

# Separated Bicycle Lanes

Butler & Beaver Pilot Projects



City Council

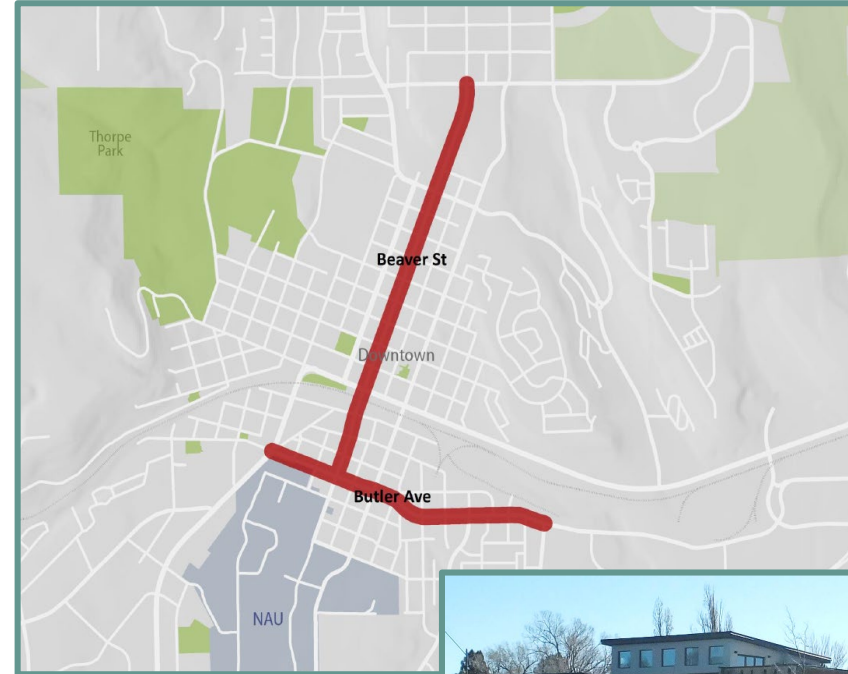
June 14, 2022



# Background

## Council recommended (July 2021):

- First pilot separated bicycle lanes installed on Butler Avenue & Beaver Street
- Improvements include parking curbs & delineators/candlesticks





# The Pilot Plan



- Start with these two phases (Butler & Beaver)
- Study
  - Collect speed & volume data before & after install
  - Collect feedback from stakeholders & citizens
  - Determine maintenance in general & during snowstorms
  - Review crashes
- Determine other possible phases or next steps



# Separated Bike Lanes

## Experience from other communities

- Make bicycling comfortable for more people
- Benefit all road users
- Preferred by bicyclists
- Part of an overall low stress bikeways network
- Support other community objectives

