

**Upper Valley Transit  
Enhancement Study**

Pitkin County  
City of Aspen  
Town of Snowmass  
Roaring Fork  
Transportation Authority

March 2021

# Presentation Agenda

- 1) Project Purpose and Need
- 2) Existing conditions summary
  - Roadway Geometry
  - Traffic Volumes
  - Traffic Operations
  - Transit Operations
  - Multimodal Network and Safety
- 3) Alternatives for Evaluation
- 4) Measure of Effectiveness
- 5) Recommendations and Next Steps

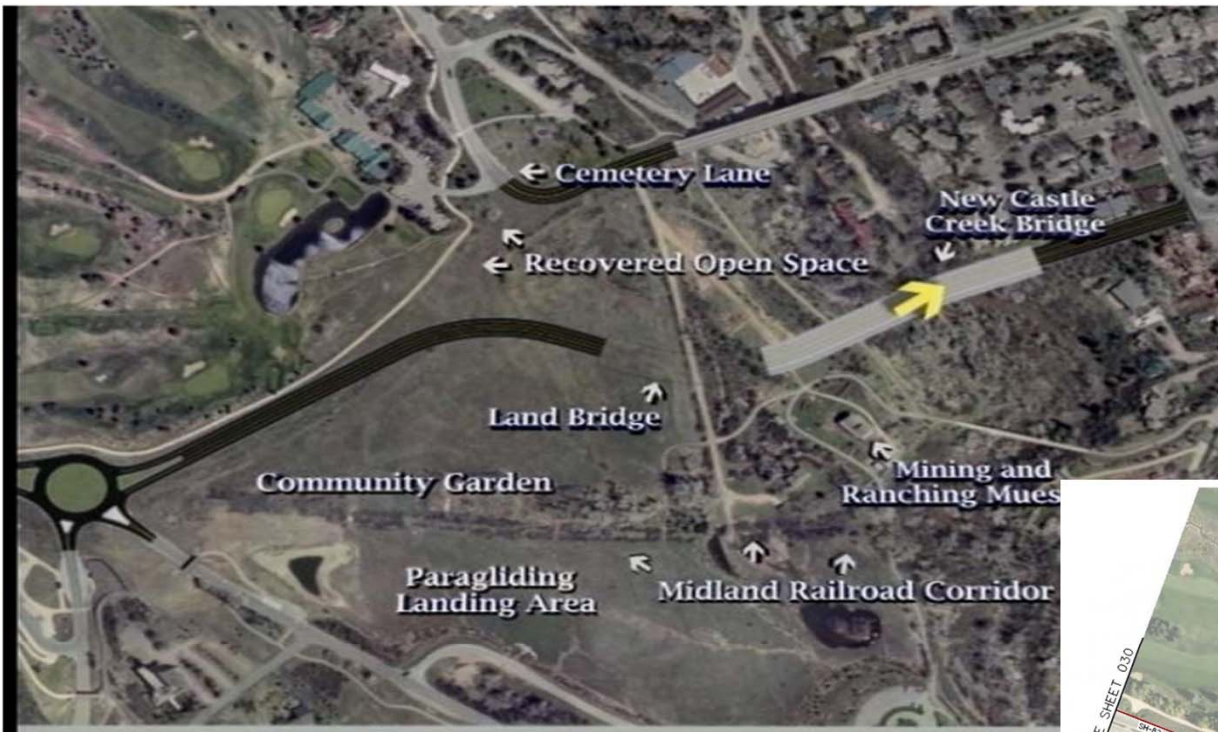


## Project Purpose and Need

- Increase transit efficiency on SH 82 between the Aspen Airport and the Maroon Creek Roundabout
- Encourage and prioritize transit, biking and walking
- Build on previous studies (Entrance to Aspen Record of Decision) and investments in transit
- Identify short-term multimodal improvements



## Previous Studies – Entrance to Aspen



# Upper Valley Transit Enhancement Study

## PROJECT GOALS



**Prioritize** transit vehicles



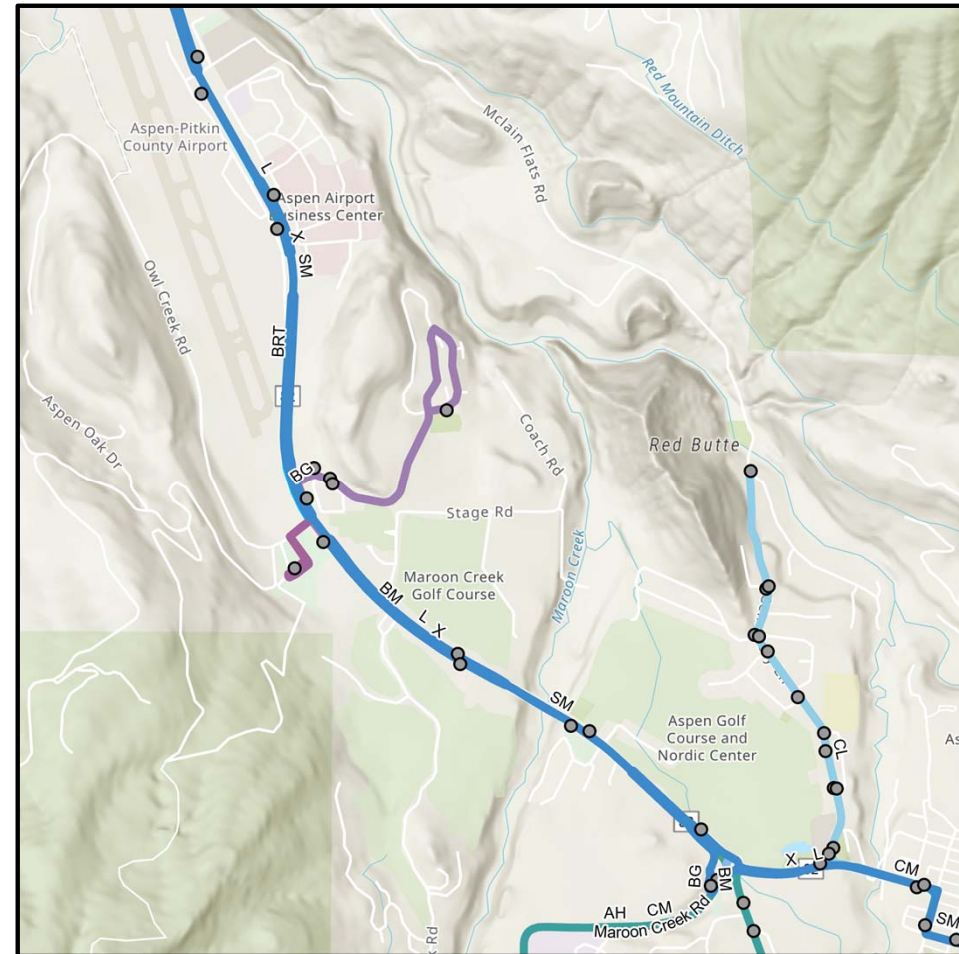
**Enhance** pedestrian & bicycle safety & access



