



# 22ND STREET REVITALIZATION PROJECT: ADDRESSING SAFETY, EQUITY, AND CONNECTIVITY.

Funding Opportunity for the Fiscal Year 2022  
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant



April 14, 2022





**PROJECT INFORMATION/COVER PAGE**

Project Name	22nd Street Revitalization Project: Addressing Safety, Equity and Connectivity
Project Sponsor (Co-applicant)	Partners include the Arizona Department of Transportation (ADOT), Union Pacific Rail Road (UPRR), Regional Transportation Authority (RTA), Pima Association of Governments (PAG), and Pima County.
Project Lead Applicant	City of Tucson, Arizona
Congressional District	Arizona's 2nd and 3rd Congressional Districts
RAISE Request Amount	\$25,000,000
Estimated federal funding (excl. RAISE)	\$ 0
Estimated non-federal funding	\$ 70,454,000
Future Eligible Project Cost (Sum of previous three rows):	\$ 95,454,000
Previously incurred project costs (if applicable):	\$ 15,487,681
Total Project Cost (Sum of 'previous incurred' and 'future eligible')	\$ 110,941,681
Are matching funds restricted to a specific project component? If so, which one?	No restrictions
Approximately how much of the estimated future eligible project costs will be spent on components of the project currently located on National Highway Freight Network (NHFN)?	0%  The 22nd Street bridge carries traffic to I-10 which is on the National Highway Freight Network. The distance is approximately 2 miles.
Approximately how much of the estimated future eligible project costs will be spent on components of the project currently located on the National Highway System (NHS)?	0%  The 22nd Street bridge carries traffic to I-10 which is on the NHS. The distance is approximately 2 miles. 22nd Street is a major east/west arterial that connects to Interstate 10.
State(s) in which project is located	Arizona
Rural or urban project	Urban
Urbanized Area in which project is located, if applicable	Tucson Urbanized Area
Population of Urbanized Area	843,168



Is the project located (entirely or partially) in an Area of Persistent Poverty (AOPP)?	Yes
Is the project currently programmed in the:	
• TIP?	Yes
• STIP?	Yes
• MPO Long Range Transportation Plan?	Yes
• State Long Range Transportation Plan?	Yes
Freight Plan?	Yes - Regional Freight Corridor in the 2018 Pima Association of Governments (PAG) Regional Freight Plan (22nd Street); Federal Critical Urban Freight Corridor (Barraza-Aviation Parkway)
<b>PROJECT CONTACT</b>	Austin Wesnitzer, P.E. Engineering Project Manager City of Tucson Department of Transportation 201 N. Stone Ave 4th Floor Tucson AZ, 85726-7210 Phone: (520) 305-2376
<b>PROJECT WEBSITE</b>	<a href="https://dtmprojects.tucsonaz.gov/pages/22nd-street-bridge">https://dtmprojects.tucsonaz.gov/pages/22nd-street-bridge</a>



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## ATTACHMENTS

The files listed below are provided as Attachments in the RAISE website.

File Name	Description
2022raiseinfoform	Required RAISE Grant summary
Narrative	RAISE Grant Narrative
BCA Memo	Benefit Cost Analysis Memorandum
BCA	Benefit Cost Analysis Excel file
Cost Est	Project Cost Estimate
CrashSafe	Crash Data and Analysis
BridgeDoc	Bridge Selection Report, Bridge Inspection Documents
100%Dgn	Final Design Plans
PublicInv	Pedestrian and Bicycle Art Report Public Involvement Summaries
LOS	Letters of Support
PAG TIP	Pima Association of Government Transportation Improvement Program, 2022-2026
Fed Zones	Opportunity Zone Map Empowerment Zone Map
NEPA	Summary of Completed Environmental Documentation



## EXECUTIVE SUMMARY

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22nd Street is a vital East-West corridor connecting downtown Tucson to some of the most historic and disadvantaged neighborhoods in the city. However, the segment between Kino Parkway and Tucson Boulevard presents multiple hazards and barriers to connectivity and social equity, including a structurally deficient bridge that spans both the Union Pacific Rail Road (UPRR) Yard and Barraza-Aviation Parkway. **In its current condition, the 22nd Street Bridge divides our community, and as a result has long been a barrier to achieving social and economic equity in under-invested areas of Tucson.** Additionally, it presents unacceptable risks to public health, safety, and regional – as national - commerce.

Within the next 10 years the bridge will require a deck replacement. The remaining structure, constructed in 1966, is at the end of its design service life. Within a few years, this critical piece of infrastructure will be at risk for failure and disruption of freight transport by rail and roadway and must be decommissioned and replaced. To address these issues, the City of Tucson and its partners have advanced the project - it is now “shovel ready”. **For all the reasons stated, the community needs this RAISE grant to advance the project across the finish line and revitalize an area underserved and divided by infrastructure.**

## I. PROJECT DESCRIPTION

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The City of Tucson, Arizona is seeking a \$25 million RAISE grant to replace the City’s 22nd Street Bridge and make improvements to 22nd Street from Kino Parkway to Tucson Boulevard. The 22nd Street bridge is located approximately two miles east of Interstate 10 (I-10) on 22nd Street. The project proposes to widen 0.85 miles of 22nd Street from four lanes to six lanes with a divided median as well as multimodal accommodations. The project includes replacing the existing 1,358’-long bridge with a new 1,354’ long bridge over the existing Union Pacific Railroad (UPRR) Gila Sub and Yard and the Barraza-Aviation Parkway (State Route 210).

