.
- Program also include additional funding for passenger and freight rail service, vehicle electrification infrastructure, and resilience efforts.

**The Americans Jobs Plan has not been approved by Congress and is subject to change. Given the inherent political nature of such a broad-based, expansive funding effort, the funding programs and their values could change significantly. While it is expected that there will be some funding available, exactly how much and for what purposes remains a question.**

*Funds would be programmed by various federal agencies, including USDOT.*

Link: https://www.crfb.org/blogs/whats-president-bidens-american-jobs-plan

### COLORADO SB 267

SB 267 authorizes lease-purchase agreements on state facilities, totaling $2 billion over four years. CDOT is receiving $1.8 billion of that money with the remainder going to controlled maintenance and other state uses. 10% of CDOT's $1.8 billion will be dedicated to transit projects.

This funding must be used on projects in CDOT's 10 Year Development plan with 25% of the funding being spent in counties with a population less than 50,000 residents. The money must only be spent on state highways – no local funding is included.

**This funding source was not included as the timeline is too accelerated and few elements would qualify with the requirement that the project be identified in CDOT's 10 Year Development Plan.**

Link: https://leg.colorado.gov/bills/sb17-267


# Appendix J – Project Renderings

move


# GLENWOOD SPRINGS MULTIMODAL OPTIONS FOR A VIBRANT ECONOMY (MOVE)

## Project Renderings

June 2021

PARSONS

GLENWOOD SPRINGS COLORADO

RFTA

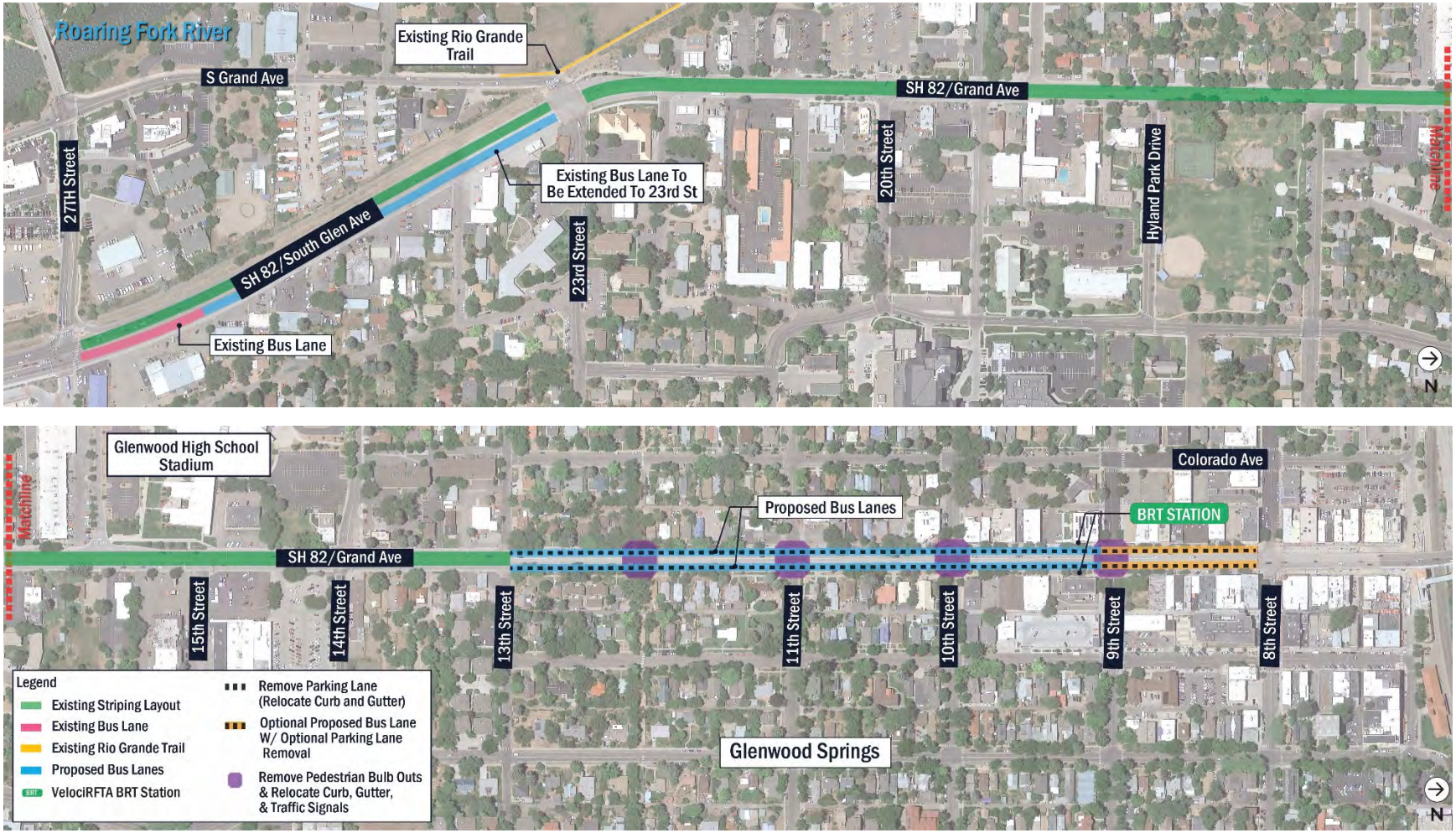


FIGURE 1. GRAND AVENUE SEMI-DEDICATED BRT LANES PLAN VIEW


FIGURE 2. GRAND AVENUE SEMI-DEDICATED BRT LANES THAT ALLOW RIGHT TURNING VEHICLES

FIGURE 3. RENDERING OF EXISTING GRAND AVENUE


FIGURE 4. GRAND AVENUE SEMI-DEDICATED BRT LANES - TO ACCOMMODATE WIDER LANES NEEDED, THE CURB WILL RECEDE BY 2' RESULTING IN THE REMOVAL OF MATURE TREES AND BULBOUTS