**Enhance** transit speed & reliability



**Develop** practical & cost-effective short and long-term alternatives



# Upper Valley Traffic Congestion

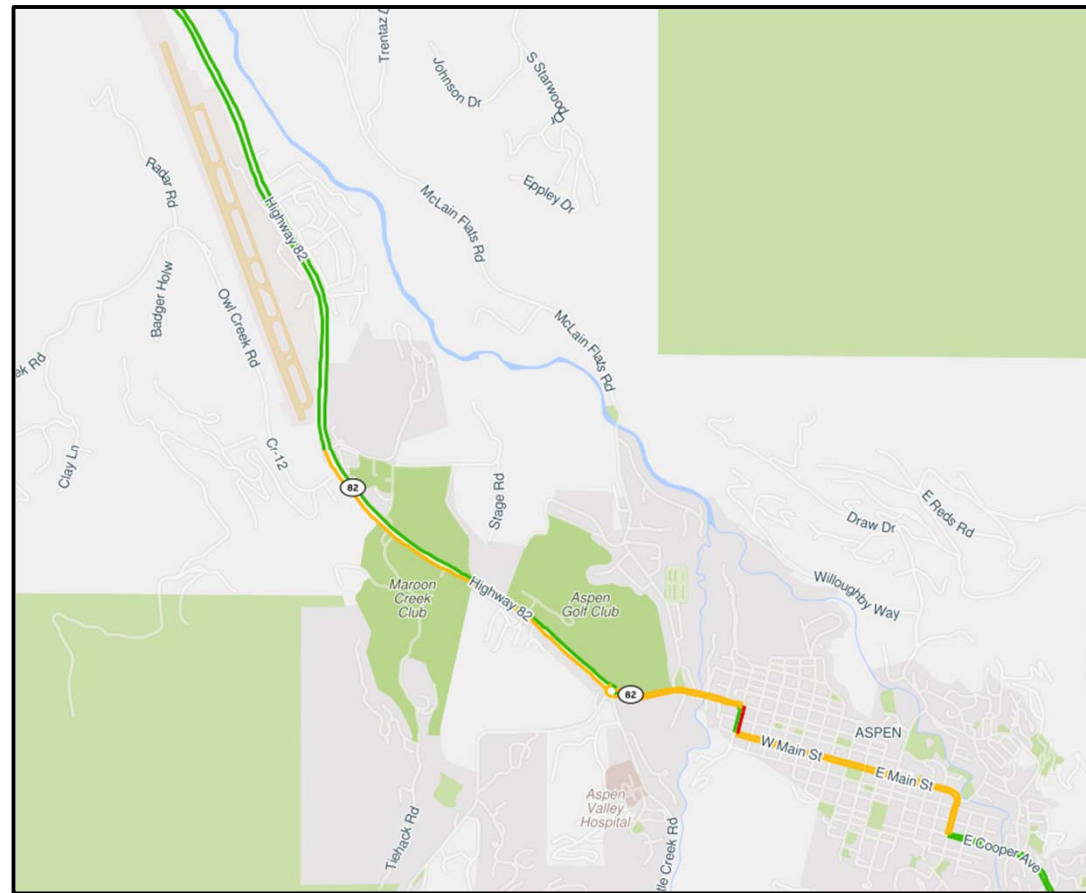
## CHALLENGES

Increasing traffic congestion

Maintaining & increasing mode share

Accommodating future development & travel demand

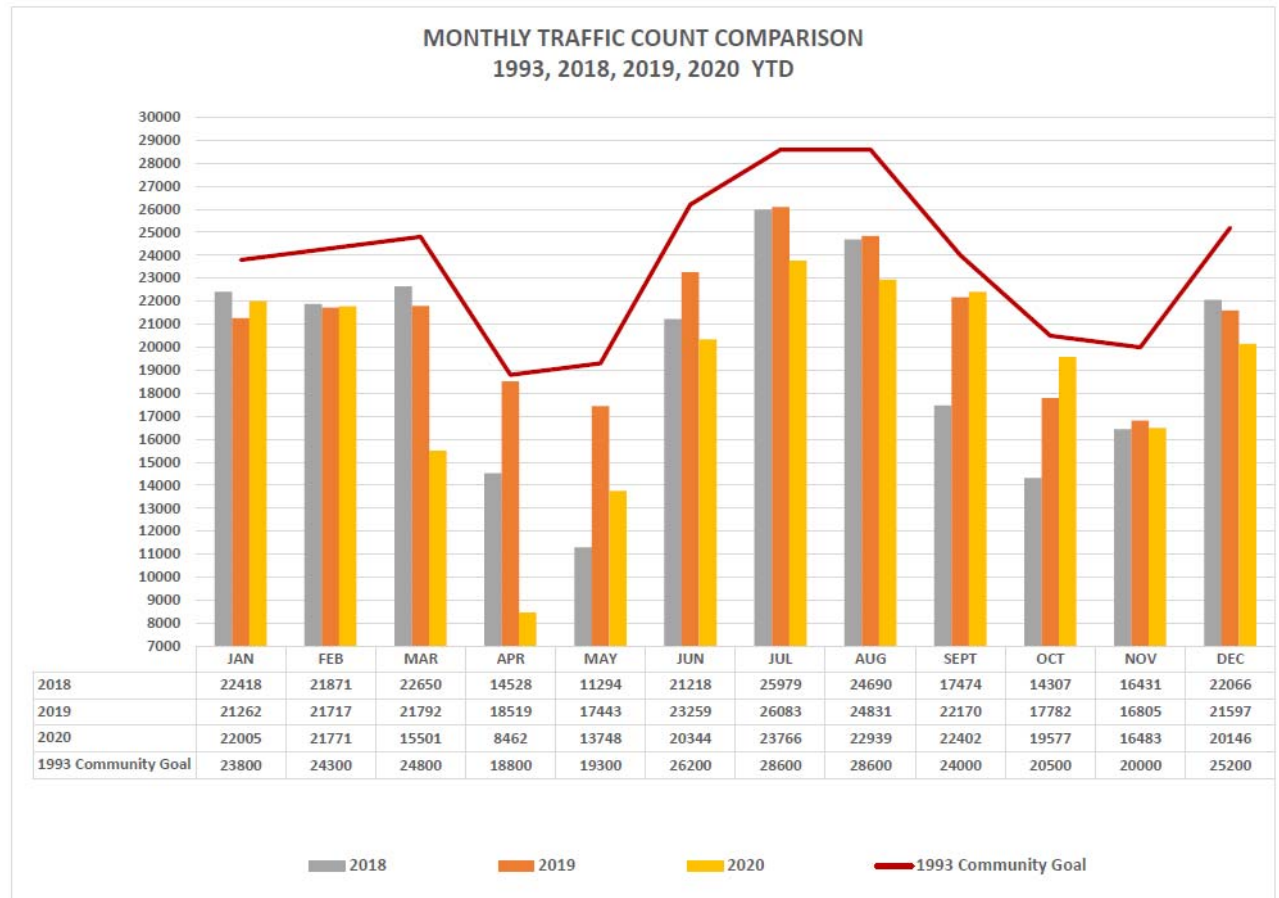
Minimizing ROW, utility & environmental impacts



INRIX Data: Ratio of historical average speed for typical Wednesday 2 PM to free flow speed (yellow is 55% to 75% of free flow speed, red is 25% to 55% of free flow speed)

