Draft Final Report

Downtown North-South Bikeway Study

Project Assessment

June 2024 — Project # ST87110163-1

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1.0 Introduction

1.1 Project Overview

The City of Phoenix's (City) Street Transportation Department has identified a north-south gap in the active transportation network in the downtown core. The study area is bounded by Roosevelt Street to the North, Central Avenue to the west, Lincoln Street to the south, and 7th Street to the east.

The purpose of this project is to determine which street(s) are the best route(s) for pedestrians, or people using bicycles, scooters, wheelchairs and other mobility devices to safely, conveniently and comfortably travel to and between downtown destinations. The project identities implementation recommendations including connections to other City of Phoenix projects along 3rd Street north and south of Downtown.

The purpose of this Project Assessment Report is to document purpose, goals, scope, and technical requirements of the project development to inform budget, design, and construction steps ahead.

A video overview of the study is provided in the video link below:

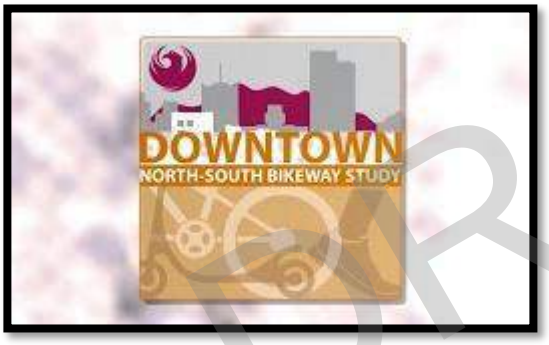

Figure 1 - Study Overview Video

1.2 Project Goals and Objectives

The primary goal addressed by the project is to provide a safe, convenient, and shaded north-south connector route through the downtown core.

Specific objectives of the pre-design phase study include:

- Complete an alternatives analysis informed by robust stakeholder and public engagement.
- Provide understandable graphics and documentation, including video/visualization of recommended implementation.
- Develop 30% plans and project assessment report for the recommended improvements.
- Position the City to procure and/or program future capital construction project based on the recommendations of the study.

2.0 Project Information

2.1 Project Location

The project study area is bounded by Roosevelt Street to the North, Central Avenue to the west, Lincoln Street to the south, and 7th Street to the east as illustrated in Figure 2 - Project Study Area.

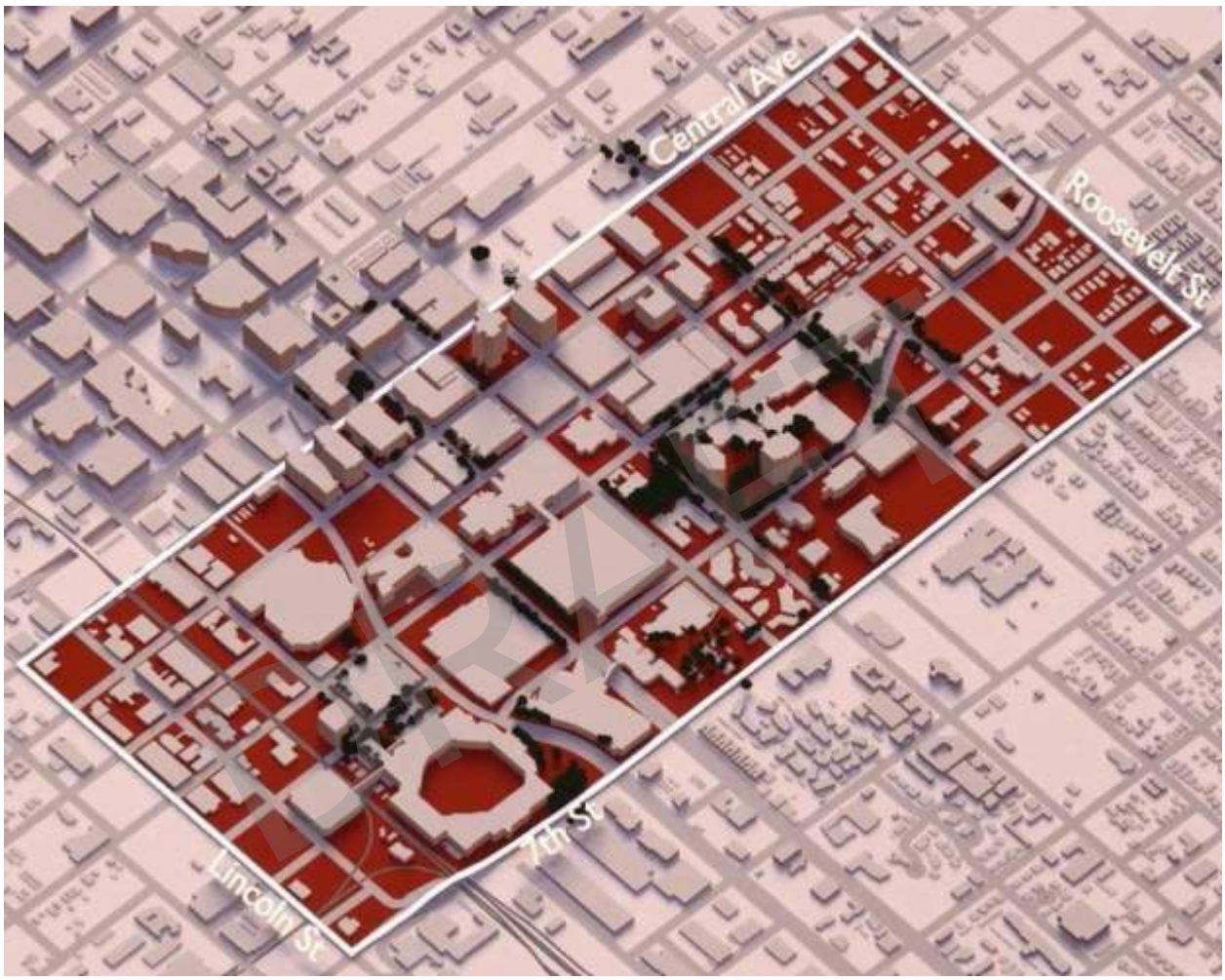

Figure 2 - Project Study Area

2.2 EXISTING CONDITIONS

Study Area Mapping

A map atlas of existing conditions was compiled to identify the following characteristics of the study area:

- Major Destinations;
- Density of Zero-Vehicle Household;
- Density of Population;
- Density of Young Adults;
- Density of Older Adults;
- Number of Jobs;
- Existing Bike Network;
- Zoning;
- All Traffic Collisions;
- Bike Collisions;
- Pedestrian Collisions;
- Curb Use Regulation;
- AM Parking Occupancy;
- PM Parking Occupancy; and
- Tree & Shade Prioritization.

A complete set of maps for the characteristics identified is provided in Appendix A – Existing Conditions Map A.

Figure 3 - Study Area Major Destinations

Existing Conditions Photos

Representative photos of the study area are provided for the study area north-south corridors:

Photo 1- 1st St Looking North, South of Jefferson

Photo 3 - 3rd St Looking North, North of Fillmore

Photo 2 - 2nd St Looking North, South of Washington

Photo 4 - 4th St Looking North, South of UPRR

Photo 5 - 5th Street Looking South, south of Garfield

3.0 Background Data

3.1 Project Purpose, Need, and Support

Purpose

The purpose of this project is to determine which streets are the best routes for people walking, riding bicycles, riding scooters, and driving wheelchairs to safely, conveniently, and comfortably travel to and between downtown destinations, including connections to other City of Phoenix projects on 3rd Street.

Need

The project is needed to rectify discontinuities in the active transportation network. As illustrated in Figure 4 - Existing Bike Network Map, no continuous north-south bikeway corridor is located within the study area.

The area is home to Arizona State University (ASU) Downtown Campus and the Arizona Biomedical Collaborative that attract students who are often less likely to own a car. The study could support this by creating more walkable and bikeable transit connections for students and the many residents of Phoenix's growing downtown.

The growth of downtown and the project growth are illustrated by population trends:

- The study area has experienced a 61 percent increase in population from 2010 to 2020 compared to an 11 percent increase throughout the broader City of Phoenix.[1]
- A 58 percent increase in multi family dwelling units in downtown/midtown are anticipated from 2020 to 2030.[2]
- A 90 percent increase in multi family dwelling units in downtown/midtown are anticipated from 2020 to 2040.[2]

Increased population generates additional trips. As the density of downtown increases the need for multi-modal facilities intensifies.