The new bridge would replace a structure that is in ‘structural deficient’ condition and is of **major concern** – since 2005 heavy vehicles (including freight, transit, school buses, and emergency medical services [EMS] vehicles) must take a detour to avoid the bridge. The new bridge will include bike and pedestrian accommodations including sidewalks and bike lanes as well as a dedicated bike and pedestrian bridge.

The project is also needed to improve safety and traffic operations, add capacity, improve safety for people walking and bicycling, freight movement, Sun Tran bus service, school bus routes, and emergency services and public safety response time. Innovative bridge construction will minimize disruption to operation of the UPRR yard and will adhere to all local, state, federal and railroad design criteria.



**This vital segment near the heart of Downtown Tucson is a bottleneck anchored by a bridge in poor condition, resulting in heavy vehicle detours since 2005.** The existing bridge, originally constructed in 1966, provides a grade separation over a major rail yard and arterial parkway that has long divided the city. The bridge is a vital link on a major east-west corridor through one of Tucson’s most economically distressed areas. The four-lane roadway is at capacity with Average Annual Daily Traffic (AADT) for the project build year (2024) and future build year (2044) projected at 42,676 and 50,049 respectively.

The benefits of this project will include safety, capacity, equity, emission reductions and commerce – including removing a bottleneck; eliminating weight restrictions responsible for detour routes for freight, transit, school buses, and emergency medical services (EMS); improving bike and pedestrian connectivity in an Area of Persistent Poverty (AOPP) and historically disadvantaged communities; and addressing the substandard clearance of a Class I railroad that impacts the potential for economic growth in the region and beyond.

The existing 22nd Street bridge is among only 1.3% of bridges in the entire state of Arizona that are rated ‘structural deficient’ which places it in a category of the highest need for replacement.

This project would address a bottleneck by increasing the number of travel lanes from four lanes to six lanes, matching the existing roadway section at either end of the project limits. **This will drastically increase the operational capacity of 22nd Street, while advancing Tucson’s efforts to create more opportunities for transit-oriented development in the areas that need it most.**

### Transportation Challenges

The Project will address these transportation challenges currently impacting the study area:

Challenge	Solution
1. Safety, insufficient capacity, and traffic operations	Widening from 4 lanes to 6 lanes with a raised median
2. Bottleneck – 6 lanes on both sides of the proposed project	Widen 4 lanes in project area to match 6 lanes on both sides of project
3. Existing bridge weight restriction due to ‘structural deficient’ rating, requiring a detour since 2005 for heavy freight, transit, school buses and EMS vehicles	A new bridge will be built to support all traffic needs and eliminate the need to re-route vehicles
4. Substandard bridge clearance at the UPRR rail yard concerns safety of the traveling public and railroad personnel. Impacts freight commerce	New bridge/overpass structure increased clearances will improve safety and commerce



Challenge	Solution
5. Safety and connectivity for pedestrians and bikes, especially low-income and disadvantaged users	Separate pedestrian/bike bridge over the Union Pacific Railroad in addition to multimodal accommodations on the bridge, ADA compliant

**Project History and Broader Context**

Improving this corridor has been a regional focus for more than 20 years. The Tucson Department of Transportation and Mobility (DTM) began a study of the Kino Parkway and 22nd Street Intersection and widening of 22nd Street from Kino Parkway to Tucson Boulevard in 2006.

The Kino Parkway intersection improvement was originally approved by the voters in the Pima County 1997 Transportation Bond Election and then in 2006; both the intersection and 22nd Street were approved by voters as part of the Regional Transportation Authority plan. The Kino Parkway intersection project was completed in 2016, which widened 22nd Street to 6 lanes.<sup>1</sup>

Design for the 22nd Street bridge project began in 2006, with establishment of a Citizen Advisory Committee (CAC). Three planning documents were prepared following the process detailed in the City of Tucson’s Roadway Development Policies:

- Advance Planning Report (APR)
- Alternative Alignment Report (AAR)
- Environmental Design and Mitigation Report (EDMR)

In addition, a Structure Type Selection Report (see Attachment: BridgeDoc) was prepared to determine the most appropriate type of bridge construction for the given project constraints. The primary design considerations for the new structure include:

- A horizontal alignment shift to the north to maintain existing traffic during construction and ensure constructability of a new six-lane structure
- Revised profile to meet required vertical clearances
- Pedestrian/bike access across the bridge to maintain multi-use continuity along the proposed 22nd Street improvements
- Railroad safety requirements for UPRR including the required horizontal and vertical clearances to UPRR tracks and facilities
- Appearance continuity (similarity) with the Kino/22nd Street Traffic Interchange Overpass structure
- Inclusion of design criteria set forth from the project CAC

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<sup>1</sup> <https://www.tucsonaz.gov/tdot/22nd-street-and-kino-parkway-intersection>





### Design Status

Final design for the 22nd Street bridge began in 2012, and all work to date has been locally funded. Plans are now 100% complete (see Attachment: 100%Dgn), making this project 'shovel ready.' Project costs incurred to date include costs for the planning, design, and right-of-way phases of the project. Costs incurred during the planning stage are attributable to preparation of the APR, AAR, EDMR, and 15% design plans. Costs incurred during the design stage include the preparation of the 30%, 75%, 90% and 100% construction documents and coordination with UPRR, ADOT, and utility companies. All needed right-of-way has been acquired for the project, following federal guidelines. A Construction Manager at Risk (CMAR) was selected in Fall 2021. The CMAR has begun pre-construction activities including constructability reviews, value engineering proposals, and price negotiations.

Based upon the current proposed guaranteed maximum price, there is a \$25M shortfall due to construction cost increases, which became evident with the recent award of the Construction Manager at Risk (CMAR) contract and receipt of the Rough Order of Magnitude (ROM) guaranteed maximum price (GMP). This RAISE Grant will provide the needed funding so that project can be completed as scheduled.

Previous Expenditures	
Design	\$5,385,690
Labor (City of Tucson)	\$415,345
Right-of-Way	\$8,159,996
Pre-Construction Activities	\$1,526,650
<b>TOTAL</b>	<b>\$15,487,681</b>

## II. PROJECT LOCATION

The project is located within the boundary of the Tucson Urbanized Area, a Census - designated Urbanized Area (UA). 22nd Street is a major east-west arterial that connects directly to I-10 via an interchange and is a designated Regional Freight Corridor in the 2018 Pima Association of Governments (PAG) Regional Freight Plan. I-10 is on the National Highway System (NHS) and National Highway Freight Network (NHFN) that connects California to Florida through Arizona's largest metropolitan areas, Phoenix and Tucson. I-10 is the southernmost transcontinental highway in the Interstate Highway System. The project location is shown in **Figure 1**.

### Key Transportation Infrastructure

The 22nd Street bridge spans the UPRR, a Class I railroad. Arizona's Class I railroads support two distinct types of operations: transcontinental movements that pass through the

state without stopping (except for train crew changes, refueling, and/or inspections) and regional movements that provide branch line service primarily into and out of Phoenix and from Mexico. UPRR links to Ports of Los Angeles and Long Beach, Chicago, and Dallas. These routes serve as a 'land bridge' to convey trade by rail between Asia and the Eastern United States.