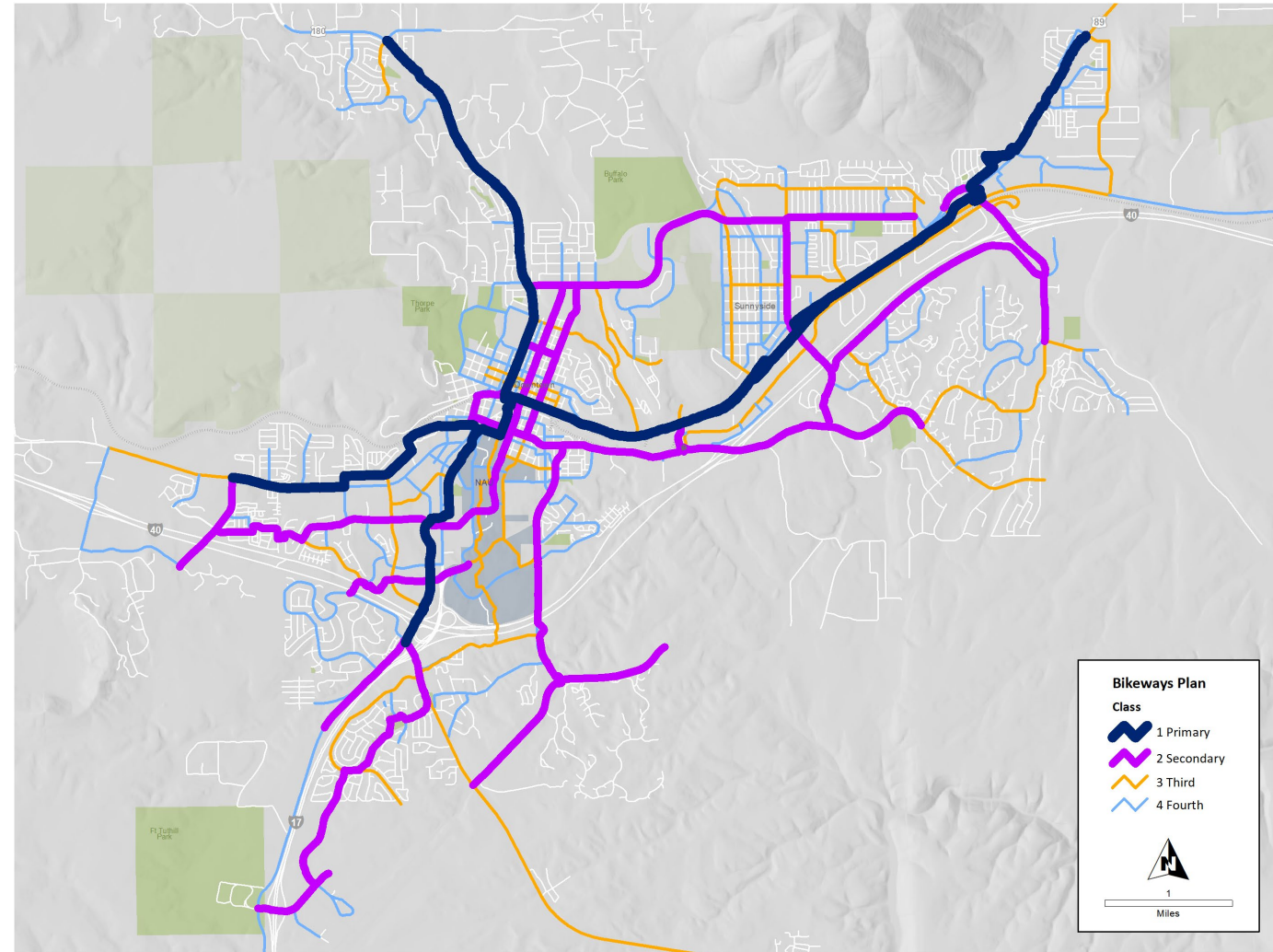


# Draft Bikeways Plan



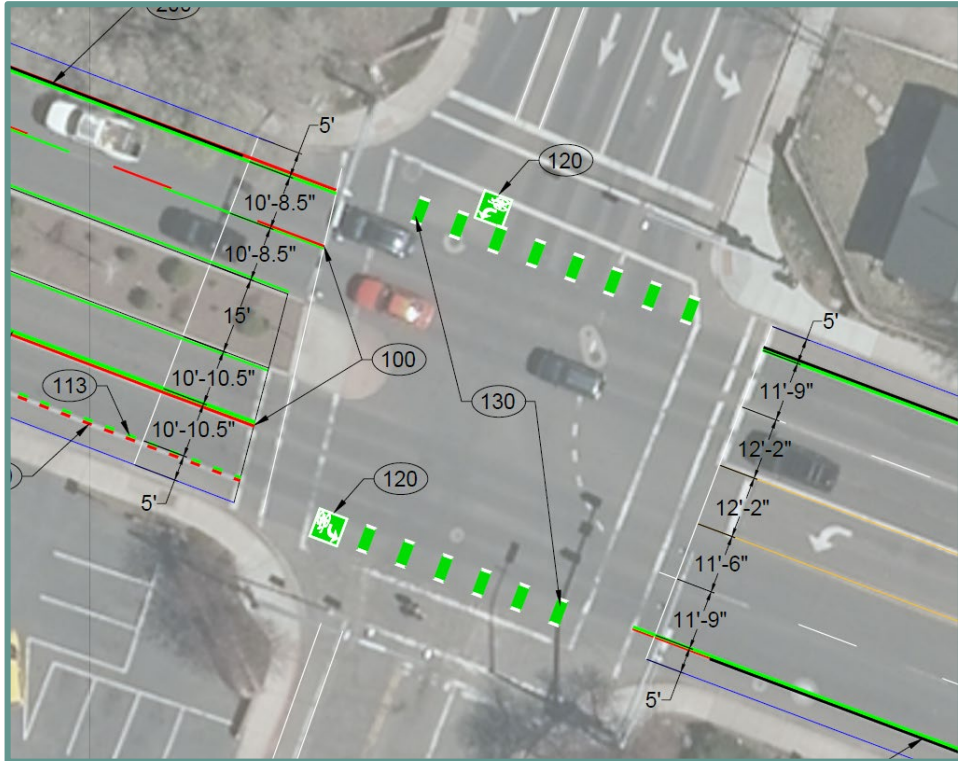
## Component of ATMP

- Low-stress
- Comprehensive/complete
- Hierarchical routes
- Variety of facilities
- Transitions from basic to enhanced
  - Buffered bike lanes to separated bike lanes





# Installation



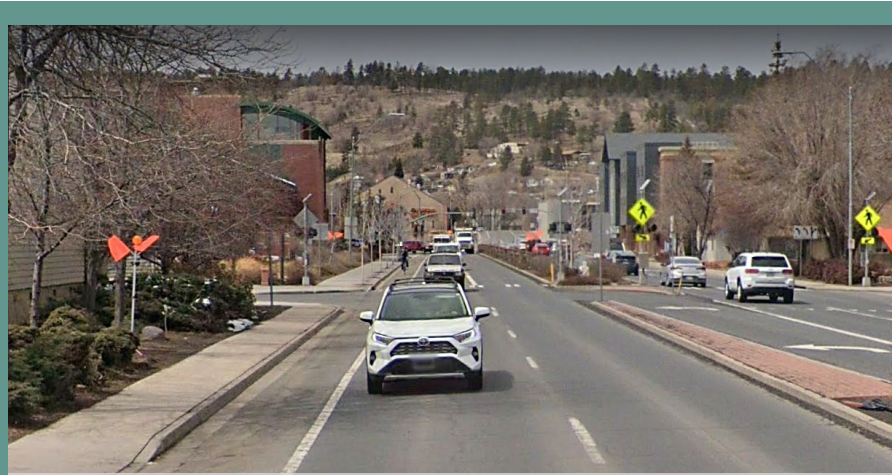
## Installed November 2021

- Butler Avenue corridor - from Milton Road to Sawmill Road
  - Two-stage bicycle left-turn boxes
  - Green extensions of bicycle lanes through intersections
- Beaver Street corridor - from Forest Avenue to Cherry Avenue
  - Green bicycle lanes south of Aspen Avenue
  - Shared lane marking south of Cherry Avenue





# Before & After Conditions



Butler Avenue **Before** Conditions (Google image)



Butler Avenue **After** Conditions



Butler Avenue **Before** Conditions (Google image)



Butler Avenue **After** Conditions



Beaver Street **Before** Conditions (Google image)



Beaver Street **After** Conditions



# Butler Avenue Speeds & Volumes

## Vehicle Speeds

Butler Ave. Vehicle Speeds		Before (October 2021)	After (April 2022)	Percent Change
Westbound	85 <sup>th</sup> Percentile (mph)	34	35	3%
Eastbound	85 <sup>th</sup> Percentile (mph)	36	35	-3%

## Bicycle Volumes

Butler Ave. Bicycle Volumes	Before (October 2021)	After (April 2022)	Percent Change
Westbound (12-Hour Period)	47	48	2%
Eastbound (12-Hour Period)	53	26	-51%
Westbound (Peak Hour)	10	11	10%
Eastbound (Peak Hour)	10	5	-50%