[1] US Census Block Group Data

[2] Maricopa Association of Governments (MAG) Socioeconomic Projections

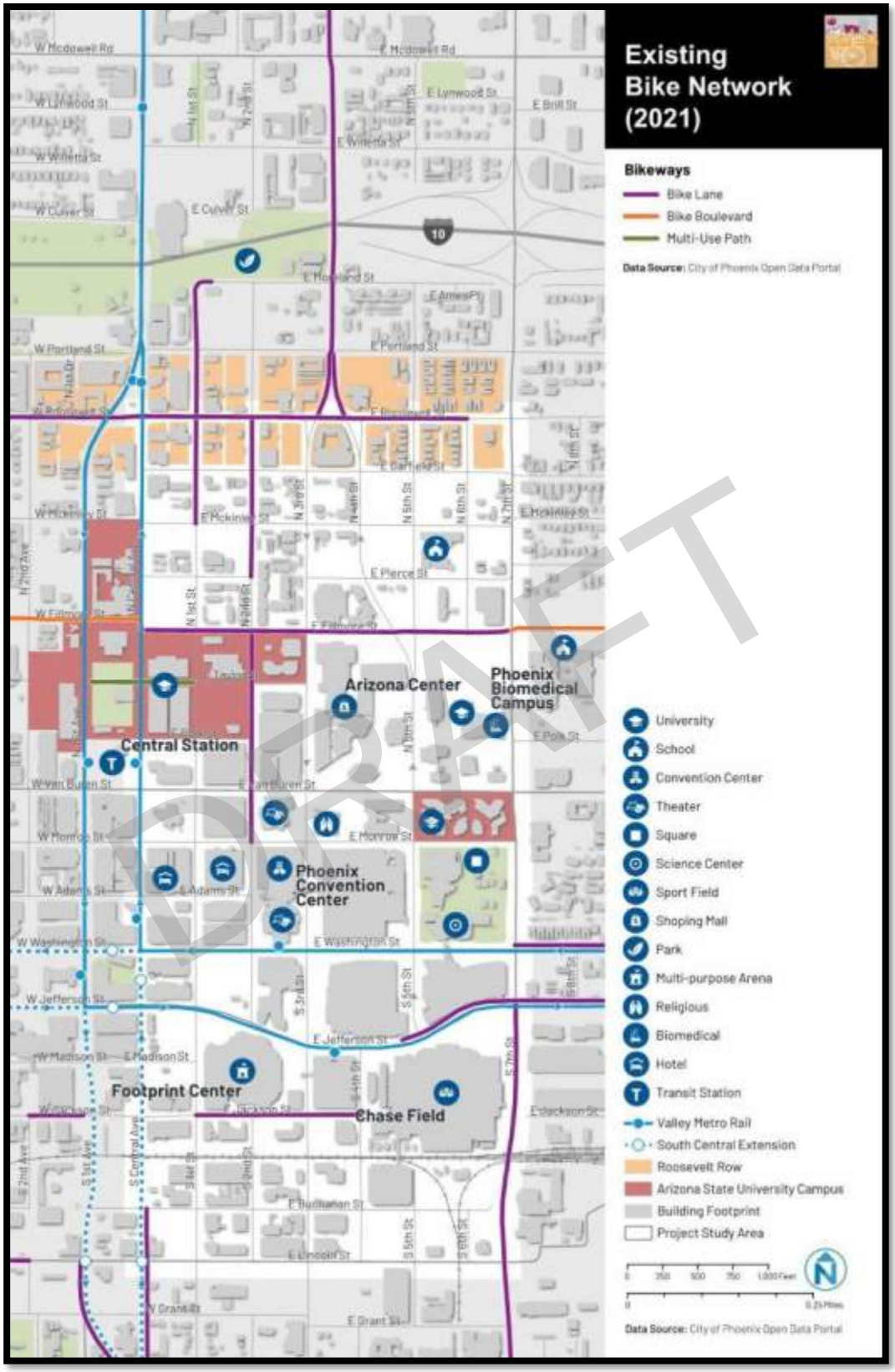

Figure 4 - Existing Bike Network Map

Support

The following City planning documents have identified infrastructure changes aligned with this study's purpose and goals:

- Comprehensive Bicycle Master Plan (2014)
    - Plan identifies 3rd Street, from Indian School Road to Buckeye Road as the highest priority corridor for implementation of bicycle facilities in the City.
- Phoenix Comprehensive Downtown Transportation Study (2014)
    - Plan identifies 3rd Street bicycle corridor into and out of downtown.
    - Plan identifies transition of 3rd and 5th streets from one-way to two-way throughfares in downtown.
- Phoenix Downtown Transportation Plan Update (2020)
    - Study agreed with recommendations from 2014 to convert 3rd Street to a two-way facility.

The City currently has multiple projects North and South of Downtown along the 3rd Street corridor:

- North of Roosevelt the 3rd Street Promenade constructed bicycle facilities to the north of downtown.
- South of Lincoln the City completed a study for the 3rd Street corridor to connect into the Rio Salado pathway system. The City is seeking funding for implementation of the proposed concept.
- South of Lincoln the City completed a study for a bicycle/pedestrian bridge across the Rio Salado. The City received a federal grant to construct the bicycle/pedestrian bridge.

Photo 6 - 3rd Street Bicycle Facilities North of Roosevelt

4.0 Alternatives Analysis

An alternatives analysis was conducted as part of this study to identify a preferred alternative. Stakeholder and public input guided the development of concept alternatives and was paired with input from the project Technical Advisory Committee (TAC) to culminate in the implementation recommendations. The alternatives analysis process included the following steps:

1. Make a list of all data sources or maps that we have access to, or have created (i.e., survey results, crash data, traffic counts, etc.).
2. For each data source, identify the key findings or takeaways as it relates to 3rd Street or the study area overall.
3. Based on the findings, brainstorm potential design considerations, projects or other investments to support safe, comfortable and connected bicycle and pedestrian travel along 3rd Street and through the study area.
4. Develop a project concepts map to synthesize the different projects. The map will be conceptual and show high-level treatments. It may identify different options at certain locations, or additional considerations.
5. Refine projects based on feedback and expertise.
6. Evaluate and score projects based on decision matrix.
7. Based on scoring, identify projects to prioritize for inclusion in proposed concept designs.

4.1 Concept Alternatives

Alternatives developed are summarized as follows. Routes and cross sections associated with each alternative are included in Appendix B - Concept Alternative Routes and Cross Sections.

1. Bi-directional bike lane on 3rd Street
2. Two one-way bike lanes on 3rd Street
3. Two one-way bike lanes on 2nd Street
4. Two one-way bike lanes on 1st Street

4.2 Alternatives Analysis

An alternatives analysis matrix was developed and modified based on input from the TAC members during a TAC meeting held on June 21, 2023. Notes from the TAC meeting are included in Appendix C – Technical Advisory Committee Meeting Notes. Alternatives were assessed for their merit with respect to traffic impacts, parking impacts, corridor directness, serving destinations, event impacts / street closures, and infrastructure or implementation barriers as detailed in Figure 5 - Alternatives Analysis Decision Matrix. All alternatives were developed using bikeway types that provides comfort in accordance with FHWA bikeway selection guidelines. As a result, this criterion was not applied to the analysis.

Criteria or Factors		Option 1 Bi-directional bike lane on 3rd Street	Option 2 Two one-way bike lanes on 3rd Street	Option 3 Two one-way bike lanes on 2nd Street	Option 4 Two one-way bike lanes on 1st Street
Traffic impacts	LOS D, E or F; impacts to turn lanes or longer queues	Limited impacts on traffic.	Limited impacts on traffic.	Limited impacts on traffic.	Potential impacts on traffic at Jefferson Street.
Parking impacts	Removal of parking; is there sufficient capacity in off-street locations	- Limited impacts to parking. - Moderate availability of replacement parking in off-street facilities.	- Limited impacts to parking. - Moderate availability of replacement parking in off-street facilities.	- Moderate impacts to parking. - Good availability of replacement parking in off-street facilities.	- Moderate impacts to parking. - Good availability of replacement parking in off-street facilities.
Corridor directness	Connection to existing or planned bike network; quality of bicycle path of travel	- Direct alignment - Connections at north and south to planned facilities.	- Direct alignment - Connections at north and south to planned facilities.	- Moderate out-of-direction travel. - Connections at north and south to planned facilities.	- Longer out-of-direction travel. - Connections at north and south to planned facilities.
Serving destinations	Level of activity or destinations directly along corridor	- Very limited ground floor activation (especially south of Fillmore) - Few destinations or businesses directly along 3rd St	- Very limited ground floor activation (especially south of Fillmore) - Few destinations or businesses directly along 3rd St	- Proximity to ASU Downtown - Limited ground floor activation	- Proximity to ASU Downtown - Moderate level of ground floor activation.
Event impacts / street closures	Frequency of scheduled street closures (i.e., no traffic of any mode)	- Street closures for periodic Convention Center events (~28 days/year). - Impacts of traffic due to events at Chase Field and Footprint Center.	- Street closures for periodic Convention Center events (~28 days/year). - Impacts of traffic due to events at Chase Field and Footprint Center.	- Street closures for periodic Convention Center events (~28 days/year). - Impacts of traffic due to events at Chase Field and Footprint Center.	- Impacts of traffic due to events at Footprint Center.
Infrastructure or implementation barriers	Other factors that could impact feasibility (railroad, etc.)	- Requires new crossing gates at railroad track.	- Requires new crossing gates at railroad track.	- Requires new crossing gates at railroad track.	- Avoids need for new crossing gates at railroad track.

Figure 5 - Alternatives Analysis Decision Matrix

Details for the traffic analysis performed to assess each alternative route is provided in Appendix H – Corridor Feasibility Assessment Traffic Analysis.

4.3 Recommended Alternative

At the conclusion of the alternative selection TAC meeting the team agreed to proceed with 3rd Street bi-directional bikeway alternative as the preferred alternative with 1st Street bikeway improvements concurrently developed to serve as an alternative route during 3rd Street closures. The team agreed to place the bi-directional bikeway on the west side of 3rd Street.

5.0 Project Scope

5.1 1ST STREET

Implementation recommendations encompass work on 1st Street from Buchanan to Portland with connections to 3rd Street as shown in Figure 8 - 1st Street Corridor. Recommended infrastructure along the 1st Street corridor includes:

- Pavement Marking;
- Signing;
- Flex Posts;
- Slurry Seal;

1st Street will ultimately serve as a detour route during 3rd Street closure days. When the 3rd Street implementation is completed, dynamic message signing will be provided at several points along 3rd Street to divert users to the 1st Street corridor.