# Seasonal Traffic Variations

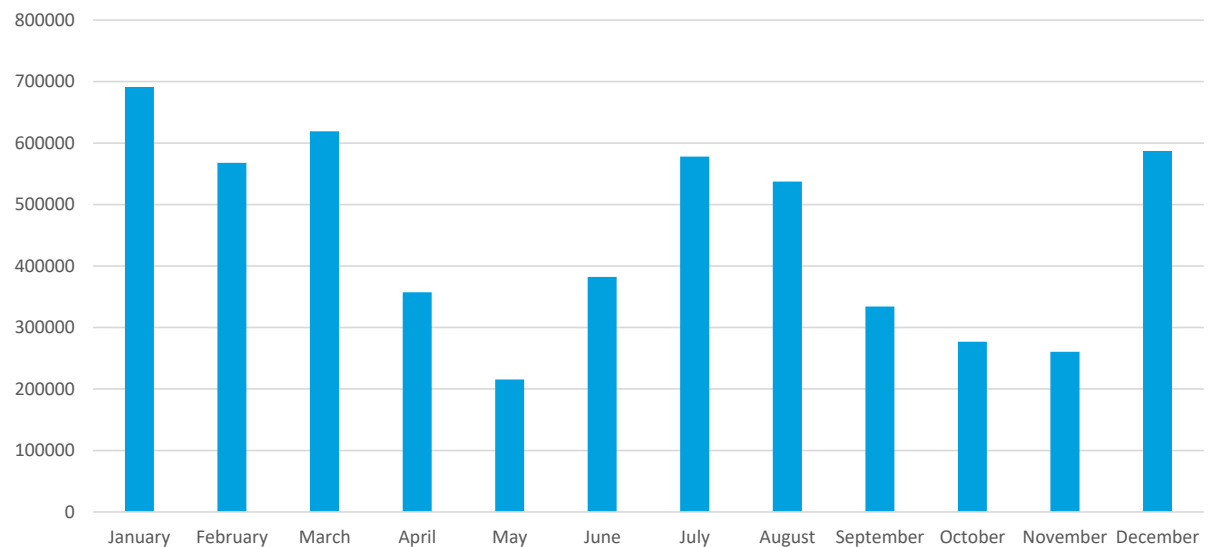
- Summer Peak is highest
- 26,000 ADT
- AM Peak Up Valley (towards Aspen)
- PM Peak Down Valley



## Seasonal Transit Ridership Variations

- Highest Systemwide Transit Ridership in January and March
- Highest ridership routes
  - VelociRFTA (1,000,000)
  - SH 82 Roaring Fork Local/Express (930,000)
  - Castle-Maroon (560,000)
  - Snowmass Skier (410,000)
  - Hunter Creek (348,000)
  - Snowmass-Aspen (280,000)
  - Maroon Bells (230,000)

Monthly RFTA Ridership, All Routes, 2019



# AM and PM Peak Hour 2019 Summer Volumes

- Airport Business Center Road

- Harmony Rd / Owl Creek Rd

- Maroon Creek Roundabout

AM



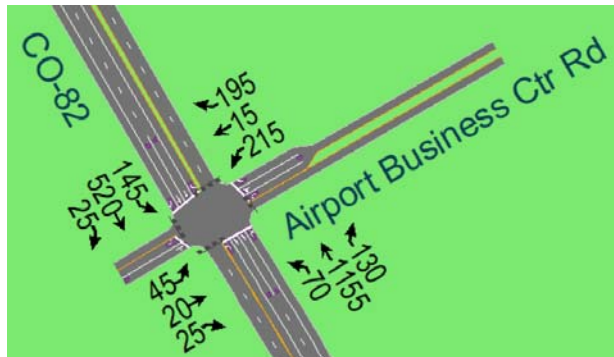
AM



AM



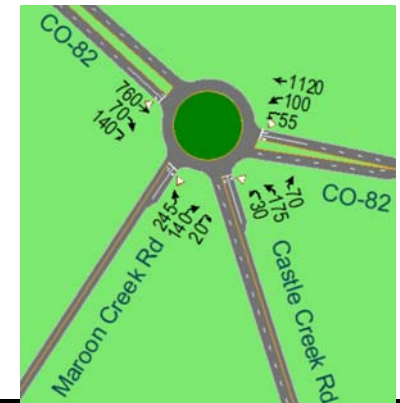
PM



PM



PM



## Traffic Model Development

- Roadway geometry, signal timing, traffic and transit volumes coded into Synchro and VISSIM model
- Model calibrated to match INRIX and RFTA AVL speed profiles and historical congestion limits
- LOS, delay, v/c ratio reported from HCM reports
- 95<sup>th</sup> percentile queues reported from VISSIM (microsimulation)

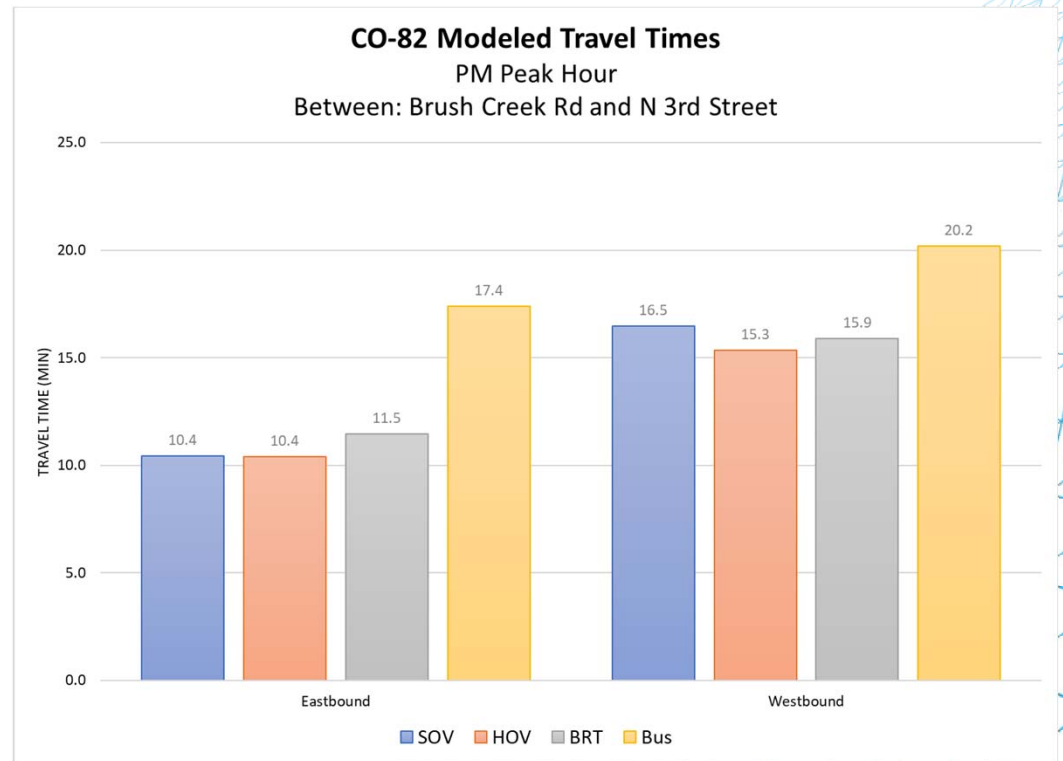
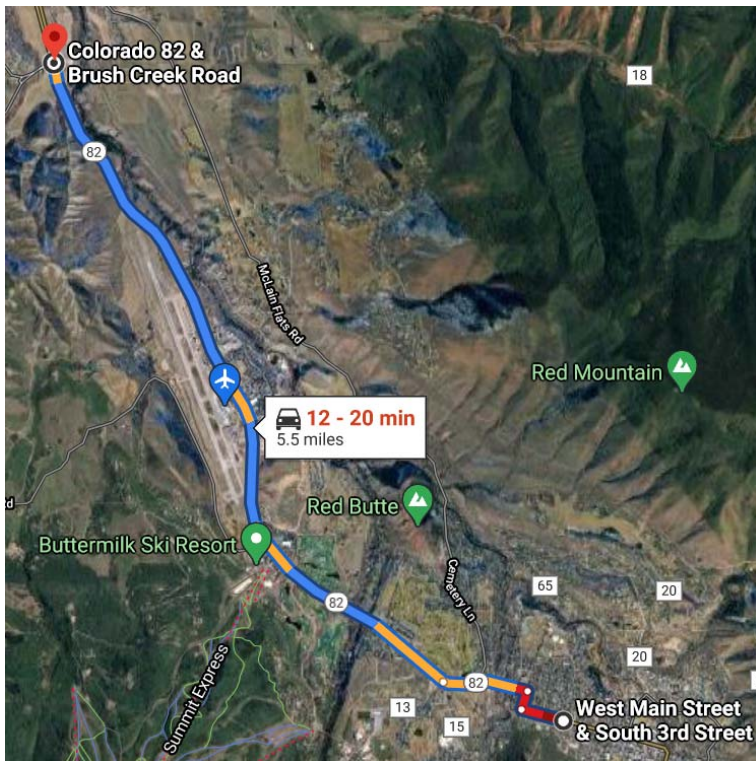