Vehicle Volumes Unchanged at Approximately 22,065 veh/day



# Beaver Street Volumes

## Bicycle Volumes

<b>Beaver St. Bicycle Volumes</b>	<b>Before (October 2021)</b>	<b>After (April 2022)</b>	<b>Percent Change</b>
Southbound (12-Hour Period)	77	83	8%
Southbound (Peak Hour)	13	17	31%

Vehicle Volumes Unchanged at Approximately 4,930 veh/12-hr period



# Crash Data

## Study Period Comparison

November - May	Beaver Street Reported Crashes	Butler Avenue Reported Crashes
2012-2013	8	27
2013-2014	10	36
2014-2015	4	36
2015-2016	10	35
2016-2017	6	30
2017-2018	8	23
2018-2019	7	36
2019-2020	3	16
<b>2021-2022*</b>	<b>10</b>	<b>30</b>

\*Study period, crash data obtained from the COF PD. No fatal or serious injury crashes have been reported since the barriers have been installed.



# Stakeholder Input

## City of Flagstaff Streets

### • Costs:

- \$66,149 Total cost of maintenance
- \$11,719 for maintenance of curbs & delineators
- \$21,373 for snow operations
- \$6,905 on street sweeping operations
- \$11,138 Additional Administrative Cost

### • Cartegraph curb & delineator maintenance numbers:

- 609 labor hours
- 609 delineators maintained
- 131 delineators destroyed
- 73 delineators replaced
- 151 delineators added (new version)
- 38 curbs damaged
- 24 curbs destroyed
- 2 curbs replaced

Work Order 60		Separated Bike Lane Project 2021 - Markings			Owner	Status
53 Total Tasks	53 Complete	Total Cost	Labor	Equipment	Material	Other
Progress	100%	\$66,149	Cost \$22,191	Cost \$20,773	Cost \$15,791	Cost \$7,395

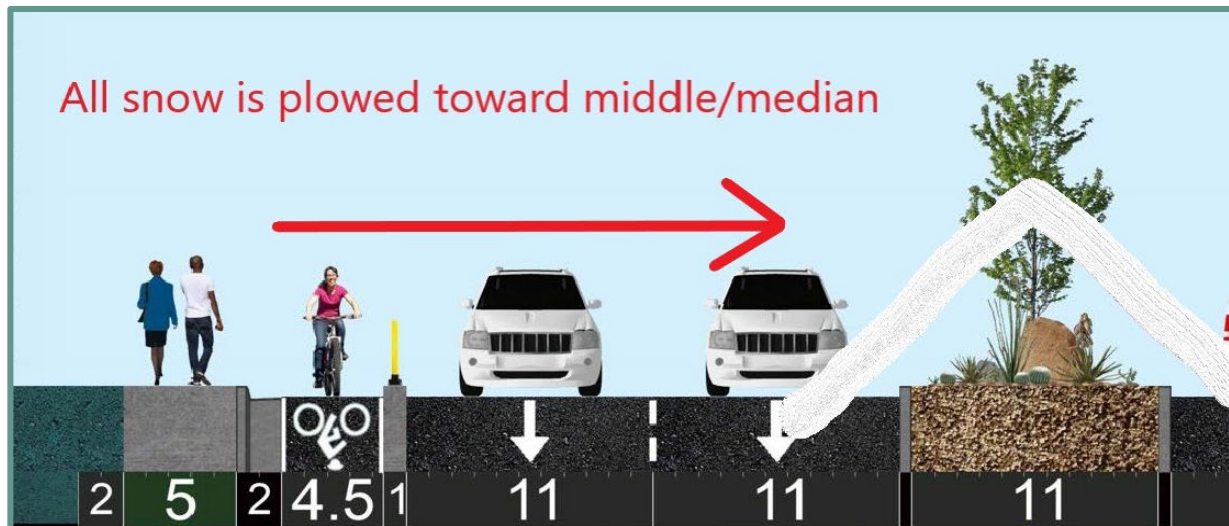




# Stakeholder Input

## City of Flagstaff Streets

- Noted issues:
  - Hardware breaking after hit
  - Narrow lanes more difficult to plow
  - Issues storing snow where **no** medians present
  - Issues keeping up with snow removal
  - Drivers pulling up onto median snow berms