A preliminary concept rendering depicting existing and proposed conditions is shown in Figure 6 - 1st Street/Jefferson Existing and Figure 7 - 1st Street/Jefferson Proposed Concept. Preliminary plans are included in Appendix J – 30% Plans.

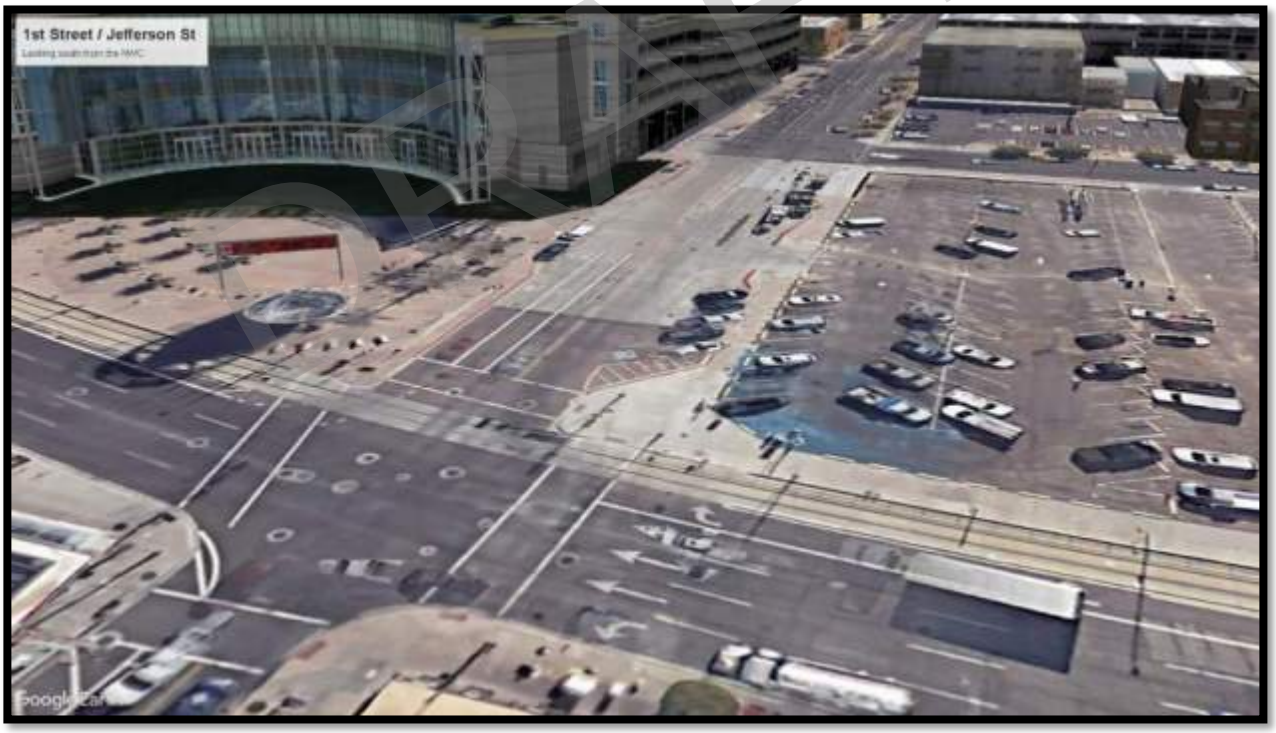

Figure 6 - 1st Street/Jefferson Existing

Figure 7 - 1st Street/Jefferson Proposed Concept

Implementation Approach

Infrastructure recommendations associated with the 1st Street corridor can be implemented through a coordinated effort by the Design and Construction Management Division, Traffic Services Division, and Maintenance Division.

Photo 7 - Street Maintenance Division Staff Install Separated Bikeway Infrastructure

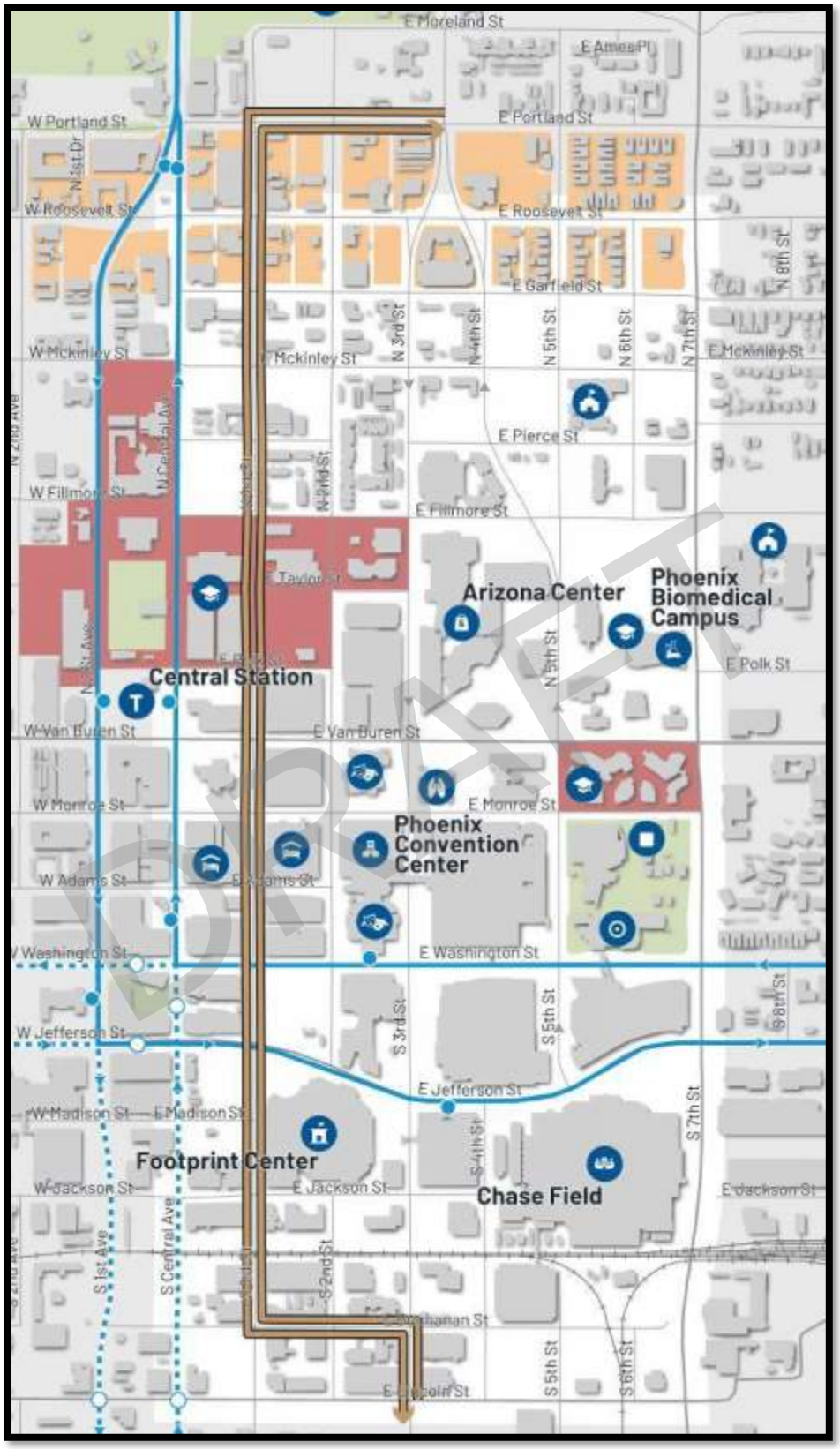

Figure 8 - 1st Street Corridor

5.2 3RD STREET

Implementation recommendations encompass work on 3rd Street from Lincoln to Portland with connections to 1st Street as shown in . Recommended infrastructure along the 3rd Street corridor includes:

- Physical Separation on west side of 3rd Street (2 options recommended for consideration);
    - Precast Concrete Curb
    - Cast-in-place median
- Mountable Curb Islands;
- Railroad Signal and Active Device Modifications;
- Traffic Signal Modifications to provide bicycle exclusive signals with a leading bike interval;
- Lighting;
- Bikeway Detour Route Dynamic Message Signs;
- Pavement Marking;
- Signing;
- Flex Posts;
- Micro Surfacing;

A preliminary concept rendering of the infrastructure recommendations on 3rd Street is provided in Figure 10 - Preliminary Concept Rendering of 3rd Street. Preliminary plans are included in Appendix J – 30% Plans. A fly-through simulation of the corridors is provided in video format at the link below:

Figure 9 - Fly-Through Simulation Video Link

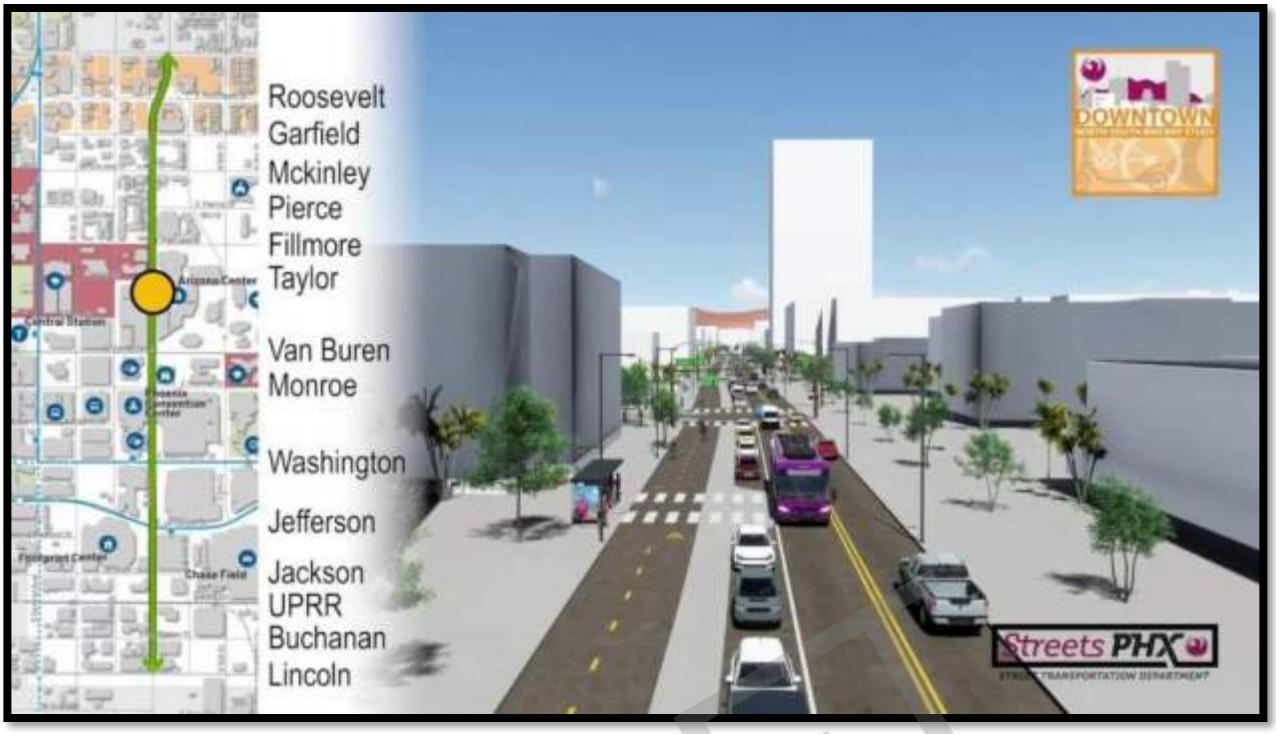

Figure 10 - Preliminary Concept Rendering of 3rd Street

Separated Bikeway Form of Physical Separation

Recommended infrastructure on 3rd Street includes a permanent, rigid barrier to separate the bikeway from adjacent travel. For this project, 2 options are recommended for consideration. Pros and cons of each form of separation are listed below:

Option	Pros	Cons
Precast Concrete Curb	• Reduced Capital Cost • Shorter construction duration	• Limited aesthetic enhancement options
Cast-in-place median	• Aesthetic options with patterns and/or landscaping	• Increased Capital Cost • Longer construction duration

Cost estimates for each option are provided in the Itemized Cost Estimate section to assist City staff in making a decision on which form of physical separation to include with the project.

Images depicting precast concrete curb and cast-in-place median forms of separation are provided below:

Figure 11 - Precast Concrete Curb (Photo Courtesy of Chicago Department of Transportation)

Figure 12 - Precast Concrete Curb Installation (Photo Courtesy of Chicago Department of Transportation)

Figure 13 - Cast-In-Place Median Installation (Photo from City of Phoenix Active Transportation Plan, April 2023)

Detour Route During 3rd Street Closures

3rd Street is closed numerous times throughout the year for event activities. During these closures, an alternative route on 1st Street has been defined and the project is planned to include dynamic signage to direct users to the alternative route as shown in Figure 14 - 3rd Street Canyon Closure Bike Route Detour. These dynamic detour route signs can be activated as part of the standard traffic control permit (TRACS) that is already obtained by Phoenix Convention Center (PCC) events. The TRACS permit would activate the detour route, requiring no additional work for PCC event staff. Additional signage accompanying the road closure signs may be required. This signage would be minimal and in line with already placed signage noting road closures.

Implementation Approach

Implementation of the ultimate infrastructure recommendations on 3rd Street will require a capital improvement project to construct. In the interim, a demonstration project is recommended to enable stakeholders to experience the recommended configuration. Additional details and programming for a demonstration project on 3rd Street are provided in the section on Quick Build / Demonstration.

Figure 14 - 3rd Street Canyon Closure Bike Route Detour

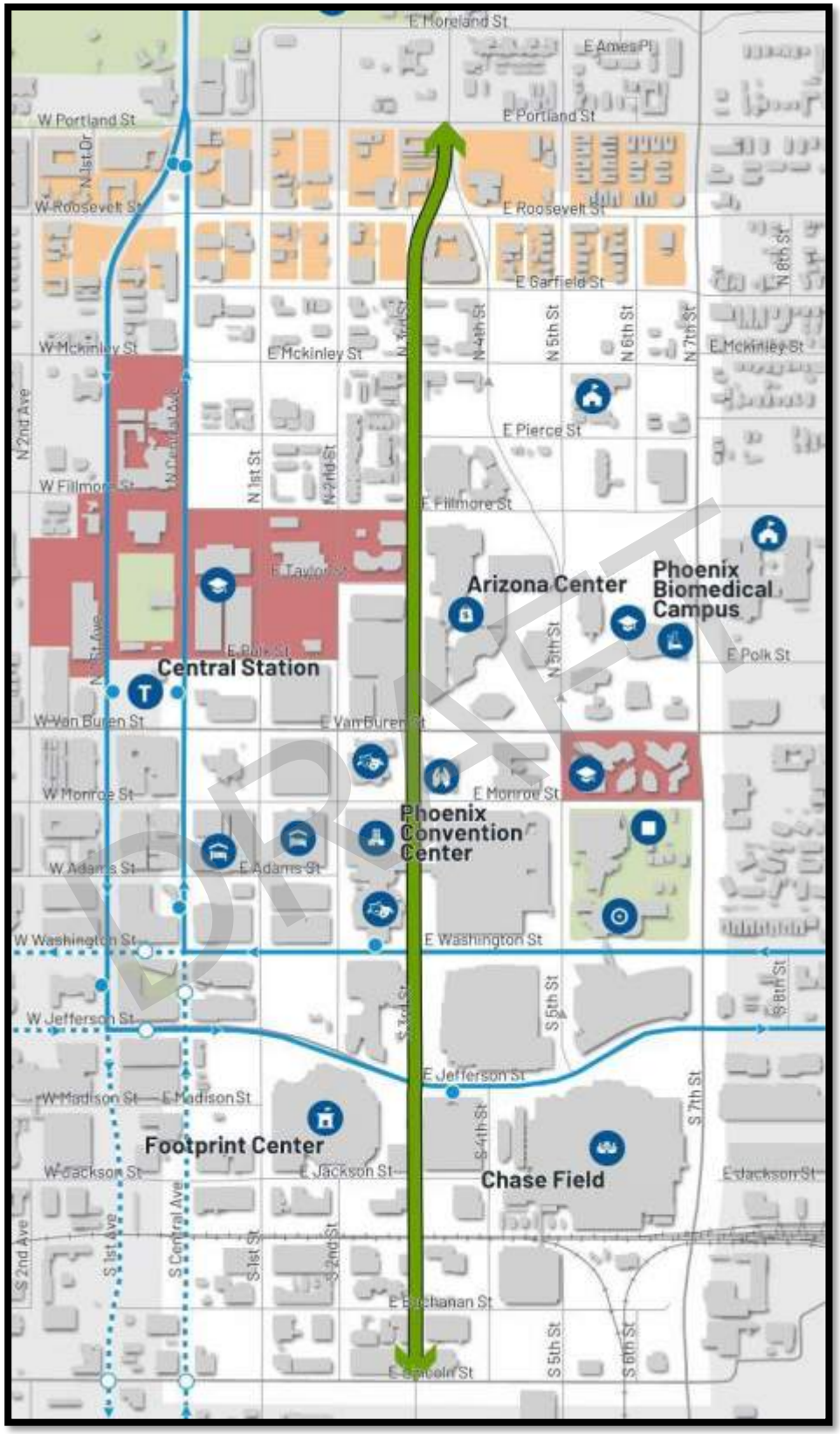

Figure 15 - 3rd Street Corridor

6.0 Project Development Considerations

6.1 Environmental Requirements

An Initial Natural/Cultural Resources Assessment (INCRA) will be prepared by City staff during final design.

6.2 Geotechnical and Drainage Requirements

A geotechnical investigation will not be required if 3rd Street improvements include cast-in-place median requiring pavement replacement. In the event the project scope is modified to widen the street, geotechnical requirements for replacement of pavement would need to be developed.

Proposed medians on 3rd Street will intercept existing stormwater runoff to outside curb and gutter pans. If precast concrete curbs are selected as the form of protection, the product used will need to include drainage slots to maintain the existing flow pattern. If cast-in-place medians are selected as the form of protection, openings in the median will need to be spaced to minimize impacts to dry-lane criteria.

No floodplains have been identified within the project study area.

Green Stormwater Infrastructure (GSI)

If cast-in-place medians are selected as the form of protection, GSI should be considered for the center of the raised medians.