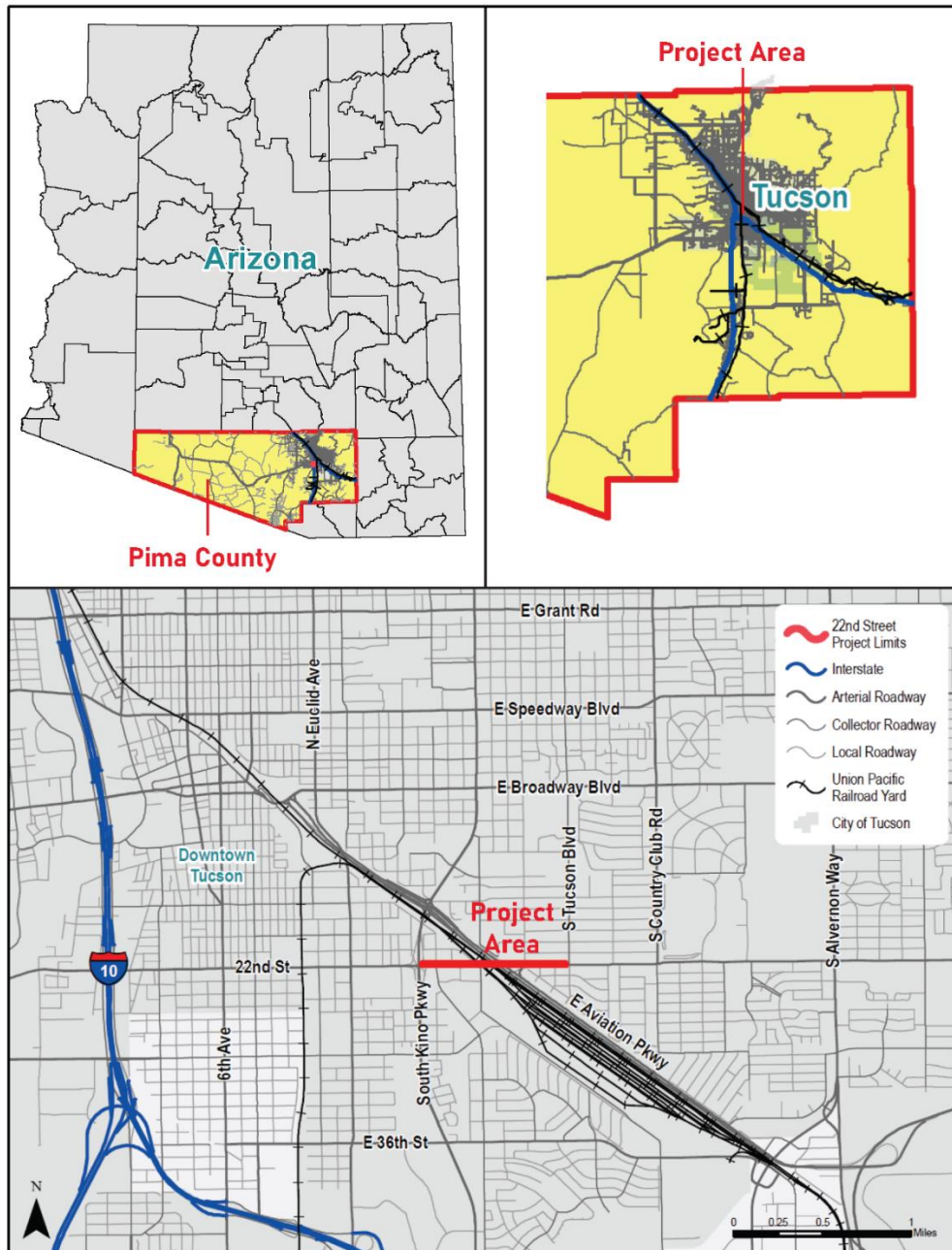


Figure 1: 22nd Street Bridge Project Area

Highways connect Arizona markets to regional and international trading partners. Significant highway freight infrastructure in the area includes Arizona's largest border

crossings that includes a Land Ports of Entry (LPOE), with the highest volume freight crossing of Mariposa at Nogales.

### Areas of Persistent Poverty and Community Development Zones

The project is located within two census tracts and adjacent to two others. Three of these are designated as Areas of Persistent Poverty (AOPPs) as illustrated in **Figure 2**.