# Traffic Operations – Capacity Analysis Results

- Roundabout fails
- Brush Creek and Cemetery operating at capacity
- Residual queuing from Roundabout towards downtown (PM) and from Roundabout towards Airport (AM)

Intersection	Synchro		Vissim	
	Delay (s)	Level of Service	Delay (s)	Level of Service
CO-82 & Brush Creek Rd	24.4 (33.8)	C (C)	(46.5)	(D)
CO-82 & Airport Business Ctr Rd	27.5 (24.9)	C (C)	(25.1)	(C)
CO-82 & Harmony Rd	18.1 (10.4)	B (B)	(8.0)	(A)
CO-82 & Owl Creek Rd	32.0 (14.8)	C (B)	(14.1)	(B)
CO-82 & Pyramid Rd/Truscott Pl	13.4 (37.5)	B (D)	(9.1)	(A)
CO-82 & Maroon Creek Rd / Castle Creek Rd	29.3 (17.7)	D (C)	(86.1)	(F)
CO-82 & W Hallam St/Cemetery Ln	5.4 (5.7)	A (A)	(35.5)	(D)

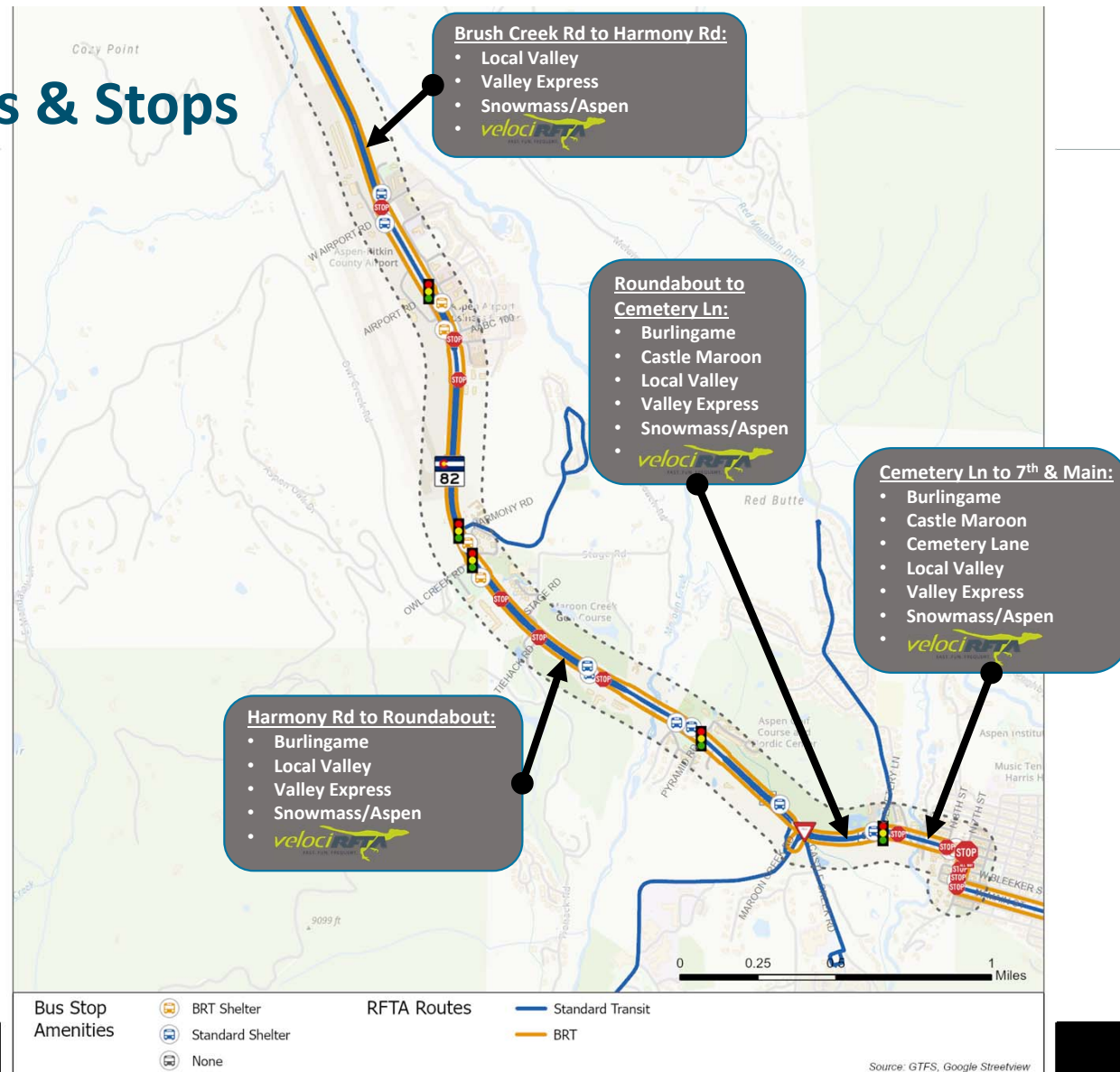
# Traffic Operations – Vehicle and Transit Travel Times



## Transit – Existing Routes & Stops

- Routes by segment (Winter)
- Average peak hour/ off-peak frequency
  - local bus 20 to 30 /20 to 30 minutes
  - BRT 10/10 minutes