6.3 Critical Agency Involvement

Coordination with several agencies and stakeholders will be required throughout the programming, design, and construction of the recommendations from this study. Agencies and stakeholders to be involved include:

- Downtown Grocers
- Downtown Hotels
- Event Centers
    - Chase Field Facility Operator
    - Footprint Center Facility Operator
    - Herberger Theater Center
    - Phoenix Convention Center
- Governmental Organizations
    - Arizona State University
    - City of Phoenix Community and Economic Development Department
    - City of Phoenix Planning and Development Department

    - City of Phoenix Police Department
    - City of Phoenix Public Transit Department
    - Valley Metro
- Non-Governmental Organizations
    - Downtown Phoenix Inc.
    - Downtown Stakeholders
    - Downtown Voices Coalition
    - Phoenix Community Alliance
    - Phoenix Spokes People
    - Roosevelt Row Merchant Association
    - Urban Phoenix Project
- Multi-Family Residential Property Managers

Coordination with the Union Pacific Railroad (UPRR) will be critical to the design and implementation schedule.

6.4 Preliminary Right-of-Way Requirements

No right-of-way acquisition is anticipated for the project. All proposed work has been identified to be within City of Phoenix right-of-way or easement.

6.5 PRELIMINARY PARKING CONSIDERATIONS

1st Street	
Existing	Proposed
Buchanan St - 3rd St to 2nd St	
17	17
Buchanan St - 2nd St to 1st St	
23	23
Buchanan St to UPRR	
28	28
UPRR to Jackson St	
3	0
Jackson St to Madison St	
20	19
Madison St to Jefferson St	
13	11
Jefferson St to Washington St	
15	15
Washington St to Adams St	
18	20
Adams St to Monroe St	
19	0
Monroe St to Van Buren St	
2	14
Van Buren St to Polk St	
9	0
Polk St to Taylor St	
32	13
Taylor St to Fillmore St	
11	4
Fillmore St to Pierce St	
15	15
Pierce St to McKinley St	
21	21
McKinley St to Garfield St	
22	22
Garfield St to Roosevelt St	
16	16
Roosevelt St to Portland St	
25	25
Portland St - 1st St to 2nd St	
25	25
Portland St - 2nd St to 3rd St	
16	16
TOTAL	
350	304

On-Street Vehicle Parking

On-street parking stalls associated with implementation recommendations are summarized in the tables provided on this page.

Off-street PM peak hour maximum occupancies provided in the Downtown Phoenix Comprehensive Parking Study[3] were utilized to identify adjacent off-street parking availability in proximity to locations where on-street parking is proposed to be reduced as part of the recommended concept.

3rd Street	
Existing	Proposed
Lincoln St to Buchanan St	
9	6
Buchanan St to UPRR	
9	10
UPRR to Jackson St	
4	6
Jackson St to Jefferson St	
8	11
Jefferson St to Washington St	
4	24
Washington St to Monroe St	
3	3*
Monroe St to Van Buren St	
6	9
Van Buren St to Taylor St	
16	18
Taylor St to Fillmore St	
5	7
Fillmore St to Pierce St	
10	11
Pierce St to McKinley St	
14	4
McKinley St to Garfield St	
5	6
Garfield St to Roosevelt St	
7	0
Roosevelt St to Portland St	
0	0
TOTAL	
100	115

* Segment can accommodate 22. Per PCC staff additional on-street parking within Canyon on Third not desired.

[3] Downtown Phoenix Comprehensive Parking Study, City of Phoenix; July 2022

Canyon on Third Bus Parking

The northbound lanes of Canyon on Third (including the vehicular pull ins) are frequently closed to allow for school and tour bus parking to facilitate drop off and pick up for those attending ticketed and non-ticketed events at PCC venues. Per PCC staff, Forty-eight (48) buses are parked on 3rd Street during these events, which must accompany a street closure between Washington and Monroe to fit 48 buses on Canyon on Third. City of Phoenix Streets Department staff are investigating modular forms of separation from the bikeway that would enable 48 buses to continue to park on 3rd Street during events. This detail is to be confirmed via ongoing coordination between Streets and PCC staff during final design.

Figure 16 - Bus Parking on Canyon on Third

Porte-cohere Parking Operations

The Sheraton Phoenix Downtown regularly hosts large banquet style events in which vehicles enter the property through the hotel's porte-cochere off 3rd Street. During these events, the on-street parking adjacent to the bikeway can be used as a flex-lane to provide queueing storage for vehicles entering the porte-cochere. This space provides over 300-ft of storage for vehicles.

6.6 Preliminary Utility Relocation Requirements

No utility relocations are anticipated as part of the 1st Street implementation infrastructure. Traffic signal modifications, at-grade railroad crossing modifications, and dynamic message sign installation all pose potential utility conflicts. As the design of these elements is advance, utility designation and potholing is recommended to confirm conflict dispositions.

6.7 Constructability/Traffic Control

Implementation Traffic Control

Implementation of 1st Street corridor bikeway modifications is anticipated to require half-street closures to place slurry seal treatment prior to installation of pavement marking and other traffic control devices. These closures will be short-term in nature with full access anticipated to resume following each day of work.

Implementation of 3rd Street corridor bikeway modifications will require detailed phasing and partial closures to construct. Traffic control plans will need to be coordinated with downtown event centers. Specifically, the construction schedule shall consider planned and contracted convention center events when defining the construction sequencing in the contract documents. Construction requiring closures will need to be coordinated in advance of project construction advertisement to ensure schedules align with event center access needs and minimize disruption to operations.

Traffic Control During Major Events Following Implementation

The conversion of 3rd Street to a bi-directional street and adding bike lanes would necessitate the modification to the special event egress and ingress plan, the Sun Burst plan. This plan has been in place for many years and is used during large scale events held at Chase Field and the Footprint Center. Modifications to the lane configurations along 3rd Street from Washington Street to Lincoln Street requires a modification to these plans. The cost and the affects to the ingress and egress of traffic during special events held at these 2 venues with the modified lane configurations are recommended to be studied further with events center staff via a demonstration project as outlined in the section on Quick Build / Demonstration.

An initial layout of the suggested modifications to the Sun Burst Plan is provided in Figure 17 - Suggested Modifications to Sun Burst Plan with Recommended Implementation. Photos and superimposed conditions have been rendered onto existing egress situations to depict the planned operation visual as shown in Figure 18 - Egress on 3rd Street from Jefferson Street Garage During 45,000+ Event and Figure 19 - Proposed Egress on 3rd Street from Jefferson Street Garage During Major Event.

The modifications along 1st street to provide bike lanes presents a need for modifications of traffic control during ingress or egress of event traffic. The affects on ingress and egress during special events are anticipated to be nominal in comparison to 3rd Street impacts. Modifications to the Sun Burst Plan traffic control on 1st Street will need to be adjusted accordingly through coordination amongst Streets, Right of Way Management, and Police Department staff.

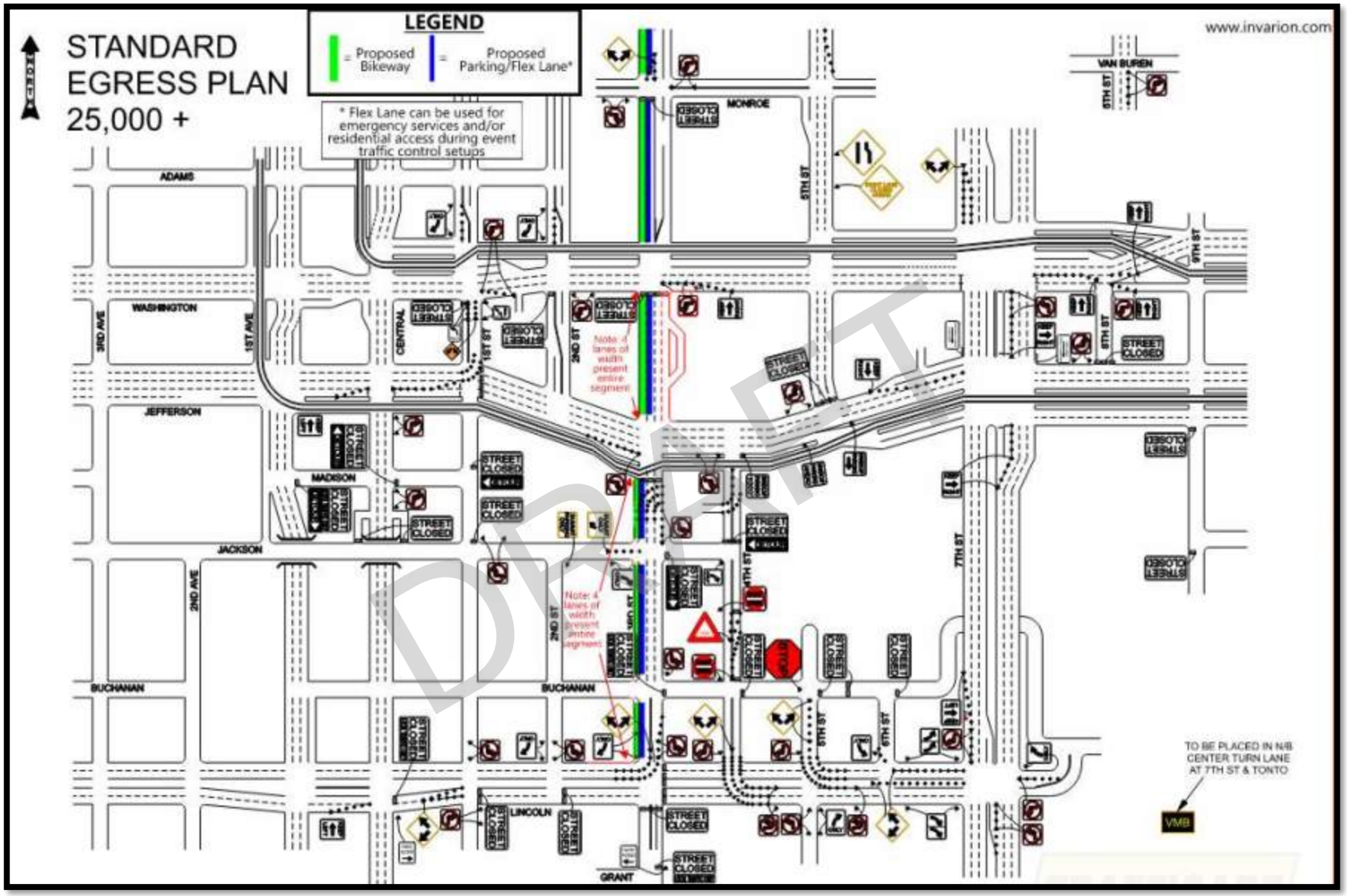

Figure 17 - Suggested Modifications to Sun Burst Plan with Recommended Implementation