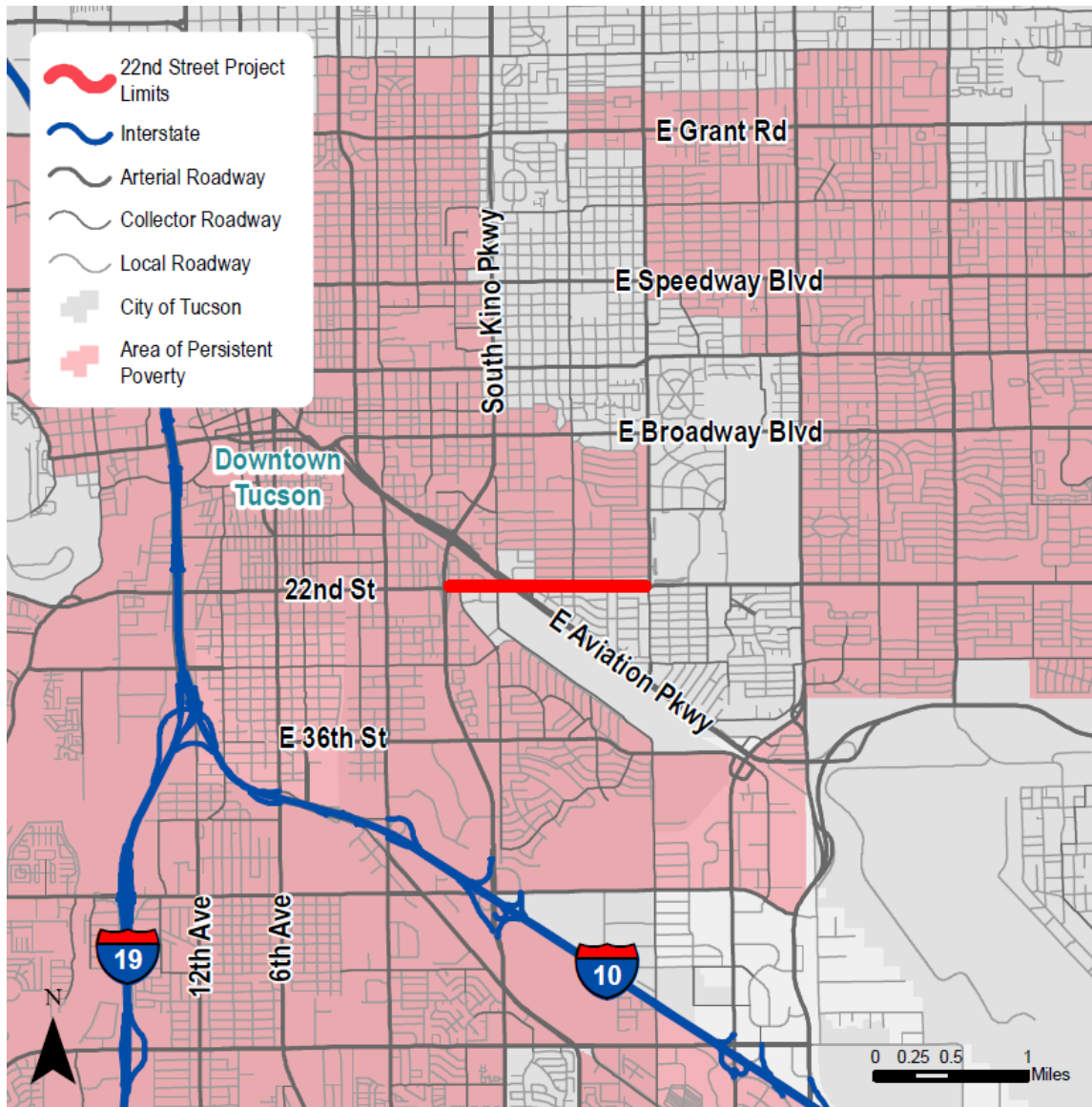


Figure 2: Areas of Persistent Poverty around 22nd Street Bridge project

This project includes multimodal enhancements that will significantly improve transportation options for the surrounding community (predominantly AOPP) and freight operations (**Figure 3**). The project will provide connections to essential services and activity centers, including Reid Park, and enhance the transportation system in a way that addresses equity

by restoring the ability to provide east-west transit services that are currently precluded by the structurally deficient bridge. The project is also in federally designated Opportunity and Empowerment Zones (see Attachment: Fed Zones).

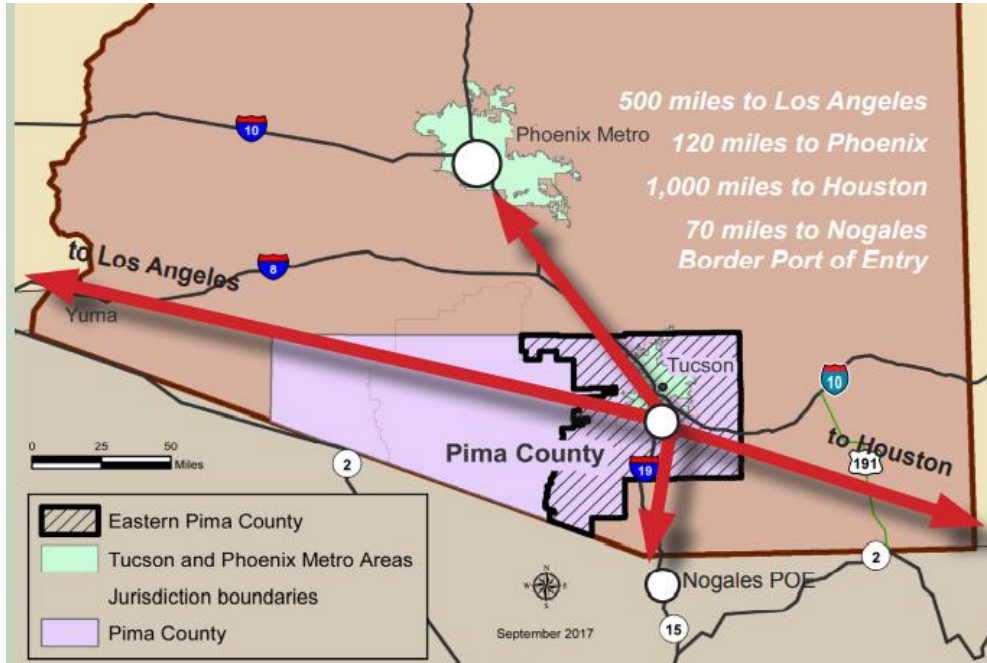


Figure 3: Graphic from Pima Association of Governments Freight Plan

Source: <https://pagregion.com/wp-content/docs/pag/2020/08/PAGRegionalFreightPlan2018ExecutiveSummary.pdf>

### Project Parties



The City of Tucson is the sponsor of this project. Other partners include the Regional Transportation Authority (RTA), Pima Association of Governments (PAG), Pima County, the Union Pacific Railroad (UPRR), and the Arizona Department of Transportation (ADOT).

## III. GRANT FUNDS, SOURCES, AND USES

### Total Project Budget

The project budget for construction is \$95,454,000. Previously incurred project costs total \$15,487,681, bringing the total project cost to \$110,941,681 (see Attachment: Cost Est). The City of Tucson is requesting \$25 million in RAISE grant funding for future eligible project costs. The RAISE grant request is approximately 27% of the project's total construction cost, which represents significant leveraging of non-federal funding.