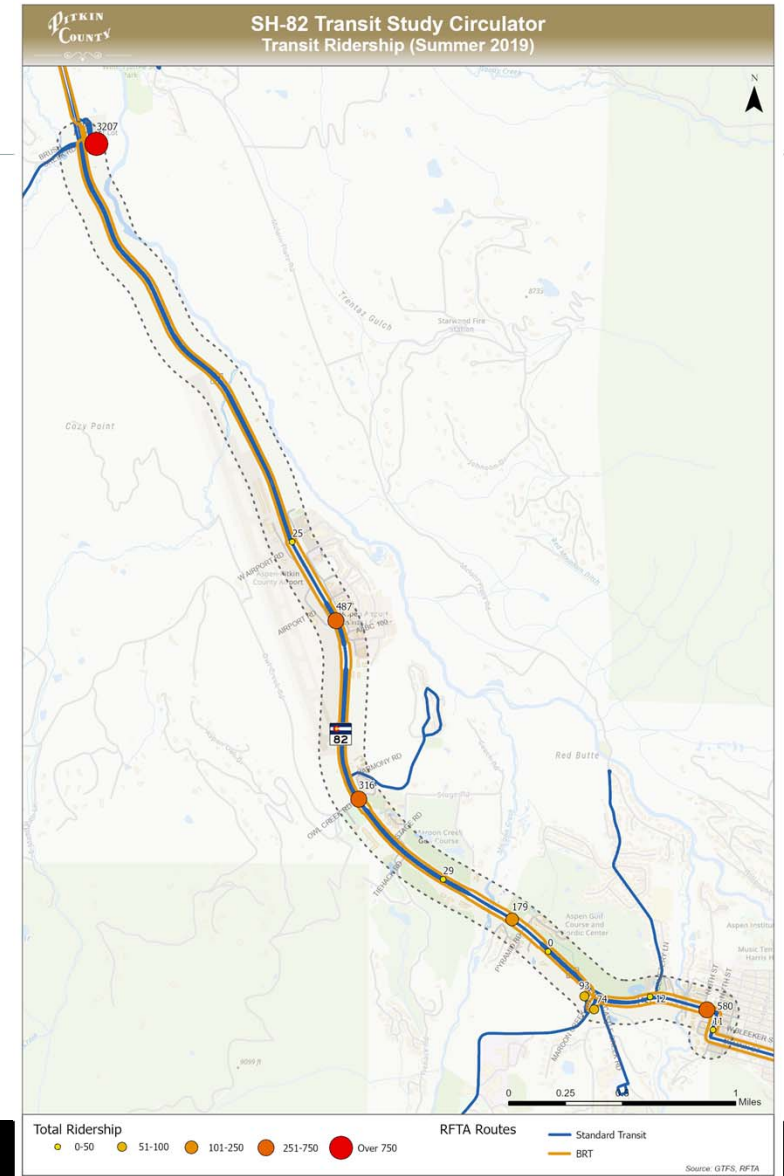
Segment	Buses per 2019 Summer Weekday Peak Hour Both Directions
Brush Creek to Harmony	26
Harmony to Roundabout	30
Roundabout to Cemetery	40
Cemetery to Downtown	46



## Transit – Ridership

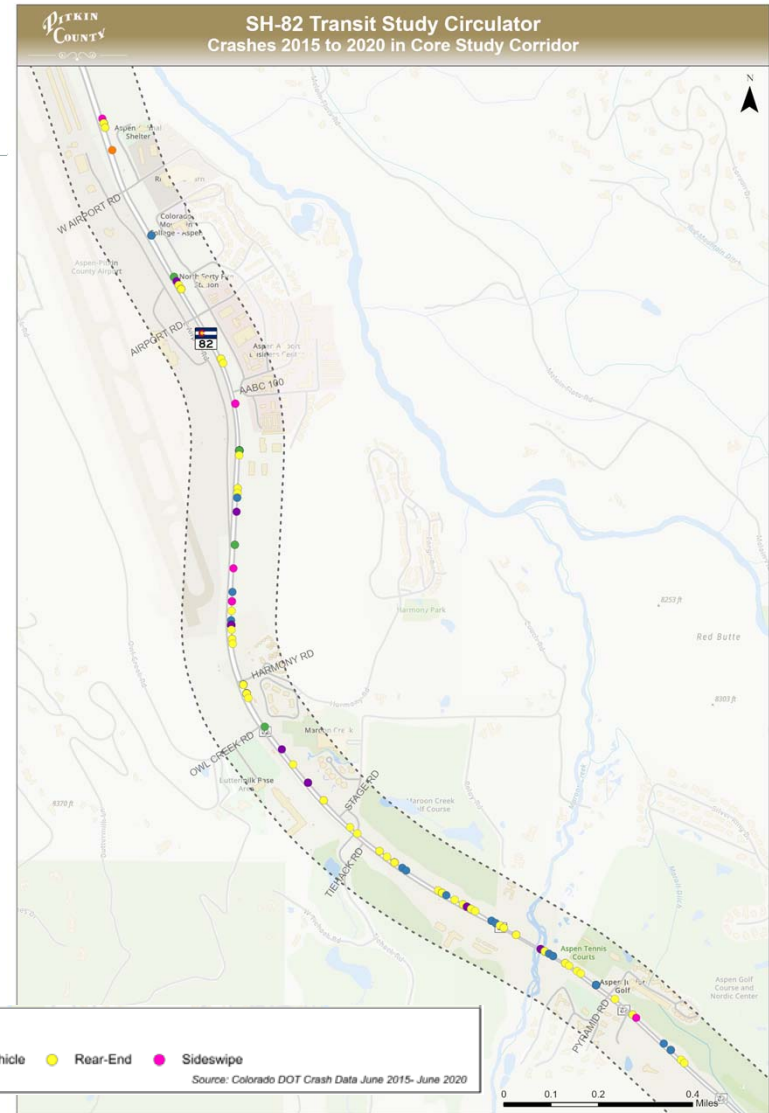
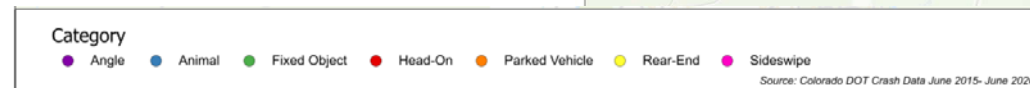
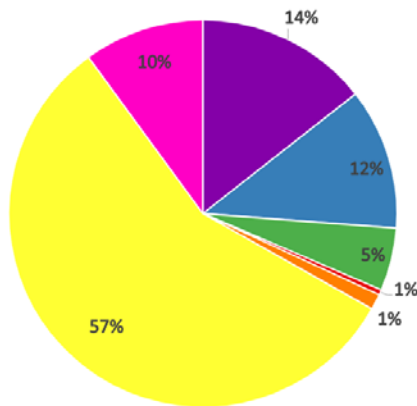
- Average Daily Stop Ridership, Summer 2019

Stop	Total Ridership (Boardings + Alightings)
BRUSH CREEK PARK AND RIDE	3,207
HIGHWAY 82 ROARING FORK TRAN	25
HIGHWAY 82 AIRPORT	487
HIGHWAY 82 BUTTERMILK	316
HIGHWAY 82 ASPEN COUNTRY INN	29
HIGHWAY 82 TRUSCOTT	179
ANN MAROON CREEK ROUNDABOUT	0
HIGHWAY 82 CEMETERY LANE	12
HIGHWAY 82 MAROON CREEK ROUN	93
MAROON CREEK RD ROUNDABOUT	74
HALLAM ST 8TH ST	580
BLEEKER ST 7TH ST	11



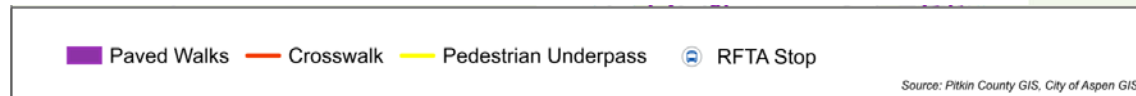
## Crash Analysis

- 229 crashes 2015-2020 in Core Study Corridor (Airport to roundabout)
  - 38 Injuries
  - 0 Fatalities
- No pedestrian, bike, or transit crashes (one involved a school bus)



# Pedestrian and Bicycle Infrastructure

- Paved walks include sidewalk and paths/ trails
- No marked on-road bike lanes within the study corridor
- 8 pedestrian crossings of SH-82 in Corridor
  - 6 pedestrian underpasses
    - (Brush Creek north of map limits)
  - 3 crosswalks
    - Brush Creek Rd
    - Owl Creek Rd
    - Ninth St