Figure 18 - Egress on 3rd Street from Jefferson Street Garage During 45,000+ Event

Figure 19 - Proposed Egress on 3rd Street from Jefferson Street Garage During Major Event

6.8 Adjacent Land Use and Development Considerations

Multi-Family Dwelling Unit Projections

Adjacent land use is anticipated to intensify in the coming decades as illustrated by the following MAG Socioeconomic Projects:

- A 58 percent increase in multi family dwelling units in downtown/midtown are anticipated from 2020 to 2030.
- A 90 percent increase in multi family dwelling units in downtown/midtown are anticipated from 2020 to 2040.

Adjacent Land Use Development

Adjacent land developers should take recommendations of this study into consideration when considering site plans and/or off-site improvements.

Hotel Operations

There are current and future planned hotel operations adjacent to the bikeways that need to be considerate of ingress/egress points as well as porta cochere and/or valet operations.

Public Art

Adjacent landowners/stakeholders have expressed an interest in seeing public art incorporated into the project.

Transportation Demand Management

As the downtown core intensifies in use, the need for Transportation Demand Management (TDM) strategies increases. TDM provides travelers with more travel options to improve the efficiency of the transportation system — leading to improved mobility, reduced congestion, and lower vehicle emissions. TDM uses strategies like educational programs, incentives and pricing, policies, and investment in small-scale infrastructure to inform and encourage travelers to make choices that efficiently meet their travel needs.

The Maricopa Association of Governments (MAG) is currently conducting a TDM Study anticipated to be completed in the summer of 2024. Recommendations from this study should be considered as part of the implementation of this project.

The Footprint Center partners with Valley Metro to offer free light rail fares during events at their venue. Chase Field staff have indicated that a similar program is being identified with Valley Metro.

6.9 Adjacent Capital Improvement Project Considerations

Arizona State University (ASU) Downtown

ASU is converting Taylor Street from 1st Street to 3rd Street into a non-vehicular street. The conversion of this street should be considered in design development of this project.

City of Phoenix Convention Center

The Phoenix Convention Center (PCC) is currently exploring a potential expansion and an Entertainment District Plan. Key findings and recommendations from the Expansion Master Plan as it relates to this project include:

- 800-1,200 room convention hotel rooms;
- Street-level retail, restaurant & entertainment uses;
- Walkability, safety, landscaping, signage and other district elements;
- Amenities including pocket parks, street performers, wayfinding kiosks, monumental public art, artistic lighting/projection experiences, and other elements;
- First/last mile transportation (coordinated scooters docks, micros shuttles, etc.);
- Nighttime lighting installations that guide pedestrian traffic.

Figure 20 - Potential Future PCC Future Expansion

Pavement Maintenance

The following projects are identified in the City of Phoenix Street Transportation Department Pavement Program[4]. These projects have an overlapping project limit or immediate adjacency with recommendations included as part of this project:

[4] Pavement Maintenance Dashboard. City of Phoenix Street Transportation Department, www.phoenix.gov/Pavement; accessed February 2024

Project ID	Location	From	To	Treatment Type	Fiscal Year	Funding Status
3046	3rd Street	Van Buren	Monroe	Mill & Overlay	2026	Council Approved
3238	4th Street/5th Street	Van Buren	Roosevelt	Fog Seal	2027	Council Approved*
2627	Union Pacific RR / Van Buren St**	Central Ave	7th Street	Slurry Seal	2025	Council Approved
2712	Van Buren Street	7th Avenue	7th Street	Micro surfacing	2024	Council Approved

* Per City of Phoenix Street Transportation Department Staff this project ID is 2695 and is planned for Fiscal Year 2024.

** Per pavement program map, this project includes several streets bounded by UPRR and Van Buren Street to the south/north and Central Ave and 7th Street to the east/west.

1st Street and Fillmore Traffic Signal

The City has designed a project to install a traffic signal and add a curb extension at the intersection of 1st Street and Fillmore.

3rd Street, Rio Salado to Jefferson

The City is initiating a design project on 3rd Street from Rio Salado to Jefferson. The design of that project is anticipated to align with the recommendations of this study. Details will need to be coordinated during final design.

6.10 Public Engagement

Extensive stakeholder and public engagement were conducted to inform concept development and decision making for this study.

December 2022 to January 2023 Engagement

The study team led a focused engagement/intercept survey effort in December 2022/January 2023. This effort included the following outreach:

First Friday – Roosevelt Row: Friday, December 2 – 6pm to 8pm

- Black Bird Bike Co, 116 E Roosevelt St (north side, east of 2nd St)
- Kähvi Coffee and Café, 214 E. Roosevelt St (north side of street)
- Modified Arts, 407 E Roosevelt St (south side of street)

Downtown Farmer's Market: Saturday, December 3 – 8am to 12pm

- 720 N 5th St/McKinley St

ASU Campus Event/Boots on Ground

Wednesday, December 7 - 10am to 1pm

- 5th St/Van Buren St

Thursday, December 8 - 10am to 1pm

- 1st St/Taylor St

Downtown Workforce Boots on Ground (YPMO): Lunchtime

- **Friday, December 9** – 11am to 1pm
  - Arizona Center, 455 N. 3rd St
- **Friday, December 9** – 11am to 1pm
  - Adams St, Central Ave to 1st Ave

Figure 21 - Engagement Photos

A pre-recorded public presentation was published on January 30, 2023, that is available at the following link:

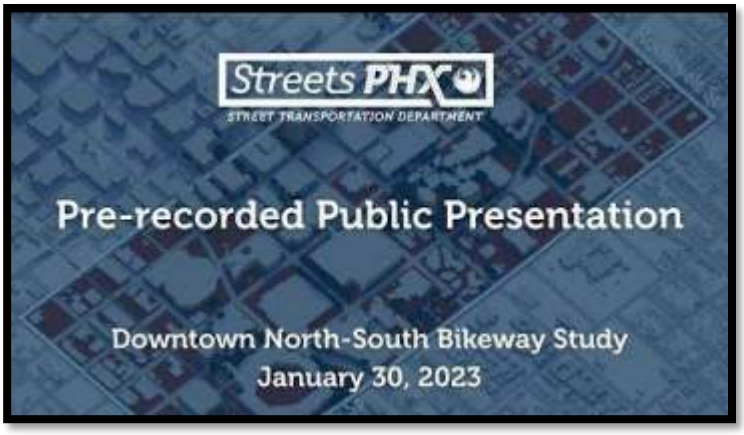

Figure 22 - Pre-recorded Public Presentation January 30, 2023

Outreach resulted in over 140 responses to a Wikimap providing input. A summary of the input received is provided in Appendix D – Wikimap Input.

Fall 2023 Engagement

A second focused public engagement was conducted in the Fall of 2023. A public open house was held on October 25, 2023, and an October 2023 Study Update was posted on the project website following the open house. This outreach period resulted in over 140 responses to a survey. A detailed summary of input is included in Appendix E – Fall 2023 Public Information and Outreach Report.

Figure 23 - October 25, 2023 Public Open House Photos

Stakeholder Meetings

Numerous stakeholders were identified and contacted to hold individual meetings about the study. Stakeholder meetings included a summary of the project study and an introduction to initial recommendations for implementation. Detailed notes from stakeholder meetings are provided in Appendix F – Stakeholder Meeting Notes. Peer City interviews were conducted to identify lessons learned from other similar bikeway installations across the country in similar contexts. An initial summary of the interviews is provided in Appendix I – Peer City Interviews and a final version of the interviews will be included with the Final Project Assessment.

6.11 Quick Build / Demonstration

A quick build deployment is recommended for the 1st Street corridor. A demonstration project is recommended for the 3rd Street corridor prior to the major capital improvement project. Implementing a demonstration project could help garner public support for the longer-term 3rd Street capital improvements and simultaneously create a critical, safe connection for cyclists moving north/south through downtown Phoenix. Detailed considerations for quick builds and demonstration projects are provided below.

Why Quick Build?

Quick build projects' cost-effectiveness and lack of heavy civil construction are the cornerstones of its success in rapidly improving safety and mobility. The utilization of affordable materials like paint and roadway markings, planters, modular and removable elements, and signage, minimizing the financial burden associated with traditional construction projects. By steering away from extensive infrastructure changes, tactical urbanism reduces labor and other capital costs while maintaining a focus on quick implementation. The temporary nature of these interventions, paired with reuse and repurposing of existing elements, ensures that costs are kept to a minimum, and that adjustments can be made to design and operation.