### Previously Incurred Expenses

Previously incurred expenses on this project total approximately \$15.5 million and include design, environmental investigation, public art component, acquisition of right-of-way, and pre-construction costs. The funding was provided by state and local sources including the RTA, State Highway User Revenue Fund (HURF), city impact fees, and county bonds.

### Future Eligible Costs

Future eligible costs are estimated at \$70.45 million and include utility relocations, completion of environmental tasks for NEPA clearance, construction, and administration.

### Contingency Funding

The budget includes a 5% contingency and 15% for construction administration applied to the construction costs.

### Source of Funds

The project is ID 131.00, sponsor ID SR 5A, is in the PAG 2022-2026 Transportation Improvement Program (TIP) (see Attachment: PAG TIP). Funding sources include the RTA, whose revenues are generated by a voter-approved, 20-year half-cent sales tax, Pima County bonds, impact fees and State Highway User Revenue Fund (HURF). A total of \$70,454,000 is programmed in the approved PAG TIP in FY 2022-2026.

## IV. MERIT CRITERIA

### CRITERIA A: Safety

SNAPSHOT: This project has <b>significant</b> benefits that target known, documented safety problems:	
Protect nonmotorized travelers and communities from health and safety risks.	★
Reduce fatalities and/or serious injuries for underserved, overburdened, or disadvantaged communities.	★
Mitigate systemic safety issues.	★

The project has significant safety benefits as it targets several known safety concerns. By creating improved connectivity to the existing bike and pedestrian network, systematic safety issues are mitigated in an area that serves historically disadvantaged communities including significant AOPPs. The surrounding area has limited east-west nonmotorized connectivity due to infrastructure such as the UPRR and an access-controlled expressway. The project protects nonmotorized travelers including those in the surrounding AOPP communities from health and safety risks by promoting safe bike and pedestrian travel and removing heavy vehicles from detour routes through AOPP and historically disadvantaged

communities. More information is included in Criteria C: Quality of Life on the opportunity with this project to connect these communities to improve health and safety, as the area creates a significant barrier for nonmotorized travelers.

The project would include the construction of a dedicated pedestrian and bike bridge in addition to multiuse paths and pedestrian and bike accommodations on the 22nd Street bridge that spans the UPRR rail yard and roads to directly benefit the safety of bike and pedestrian users.

This project will implement multiple proven safety countermeasures, from providing the separated pedestrian path and bridge to preventing access from a low-speed minor street onto the high speed mainline to reduce the potential for high-severity angle crashes (see Attachment: CrashSafe). The project will also provide safer access to the separated pedestrian path and bridge including crossing improvements. The project also follows the Arizona Strategic Traffic Safety plan and its Intersection Emphasis Area section, by dedicating turn lanes to reduce rear-end crashes and providing new street lighting to meet current light level standards for the area. It also utilizes the Plan's Lane-Departure Emphasis Area section by creating shoulders with appropriate clear zone and recovery areas, which will result in reduced crash frequency.

Additionally, the safety requirements specific to the steel pedestrian/bike bridge are stringent and address AASHTO, AREMA, and Burlington Northern Santa Fe (BNSF) Railway & UPRR Guidelines for Railroad Grade Separation Projects codes and guidelines, which have all been used in determining clearance, opening size, separation, and the like regarding design criterion.

The project will improve safety for the community by reducing the response times of emergency vehicles, which currently cannot cross over the bridge and are required to detour, which will further mitigate systematic safety issues.

The project will improve safety by reducing congestion. Between 2017 to 2021 there were 141 crashes in the area on 22nd Street with 52 injuries (8 of which were suspected serious injuries). The trend of crashes has increased over this time as shown in **Figure 4**. There was one crash that involved a bike. Furthermore, the detour route had over 90 crashes. The 22nd Street roadway widening will reduce crashes in a disadvantaged community since capacity issues will be addressed on the corridor with the added benefit of removing heavy vehicles from the detour route.

The project is a “**segment of concern**” – the PAG Performance Report (see Attachment: CrashSafe) rates this segment of roadway as Poor in the areas of Bridge System Maintenance, Roadway Safety, Current and Future Roadway System Performance and Sidewalk Presence.

The bridge will significantly improve the safety around the railroad infrastructure. The existing bridge lateral clearance of approximately 9'-4" between the existing pier and the centerline of the rail is insufficient and is a major concern as it relates to the safety of the traveling public

and railroad personnel. Clearances in the rail yard are up to 70% below the minimum requirements established by American Association of State and Highway Transportation Officials (AASHTO), American Railway Engineering and Maintenance-of-Way Association (AREMA), and UPRR. The new bridge is designed to meet railroad safety requirements for UPRR including the required horizontal and vertical clearances to UPRR tracks and facilities.