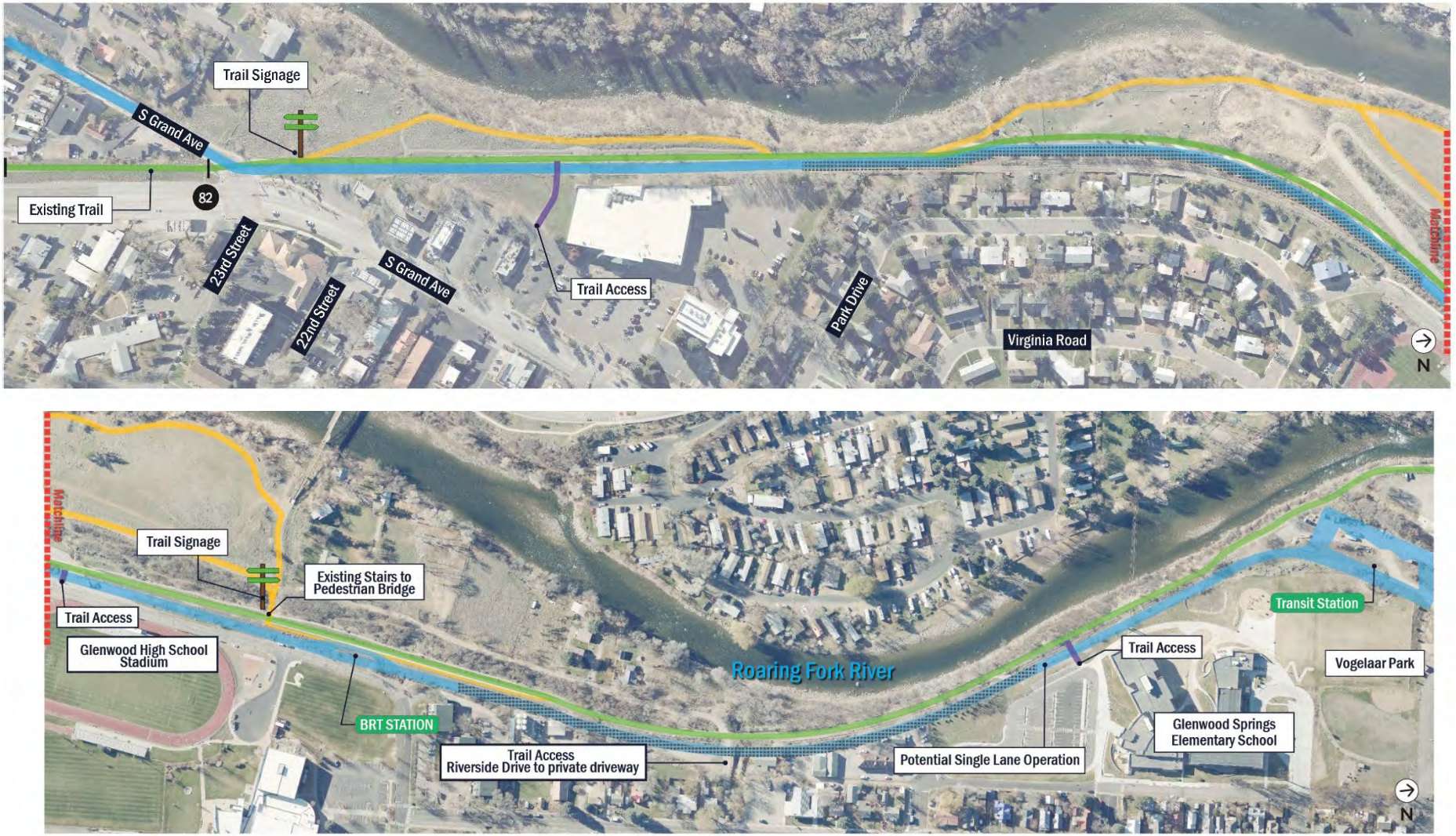


FIGURE 5. RIO GRANDE BRT LANES AND TRAIL PLAN VIEW


FIGURE 6. RIO GRANDE CORRIDOR BRT: EXISTING


FIGURE 7. RIO GRANDE CORRIDOR BRT RENDERING