Quick build project can be constructed with different goals in mind:

- Demonstrations (days – weeks) to show short term proof of concept
- Pilot projects to evaluate real world impacts and incorporate design feedback (weeks – 1 year)
- Longer-term (1-5 years) laying the groundwork for a capital construction project or creating much need connectivity and safety while a capital project is funded and designed.

Quick build projects have many benefits to a project life cycle. They can achieve similar safety and mobility results at lower costs and are often easier to implement due to their flexibility. Enhancing the planning process builds trust with the community and allows for real world feedback loops.

Build public support

Engaging the community in the planning and execution of projects fosters a collaborative environment and instills a sense of ownership. The visible and immediate nature of quick build captures public attention and demonstrates the positive outcomes of interventions and can alleviate public concern about perceived negative impacts. Quick build projects provide an interim step in a project lifecycle, which encourages communities to be active participants and builds a stronger connection between communities and project owners and can even create community-based project stewards. The iterative process of these projects allows for feedback and adaptation, further building trust and support by showcasing a commitment to change and public feedback.

Test different treatment types

Quick build provides communities and governments with a valuable opportunity to experiment and test various treatment types in urban spaces. By implementing low-cost, temporary intervention, communities can observe the real-world impact of different treatments, allowing them to decide which interventions address their unique needs, understand trade-offs, and create a sense of ownership over the final project outcomes.

Gather Data

In addition to the experimentation and consensus building benefits of quick build, these types of projects also provide a unique opportunity to collect data points, both qualitative and quantitative, on the impacts of a project before significant dollars are spent, and communities are disrupted by heavy construction. Following the implementation of quick build projects, project teams can observe operations, collect traffic data, and conduct surveys to understand the impacts of changes to roadway programming, including geometric changes, mobility improvements and livability enhancements. This data can be critical in continuing to build community support and when solidifying design for long-term capital improvements to better achieve project goals.

Enhance Placemaking

Allowing communities to play a hands-on role in shaping public spaces fosters a sense of ownership and connection among residents. Quick build not only addresses the needs of a community but inspires collective reimagining of public space. This reimagining strengthens community identity by creating connections and a sense of ownership between people and the places they share and utilize every day.

Quick Build Considerations

In addition to determining the purpose of a quick build project, the City must also consider the resources and time needed to procure quick build materials, and the various inputs that must be collected to plan the project. Considerations for internal consensus building, data collection and analysis, treatment and material types for quick build bike lane projects, and project evaluation are detailed below.

Internal Consensus Building Considerations

For cities new to quick build projects, building internal consensus is an important step in taking these projects from conception to reality. Getting key stakeholders, such as city engineers, agency partners, and elected officials on-board with project goals, benefits and trade-offs of quick build, and acceptance of treatments and materials is critical before broaching a specific project design or plan. In order to build internal consensus, consider:

1. Understanding the concerns of stakeholders and be prepared to address those concerns with data and statistics.
2. Bringing in the experts; look to peer cities for lessons learned, consult thought leaders and national and international best practices.
3. Demonstrating a willingness for an incremental approach to quick build projects; demonstration projects can have a big impact and lead to more robust treatments in the

future.

4. Bringing internal stakeholders into the planning and design process early and often to ensure everyone feels ownership.
5. Developing a documented process for planning, conducting public outreach, implementing quick build projects, and conducting evaluation. A visible path and SOPs can provide significant comfort.

Timeline Considerations

Project development and implementation times are significantly shorter for quick build projects than traditional capital build projects. Many factors may influence timeline, including internal City processes, approvals, and political considerations. It is critical that project teams develop and adhere to realistic project schedules that consider internal and contractor capacities, City processes, and stakeholder considerations to achieve quick build project delivery.

Successful quick build programs commonly have agency staff contribute to planning, design, and implementation of quick build projects. Project teams should assess available in-house resources and existing contract capacity to support data collection, outreach, planning, design, and construction to accelerate quick build project delivery. Utilizing materials that are already used in the normal course of business and taking advantage of predictable maintenance opportunities such as repaving schedules can also lead to more time and cost-effective project delivery.

While these projects are low-cost in construction materials, they do require a high level of coordination to accomplish. A detailed project schedule can streamline coordination and ensure all members of a project team, including contractors and consultants, are on the same page.

For a sample project schedule, please see Appendix K.

Material Considerations for Quick Build

Quick Build treatments have emerged as dynamic and adaptable solutions to address immediate challenges and enhance the safety, accessibility, and vibrancy of public spaces. Unlike traditional, long-term infrastructure projects, tactical planning involves quick, low-cost interventions that can be implemented rapidly to test and transform urban environments. The following provides an overview of various materials and low-cost treatments that can be used to implement short-term infrastructure changes aimed at enhancing bicycle and pedestrian facilities.

From vibrant crosswalks to pop-up bike lanes, tactical planning materials enable quick interventions without a significant cost. Materials used to implement the treatments described above vary considerably in cost, ease of implementation, and longevity, all of which should be considered when defining the purpose of a quick build project.

Vertical Elements

- **Definition and Characteristics:** Vertical materials include physical elements like bollards, planters, traffic cones or barrels, jersey barriers, and temporary fencing. These materials are chosen for their durability, visibility, and ability to demarcate spaces effectively.
- **Benefits and Applications:** The strategic use of vertical elements provides multifaceted

benefits. They serve a pivotal role in both safeguarding public spaces and contributing to the dynamic aesthetics of treatments. Planters can be strategically positioned to create protective barriers for pedestrians along busy streets, or to delineate a parklet while contributing to the visual appeal with greenery and improving air quality. Bollards can serve as effective separators for bike lanes or to demarcate space for curb extension, helping to guide traffic flow without a long-term impact on the streetscape.

- **Vertical Element Materials:** Traffic Cones, Free-Standing Delineators, surface mounted delineators, (Davidsons, K-71s), Plastic Jersey Barriers, Concrete Jersey Barriers, Traffic Control Barricades, Fence Barrier, Wave Barrier, Armadillos/Zebras, Parking Stops, Precast Concrete Curb, Cycle Lane Defenders, granite blocks, quick kurb/tough curb, rubber speed bumps, planters, parking stops.

Surface Treatments

- **Definition and Characteristics:** Surface treatment materials have considerable variability in longevity. Paint, chalk, and sticker decals may only last a few days to weeks, while MMA and thermoplastic may last many years. All the tactical materials outlined below for demonstration projects or longer-term interim projects allow for experimentation without permanent commitment.
- **Benefits and Applications:** The temporary and reversible nature of surface treatment materials allows cities to test different street configurations and designs. These materials also foster community engagement and contribute to the dynamic and ever-changing nature of tactical urban interventions. Temporary markings can be used to create vibrant crosswalks or temporary bus lanes, while chalk can be used for interactive street art, engaging communities, and promoting a sense of play in public spaces. Decals can offer quick and visually appealing solutions for wayfinding or branding in temporary events. More robust materials such as MMA and thermoplastic can create bike lanes and pedestrian spaces that can be observed over many months. Some modular materials applied to roadway surfaces go beyond color and markings. These toolkit items, such a bus boarders and modular refuge islands can replicate concrete constructed three-dimensional elements raising new spaces to curb height.
- **Surface Treatment Materials:** Traffic Tape, Spray Chalk/Paint, Stencil, Thermoplastic, Epoxy Gravel, Edurablend, MMA, acrylic asphalt paint, bus boarders, modular refuge islands.

Landscaping and Furniture

- **Definition and Characteristics:** Landscape and furniture elements encompass movable items like benches, tables, potted plants. These elements are chosen for their adaptability, aesthetic contribution, and ease of relocation.
- **Benefits and Applications:** The use of landscape and furniture elements provides a flexible approach to shaping urban environments. The temporary nature of these elements allows for experimentation, creating adaptable and inviting spaces that respond to the evolving needs of the community. Movable and surface mounted benches can be

strategically placed to create temporary seating areas in underutilized spaces, fostering community interaction. Portable tables can enhance the functionality of public spaces, providing spaces for dining, work, or socializing. Umbrellas can provide shaded areas while increasing the visual appeal of a space.

- **Landscaping and Furniture Materials:** Astro Turf, Live Grass, Small Trees, Planters, Movable chairs, tables, and umbrellas, picnic tables, granite or concrete blocks, surface mounted benches and leaning bars, surface mounted bicycle parking.

Signage

- **Definition and Characteristics:** Signage may be required as part of a tactical project to change the use of the curb, alter traffic patterns and controls, and provide wayfinding and place-based guidance for new spaces.
- **Benefits and Applications:** The use of signage is an important element in communicating with users of the roadway about changes due to a tactical project. Signage may include temporary signage detailing changes during project construction, paddle signage in the roadway, curb regulation signage, new bus stop signage, signage denoting changes to signal infrastructure or timing, or wayfinding signage. Depending on the purpose of signage, it may be mounted on its own pole or on existing infrastructure.
- **Signage Materials:** Aluminum or other metal signage, roadway paddle signage, corrugated plastic signage, temporary laminated signage, wayfinding signage such as finger posts or maps.

For detailed product descriptions with high-level product costs, refer to Appendix K.

Data Collection Considerations

Big Data

StreetLight Data, Inrix, Replica or other big data sets can give the city high level directional vehicles volumes, vehicle speeds, and turning movement counts (TMCs) to access level of service and potential capacity reduction. Waze can provide vehicle travel time data for predefined corridors that can be specified using the Waze Developers API tool. Access to the Waze Developers API tool is free for City and Agency partners in the Waze for Cities program.

Big data sources should be validated through existing data sources such as vehicle volumes or turning movement counts. These data sources also have a harder time capturing cyclist and pedestrian volumes accurately, which should be considered when using these tools.