# Alternative 1 – Maximized Multimodal Right-of-Way

- **Intersection Improvements**

- Service Center Road
  - New traffic signal
  - Pedestrian Crossing w/ traffic signal
  - Speed limit reduction from 55 mph to 45 mph
- Owl Creek Road
  - Ped underpass to replace existing at-grade crossing
  - Extend HOV lane Up Valley through Owl Creek Road intersection
- Maroon Creek Road Roundabout
  - Provide Down Valley bypass lane in outer lane through roundabout

- **Bus Priority**

- Run BRT through airport on separate guideway with replacement stop at terminal
- Harmony Road/Owl Creek Road
  - Channelize bus bypass lane at Harmony Road Signal (Up Valley) and Owl Creek Signal (Down Valley)
  - Up Valley queue jump at Owl Creek from existing right-turn lane
    - Modify curb on far side of intersection to provide access to far side bus stop
- Cemetery Lane
  - Down Valley queue jump at Cemetery Lane to tie into 2<sup>nd</sup> approach lane at Maroon Creek Roundabout

- **Enforcement of HOV lane**

- **Ped and Bike Safety**

- Trail connection Aspen Country Inn
- Sage Way Sidewalks

**\*\*Pedestrian related improvements highlighted in green\*\***

## Alternative 2 – Spot Multimodal Improvements

- **Intersection Improvements**

- Service Center Road
  - New traffic signal
  - Pedestrian Crossing w/ traffic signal
  - Speed limit reduction from 55 mph to 45 mph
- Owl Creek Road
  - Extend HOV lane Up Valley through Owl Creek Road intersection
- Maroon Creek Road Roundabout
  - Provide Down Valley bypass lane in outer lane through roundabout
  - Allow through movements for HOV vehicles from outer Up Valley approach lane to roundabout (2<sup>nd</sup> EB lane)

- **Bus Priority**

- Harmony Road/Owl Creek Road
  - Up Valley queue jump at Owl Creek from existing right-turn lane
    - Modify curb on far side of intersection to provide access to far side bus stop
- Cemetery Lane
  - Down Valley queue jump at Cemetery Lane to tie into 2<sup>nd</sup> approach lane at Maroon Creek Roundabout

- **Enforcement of HOV lane**

- **Ped and Bike Safety**

- HAWK at Aspen Country Inn

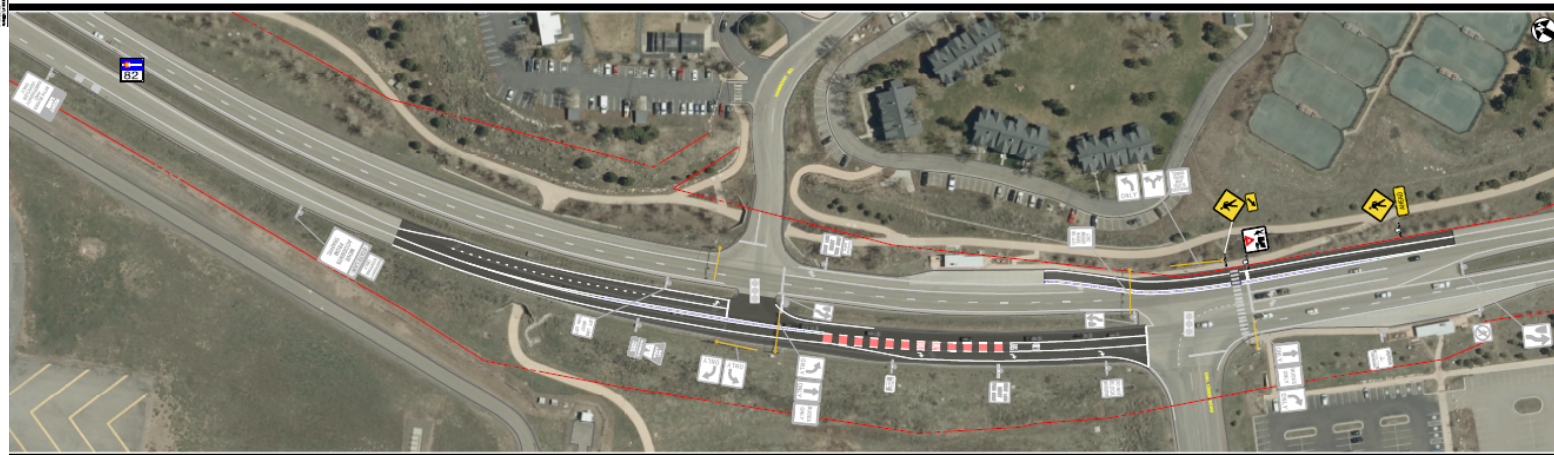
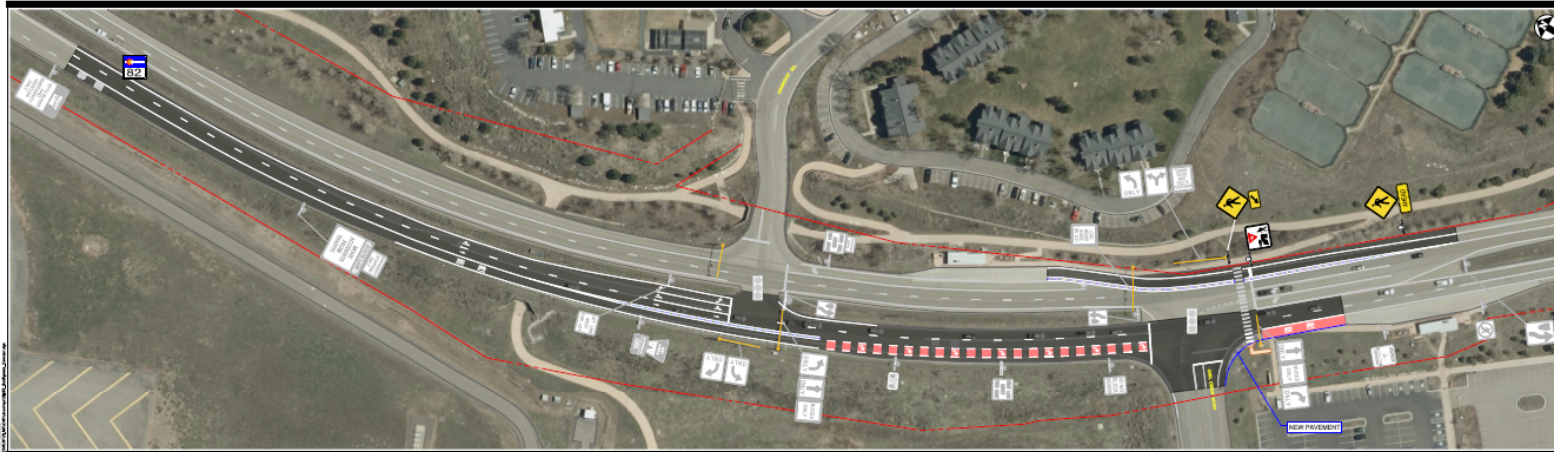
**\*\*Pedestrian related improvements highlighted in green\*\***

## Alternative 3 – Traffic Technology Application

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- **Traffic Technology Application**
  - Additional Bus Signal Priority
  - Modified Signal Phasing
  - Enhanced detection
- **Enforcement of HOV lane**