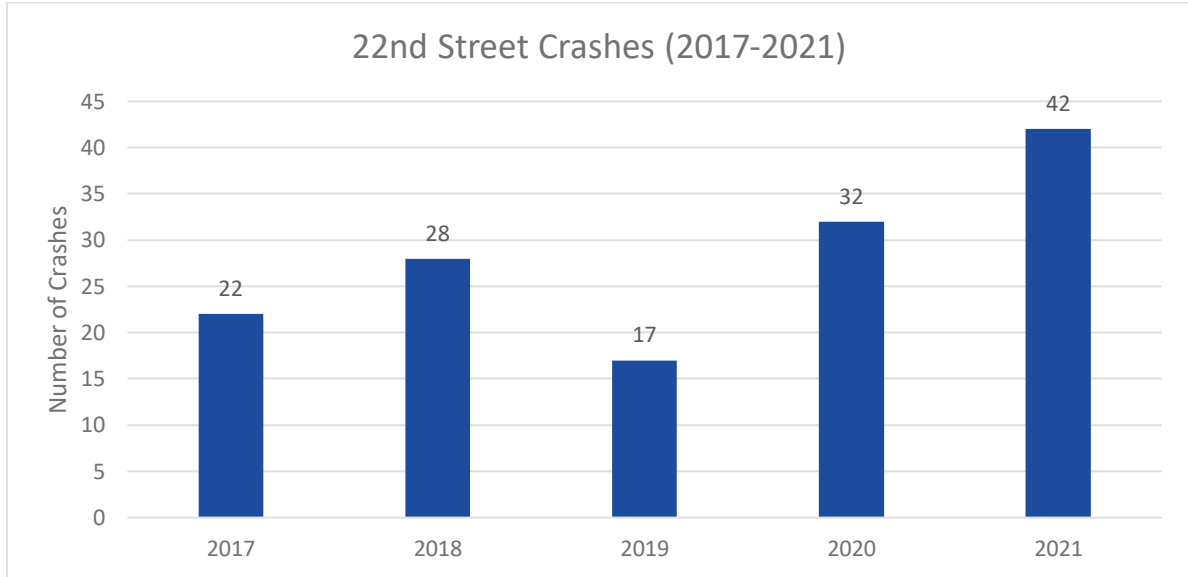


Figure 4: Project Area Crash Data, 2017-2021

### CRITERIA B: Environmental Sustainability

SNAPSHOT: This project has <i>significant</i> documented environmental sustainability benefits:	
Reduce transportation-related air pollution and greenhouse gas emissions from uncoordinated land use decisions	★
Reduce vehicle miles traveled (VMT)	★
Promote energy efficiencies	★
Support fiscally responsible land use and transportation efficient design	★
Improve the resilience of at-risk infrastructure	★
Recycle or redevelop brownfield sites	★
Address the disproportionate negative environmental impacts of transportation on underserved, overburdened, or disadvantaged communities	★

This project has significant environmental benefits and is in line with the City of Tucson’s commitment to combat climate change.<sup>2</sup> The project also meets the goals of Biden Administration’s Justice40 Initiative.<sup>3</sup> The project will reduce greenhouse gas emissions in several ways. For example, there will be a reduction in travel time delay, VMT, greenhouse gas emissions, and overall transportation energy requirements, especially for heavy vehicles over 15 tons, which have been required to use a detour route.

This detour route has added approximately one-half mile to their trips which require sharp turns and stops further increasing emissions. This detour route has been in place since 2005, (see **Figure 5**) due to the structural deficient condition of the 22nd Street bridge, as it is unable to support loads of vehicles over 30,000 pounds gross vehicle weight (GVW), which includes many emergency vehicles, trucks, and buses.