# Stakeholder Input



## City of Flagstaff Parks

- Plowing to median causes:
  - Damage to plants, shrubs, trees, irrigation - \$4,000 per season
  - Additional applications of cinders - \$2,000 per season

## City Risk Management

- Two claims filed
- Four official inquires

## City of Flagstaff Solid Waste

- Unable to pull over
- Witnessed bicyclists kick trash cans left in path
- Witnessed handlebars hitting trash cans
- Requesting more space at a few locations
- Butler feels too narrow
- East side residents drag trash can over bicycle curb



# Stakeholder Input



## City Police Division

- Increased near misses
- Narrowed lanes during snowstorms causing dangerous driving behavior
- Dangerous driving conditions outweighs safety benefits for bicyclists

## City Fire Division

- Drivers unable to pull over to let fire trucks pass
- During peak hours, emergency response times have increased
- Narrowed lanes during snowstorms causing challenges
- Bicyclists using travel lanes on trash day



# Stakeholder Input



## Mountain Line Transit

- Travel lanes too narrow
- Bicyclists driving in travel lanes during snow events
- Vehicles driving in middle of roadway due to snow berms at both curb edges
- Bus mirrors hitting other buses or objects
- Broken delineators & debris in bike lanes

## Flagstaff Unified School District

- Have not had best experience
- Lanes too narrow
- FUSD bus & Mountain Line bus hit mirrors
- Witnessed bikes bending over delineators into traffic
- Witnessed drivers running over curbs & delineators
- Making turns more difficult



# Community Survey



- Flagstaff Community Forum
- Open from May 2 through May 23, 2022
- 602 responses submitted
- Four parts:
  - Experience with separated lanes
  - General thoughts and comments
  - Ratings of different types of bike lanes
  - Bicyclist experience/type



# Survey Highlights



- Bicyclists' experience with the separated lanes was both polarized and evenly split
- Drivers' experience was negative
- Can help cyclists feel more comfortable and encourage more people to ride
- Positives were enhanced safety, preventing vehicle encroachment, better accommodation, and more awareness



# Survey Highlights



- Concerns for bicyclists include maintenance, snow/cinders, delineators, trash cans, vehicles turning, feeling trapped
- Concerns for drivers include narrow lanes, maintenance, snow removal, delineators, turning from or onto the street
- Many survey respondents expressed strong disapproval of the separated lanes
- There is support for separating bike lanes from traffic



# Cost Summary

Item	Cost
Butler Avenue Installation	\$513,000
Beaver Street Installation	\$269,382
Summer 2022 Final Pavement Markings	\$69,756
Install New Delineators	\$13,000
Maintenance of Curbs and Delineators	\$11,719
Additional Snow Operations	\$21,373
Additional Sweeping Operations	\$6,905
Public Works Administrative	\$11,138
Parks Department Median Restoration	\$6,000
<b>Total*</b>	<b>\$931,294</b>
<b>*Does not include \$131,000 for Toolcat purchases with accessories</b>	

# Recommendations Continued



## Transportation Commission

- Remove curb & delineators from Butler and stripe a buffer
  - Collect ridership and maintenance cost data
- Keep Beaver the way it is

## Bicycle Advisory Committee

- Recommended keeping Butler and Beaver for at least one full year for further data collection and review.
- Small modifications to curb placement is recommended

# Recommendations



- Keep the separated bicycle lane pilot project on Beaver Street up over the summer to collect more data
  - Analyze the maintenance and operational impacts of adjusting the delineators and curb limits and continue collecting bicycle ridership trends.
- Modify the Butler Avenue pilot project from a parking curb separated facility type to a buffered bike lane facility type.
  - This cross section will more closely match the current recommended practice for buffered facilities.
  - This approach is consistent with the short-term planning contained in the Bikeways Master Plan and the Active Transportation Master Plan (ATMP).
- Install buffered bike lanes on Butler Avenue from the eastern terminus of the pilot project at Sawmill to Ponderosa Parkway.

# Questions & Discussion



# Buffered Bike Lanes



A buffered bicycle lane on downtown Portland's Southwest Stark Street