# Owl Creek/ Harmony Road Bus Queue Jump / Bypass



Mead  
& Hunt

SH-402 Bus By-Pass  
Harmony Road and Owl Creek Road Concept 1A

Sheet No. 1

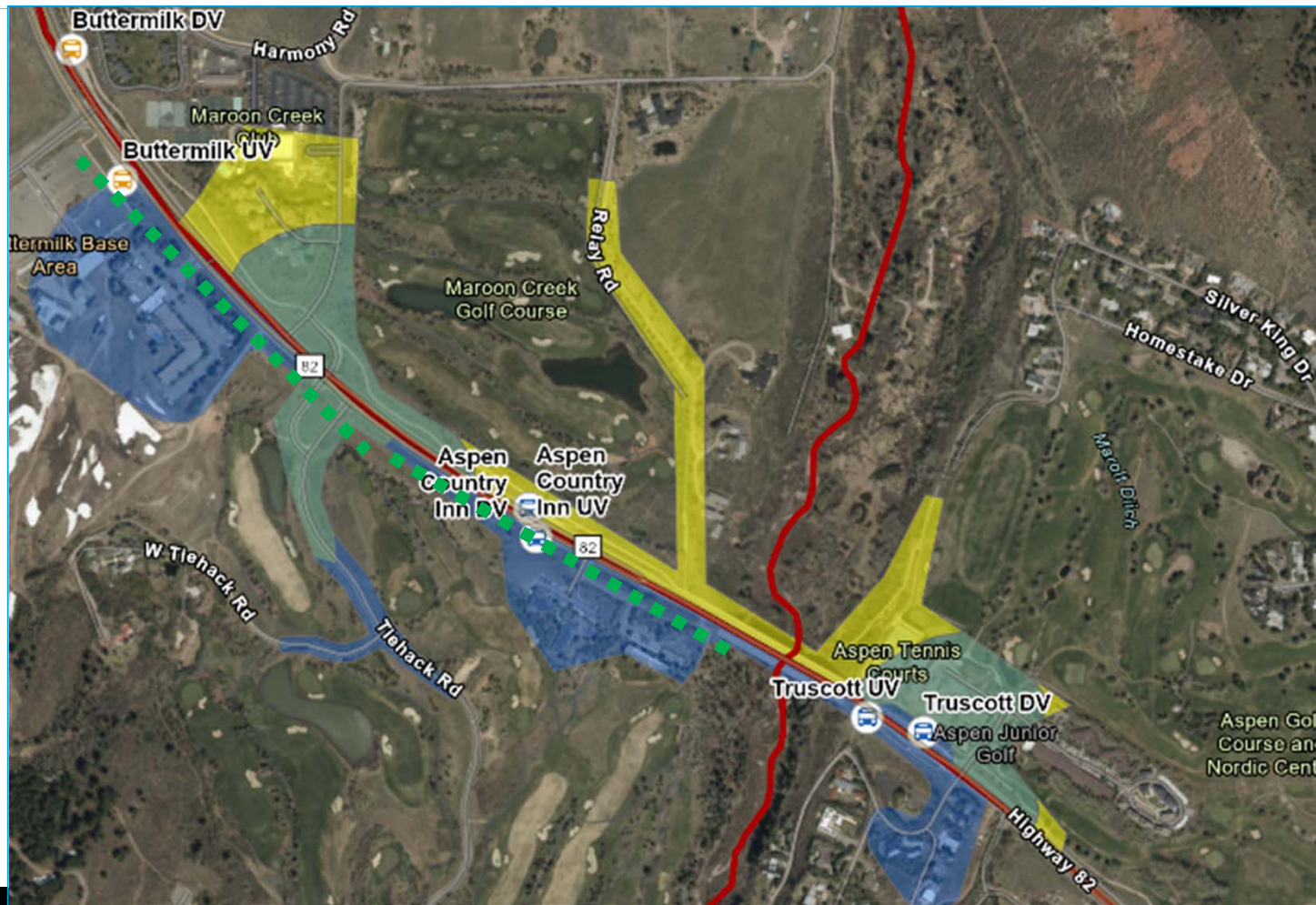
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# Buttermilk Pedestrian Underpass

- Remove existing at-grade crosswalk



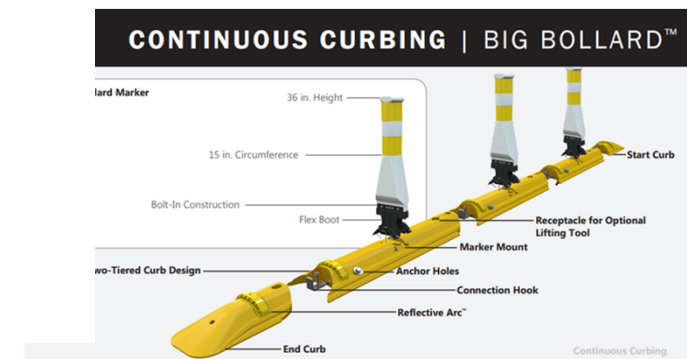
## Shared Use Path Buttermilk to Truscott



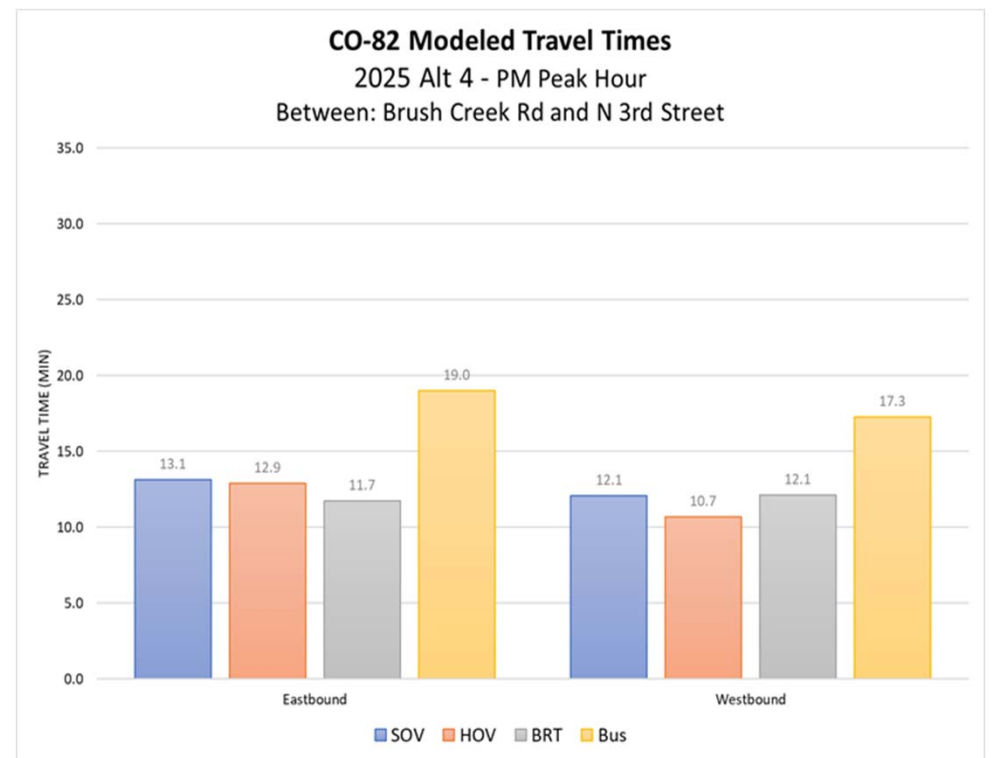
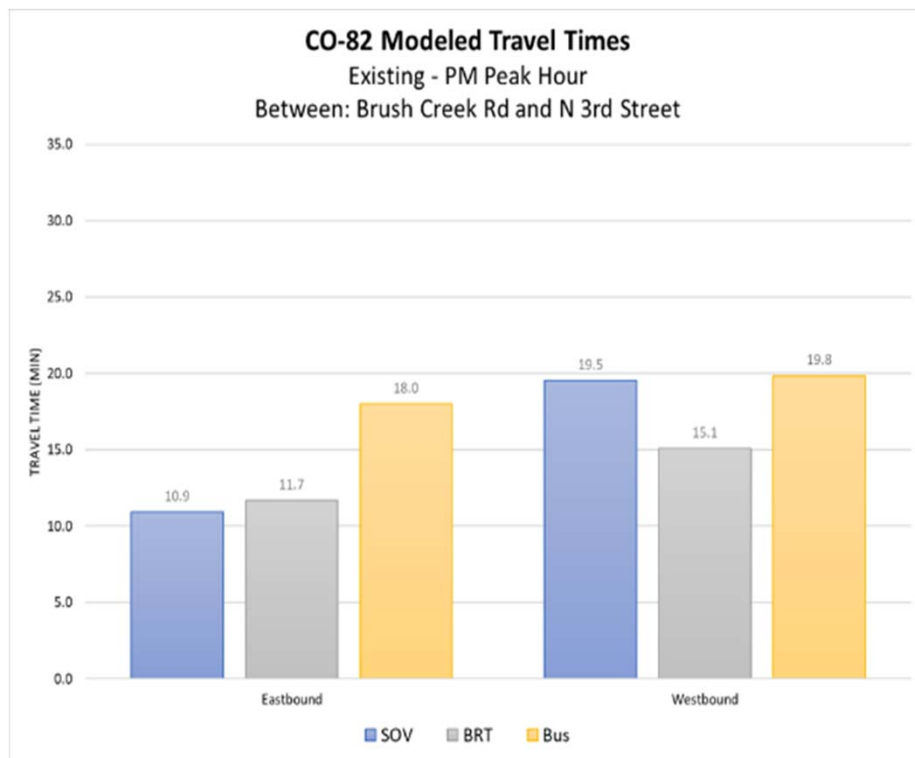
# Maroon Creek Roundabout Channelization