FIGURE 8. RIO GRANDE CORRIDOR BRT RENDERINGS: VIEWS FROM RIO GRANDE TRAIL

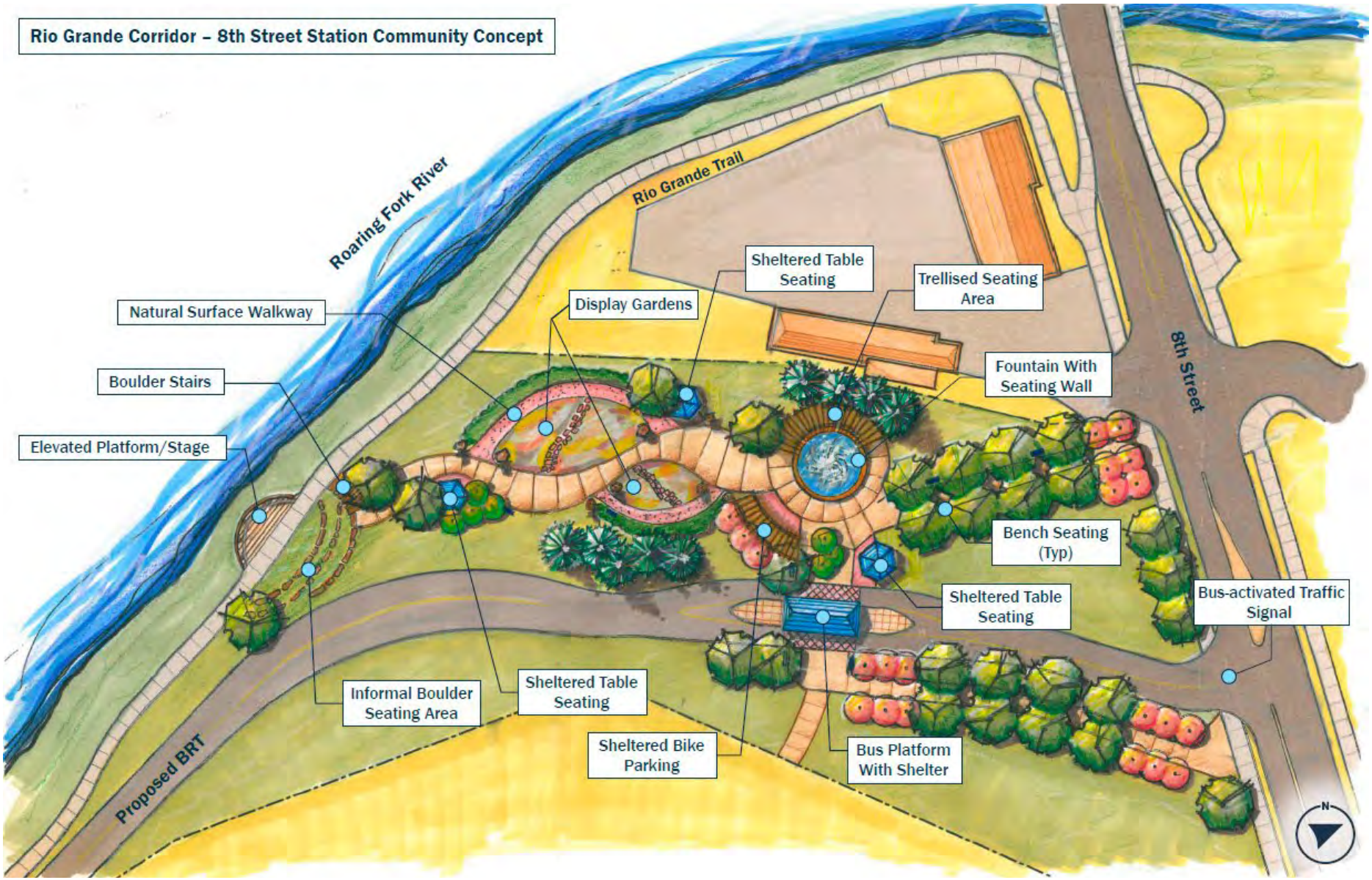


FIGURE 9. RIO GRANDE CORRIDOR BRT RENDERING: 8TH STREET STATION COMMUNITY CONCEPT