Project Specific Data

Big data sets should be coupled with ATRs and manual turning movement counts to validate big data, or at specific locations where congestion is a concern, or movements are complex or unpredictable.

Bicycle safety and mobility improvements such as adding protected bicycle lanes will make it more likely that cyclists will choose the north/south routes on 3rd Street. The city should conduct

manual counts of cyclists using the corridor before and after project implementation to better understand latent demand for similar facilities. These manual counts could be augmented by intercept surveys to understand cyclist comfort, particularly at intersections.

If signal timing improvements to improve traffic flow, facilitate bicycle movement, or improve overall roadway safety are included in the quick-build operational design, traffic signal analysis may need to be undertaken to understand impacts.

Baseline data collection is recommended before the demonstration project's implementation so that changes over time can be monitored. Data collection methods should be consistent between the baseline data collection and during the demonstration project, therefore, data should be collected during the same time of day and day of the week during events at Chase Field and the Footprint Center. Variability can be further reduced by averaging multiple pre-implementation days together.

The following table provides an overview of recommended key performance indicators (KPIs) and potential data sources for each of the KPIs. Considerations for collecting pre- and post-demonstration project data should include both for event and non-event days and times to demonstrate the impact to event venues as well as overall safety and mobility benefits of the project.

	Key Performance Indicator	Data Source
Bicycle	• Bicycle / personal micromobility volumes along 3rd Street • Bicycle / personal micromobility volumes along 1st Street	Automated counter / Manual counts
Shared Micromobility	• Shared micromobility volumes along 3rd Street • Shared micromobility volumes along 1st Street	Lime, Spin
Pedestrian	• Pedestrians walking in bicycle lanes	Manual counts
Vehicle	• Vehicle travel times along key corridors • Vehicle volumes along key corridors • Off-street parking utilization at key event day garages	Waze / Inrix Automated counter Garage entries

Community Feedback	• Intercept surveys during the demonstration project	Manual data collection

Figure 24 - Recommended Demonstration Project Key Performance Indicators

Project Monitoring and Evaluation

Quick Build treatments can reveal behavior change in roadway users and introduce a new dynamic to a street environment before installing permanent infrastructure. Understanding and measuring change is an important part of implementing quick build projects.

Project monitoring will allow the City to quickly address observed issues and community concerns when a quick build project is first implemented. Using quick build materials has huge benefits in their rapid installation and low-impact removal; however, because of their temporary lifespan, they are at risk of being damaged or displaced more easily than their capital counterparts. The City should be prepared to address immediate issues that arise with materials being damaged, out of place, or missing. Elements such as planters, traffic channelizers, paint, and signage should be inspected regularly (daily during the first two weeks and bi-weekly during the second and third months) to ensure proper functioning. Agency maintenance staff, public works staff, or hired consultants are good candidates for assessing project conditions and should feel comfortable adjusting the field to immediately address unsafe conditions or undesirable patterns. Providing a system to receive and address issues identified by the public widens the reach of the monitoring plan and increases public participation and investment in the project's future.

Monitoring the design should also be incorporated into the monitoring plan. One of the advantages of implementing a project with quick build materials is that certain elements can be tested out and adjusted in response to feedback and data. For the tactical treatments planned for protected bike lanes, some potential design elements to consider monitoring include compliance with turn treatments, access points to key trip generators (i.e., driveways, event venues, transit), cyclists' understanding and comfort particularly at intersections and at bus stop boarding areas. Design monitoring should be performed by technical staff such as street transportation department or project staff since they will be most familiar with the project design elements and purpose.

A quick build project is a precursor to a permanent design; therefore, the performance metrics identified to measure impacts of the tactical treatments should be the same used for the permanent treatments. The tactical treatments being explored for 3rd Street are focused on cycling safety and mobility enhancements while maintaining or improving pedestrian experience and reducing impact to vehicle congestion. Measurable Key Performance Indicators (KPIs) should be developed with a focus on cyclists, pedestrians, and motorists to understand the impacts on all roadway users.

Financing Opportunities

A variety of financing opportunities are available for the City to take advantage of through the federal government for quick build projects and longer-term capital projects. A high-level overview of these grant programs and their requirements are detailed below.

Safe Streets and Roads for All (SS4A)

The US Department of Transportation's (USDOT) SS4A discretionary grant program provides funding for two categories of projects:

1) Planning and Demonstration Grants, and

2) Implementation Grants.

Projects funded through the Planning and Demonstration Grants typically involve innovative approaches to address specific safety challenges, improving intersection design, implementing traffic calming measures, enhancing pedestrian and bicycle infrastructure, and integrating new technologies for safer roadways.

Demonstration projects are broadly defined by the USDOT, and funds can be used for:

- Systematic deployment of interim treatments,
- Road diets and parking protected bike facilities,
- Technology pilots including speed cameras,
- Operation pilots including bus operator training and safety messaging.

It should be noted that Demonstration Grants are required to include the use of temporary materials and data collection and analysis to inform the development and improvement of a Comprehensive Safety Action Plan. USDOT states that at a minimum, the data collection should analyze before-and-after crash data for the demonstration project as it relates to the safety problem being addressed. Action Plans must be updated if funds are received for the demonstration project, and the findings from the project should be integrated into the Action Plan's list of projects or strategies.

Active Transportation Infrastructure Investment Program (ATIIP)

USDOT's ATIIP grant program provides funding for enhancing non-motorized active transportation infrastructure, such as walking and biking paths, to make these modes safer and accessible for all. The objectives of the ATIIP include enhancing safety and accessibility, improving connectivity, and promoting environmental and health benefits and recipients of the grant are required to demonstrate how their projects would achieve the program's goals. Similar to the SS4A grants, this program has two different categories of projects, Planning and Design Grants and Construction Grants.

While this program primarily focuses on creating and improving long-term active transportation infrastructure, ATIIP funds could be applicable for quick build projects that are part of a broader strategy or phase towards long-term infrastructure development. The quick build project could be used to test different alternatives as part of the Planning and Design grants and could be a way to gather community feedback before moving forward with the final design.

Rebuilding American Infrastructure with Sustainability and Equity (RAISE)

USDOT's RAISE grant program aims to invest in road, rail, transit, and port projects with significant local or regional impact. The RAISE program includes two categories of grants: Planning Grants

and Capital Grants, and applications are evaluated on their potential to deliver economic, environmental, safety, quality of life, and state of good repair benefits. RAISE grant funding may be used for projects across all modes of transportation and may be used for bicycle and pedestrian facility improvements that enhance safety and provide more sustainable transportation options.

Similar to the ATIIP grant program, the RAISE program also focuses primarily on funding projects with long-term impacts on infrastructure and transportation systems. RAISE grant funds could be applicable for quick build projects that are part of a larger, comprehensive strategy for pedestrian and bicycle infrastructure improvements. The quick build component would need to be integral for the long-term project goals and should clearly define the outcomes in terms of the RAISE program's goals.

7.0 Seasonal Considerations

Construction scheduling should be aligned with event center schedules to minimize impact to existing operations.

8.0 Design Criteria

Design criteria were identified and reviewed with City Traffic Services Staff during concept development. At the time of concept development, the City was working on an update to the Street Planning and Design Guidelines Manual. The design dimensions applied to this project are in conformance with the updated guide[5] issued in July of 2023. In addition to the Street Planning and Design Guidelines Manual, the design was developed in accordance with the Design Guidance provided in the Active Transportation Plan.[6]

10.0 Schedule

Following completion of the study, the City plans to begin programming for this project. A phase 2 study is also anticipated to conduct additional stakeholder outreach while pursuing

[5] Street Planning and Design Guidelines Manual, City of Phoenix; July 2023
[6] Active Transportation Plan, City of Phoenix; April 2023

programming. For planning purposes, a 6–9-month schedule should be considered for completing design and implementation of 1st Street corridor implementation. The 3rd Street corridor implementation is anticipated to require 24-30 months to complete design prior to initiating construction. The major lead item in the schedule for design of the 3rd Street corridor is UPRR coordination and approval for modification to the at-grade crossing.

11.0 Information on Potential Funding Sources

Several sources have been identified for federal funding. These funding partners include but are not limited to: Congestion Mitigation and Air Quality Improvement (CMAQ) Program, Surface Transportation Block Grant (STBG) Program, and the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) program. In addition, City of Phoenix local funds should also be solicited to provide the required match.

12.0 Executive Summary

The intent of this project was to establish a preferred corridor for north-south active transportation in downtown Phoenix. The study explored the feasibility of several alignments and configuration, ultimately recommending infrastructure upgrades on 1st Street and 3rd Street. Currently, there are no north-south bikeways throughout the downtown core, presenting a barrier in the bike network.

Community input and stakeholder engagement has driven the identification of the recommended corridors and design concepts. Implementation of the project via a phased approach is recommended as follows:

- 1st Street Corridor
- 3rd Street Demonstration Project(s)
- 3rd Street Corridor Design
- 3rd Street Corridor Construction

13.0 Appendices

Appendix A – Existing Conditions Map Atlas

Appendix B – Concept Alternative Routes and Cross Sections

Appendix D – Wikimap Input

Appendix E – Fall 2023 Public Information and Outreach Report

Appendix H – Corridor Feasibility Assessment Traffic Analysis

Appendix I – Peer City Interviews

Appendix J – 30% Plans

Appendix K – Quick Build Sample Schedule and Material Guide

Appendix L – Draft Project Assessment Summary of Comments