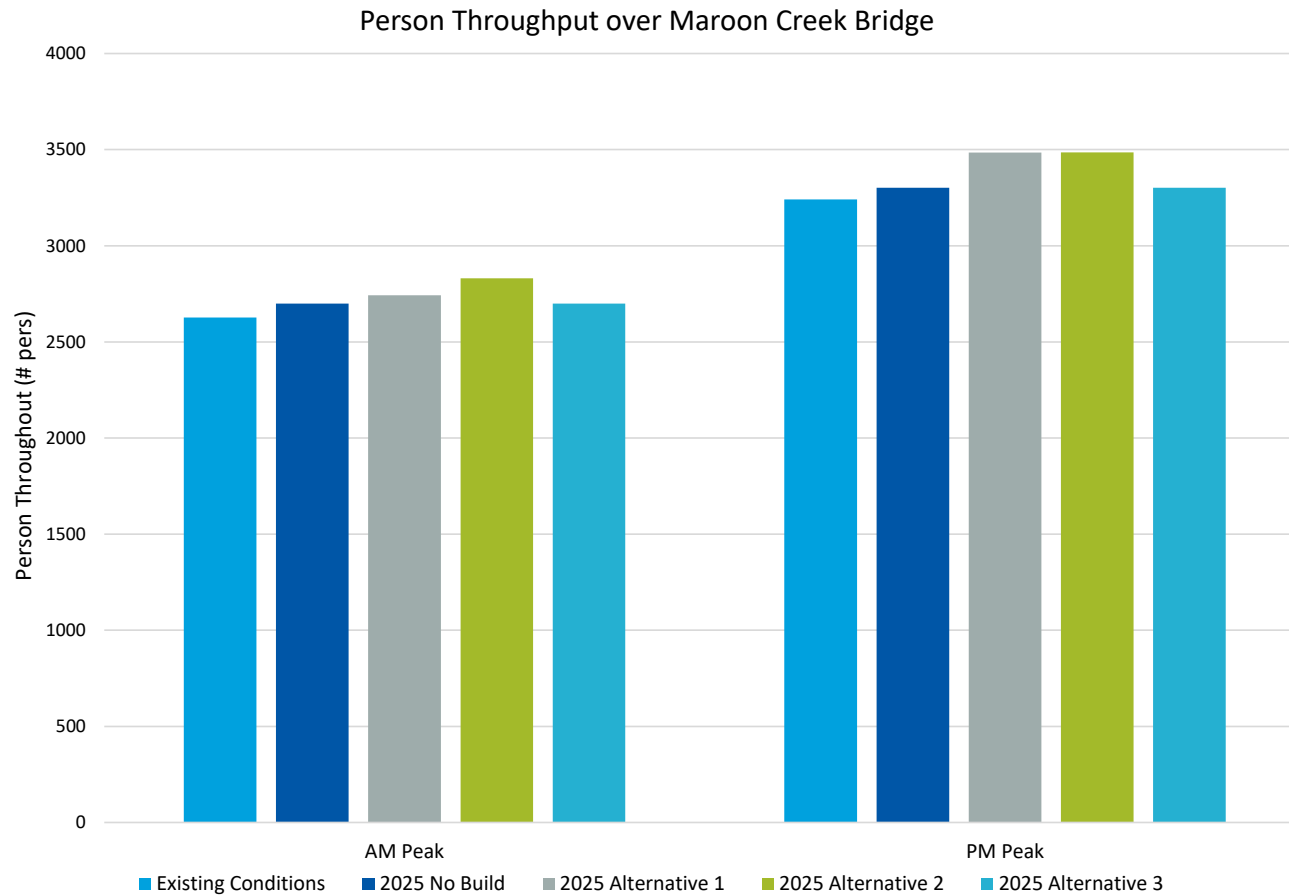
Figure 45: Down Valley Channelization at Maroon Creek Roundabout


















# Modeled Travel Times



# Traffic Operations Overview – Person Throughput



Improvement	Measures of Effectiveness	Rating by Goals and Impacts	Scoring		Estimated Cost	Notes
			Raw (0-45)	Adjusted (0-3)		
Build Alternative 1 Maximized Multimodal ROW	Multimodal		24-27/45	1.60-1.80	\$15,000,000 – \$17,000,000	
	Vehicular					
	Bicycle/Pedestrian					
	Transit					
	Other Impacts					
Build Alternative 2 Spot Multimodal Improvements	Multimodal		26-29/45	1.73-1.93	\$3,000,000 – \$4,000,000	
	Vehicular					
	Bicycle/Pedestrian					
	Transit					
	Other Impacts					
Build Alternative 3 Traffic Technology Application	Multimodal		20-23/45	1.33-1.53	\$100,000 – \$200,000	
	Vehicular					
	Bicycle/Pedestrian					
	Transit					
	Other Impacts					

## Cost Estimates and Next Steps

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- Roundabout Channelization - \$50K
- Pedestrian Underpass - \$8M
- Queue Jumps - \$400K
- Shared Use Path - \$1M
  
- Preliminary Engineering, Stakeholder Engagement, Funding / Partnership Identification of Pedestrian and Transit Priority Improvements in 2022



# Questions?