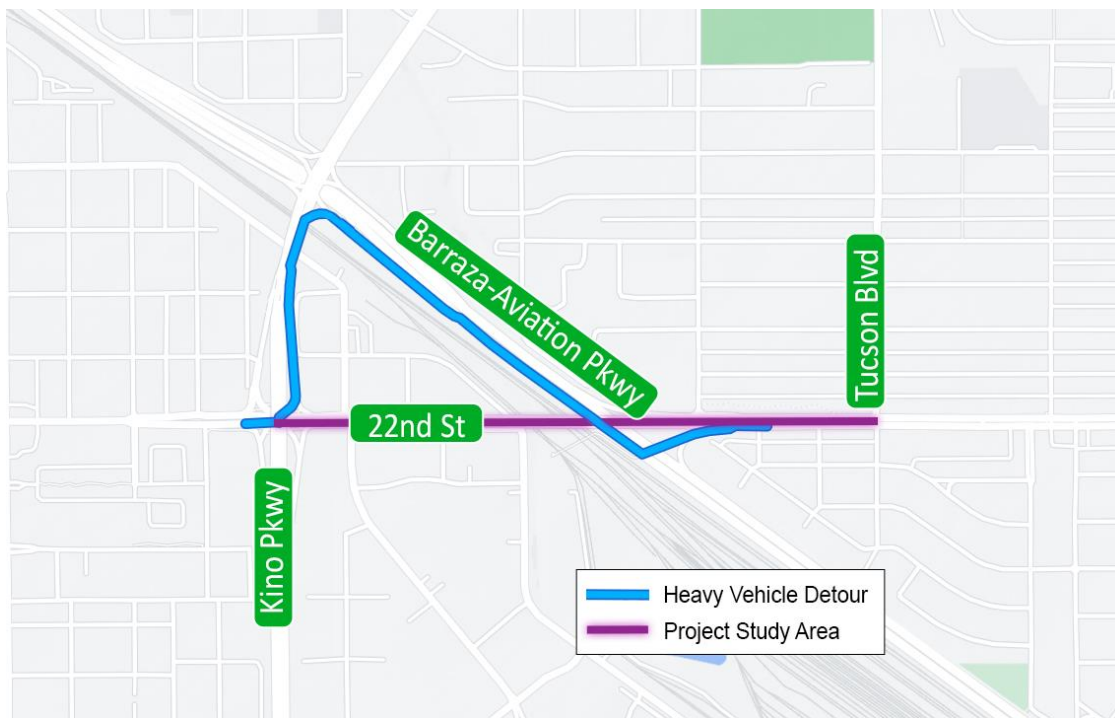


Figure 5: Required Detour for Vehicles over 15 Tons

Additional transportation system efficiencies will be promoted by enabling greater freight rail capacity due to eliminating the substandard clearance over the UPRR railroad. **There are seven sets of railroad tracks beneath the bridge.** The existing bridge has a vertical clearance of 23’-0” over the tracks. The new bridge will have a vertical clearance of 27’-11”. The bridge clearance improvements will allow for increased freight movement. Moving

<sup>2</sup> <https://climateaction.tucsonaz.gov/>

<sup>3</sup> <https://www.transportation.gov/equity-Justice40>.



freight by rail is one of the most energy-efficient modes of freight transport. On average, **railroads are three to four times more fuel efficient than trucks<sup>4</sup>.**

Reducing multimodal travel time delay and increasing the opportunity for freight movement along the corridor reduces the need for additional development outside of the city and encourages infill within the existing urbanized areas. **This potential to reduce sprawl is an added environmental benefit of the project.** The reestablishment of freight movements within this corridor may allow freight services to make use of local brownfields for additional built facilities.

The project is consistent with local plans and supports existing and future land use and multimodal transportation plans. The project promotes safe, non-motorized travel for the communities surrounding it by enhancing the facilities non-motorized travelers will use. The project will add much needed connectivity for non-motorized travel in an AOPP, including historically disadvantaged communities. The project includes a bridge with sidewalk and a paved shoulder for bicycles, and a separate pedestrian and bicycle bridge. Enabling freight movements through this corridor will reduce the additional distance that is required by detours, which helps reduce emissions and other health-related transportation impacts throughout the area.

The project requires construction resources (steel, concrete, asphalt, etc.) that are not in short supply or require unusual impacts to obtain or deliver to the project site. Lower-carbon pavement and construction materials will be considered. Resource use will be reduced over time due to less maintenance required. The current roadway and bridge structure are obsolete, requiring continual maintenance to roadway and bridge deck surfaces. The new facility will reduce those needs.

The project will not consume any undisturbed natural areas or habitats. The project is in a built-out, urban area, and work is to occur within the current transportation corridor. The



*Existing 22nd Street Bridge, view of railroad tracks under bridge*








*Existing 22nd Street Bridge, view over railroad tracks*

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<sup>4</sup> <https://www.aar.org/wp-content/uploads/2020/06/AAR-Sustainability-Fact-Sheet.pdf>.

completed project will not require future impacts to natural resources. The project will install native vegetation, enhancing the environment.

**CRITERIA C: Quality of Life**

SNAPSHOT: This project has <i>significant</i> documented quality of life benefits:	
Increase accessibility for travelers specifically for underserved, overburdened, or disadvantaged communities	
Reduce transportation and housing cost burdens, including through commercial and mixed-income residential development near public transportation, along rural main streets, or other walkable neighborhoods	
Remove barriers for individuals and communities to transportation, jobs, and business opportunities	
Proactively address racial equity or other disparities	
Enhance the unique characteristics of the community for underserved, overburdened, or disadvantaged communities	

This project significantly improves the quality of life in and beyond the project area. By improving east-west connectivity in an area that lacks connection, the project helps to remove transportation barriers for both nonmotorized and motorized travel resulting in a significant improvement to the quality of life and racial equity for those in the surrounding community. AOPP and historically disadvantaged communities are in and border the project area, and they will directly benefit from the accessibility created by the project’s multimodal components including improved pedestrian and bike connectivity and improved transit routes. This project will reduce dependency on personal automobile use, and the active transportation experience will be further enhanced by the removal of freight from the detour route that will result from this project.

Public transportation service will benefit from the project by eliminating the need for a detour route. This will create more direct links which save the customer time between residential and other developments and will further help to remove barriers to these destinations, including the potential use of public transit along the corridor.

The CAC was very involved with the project from its inception and especially with the design of the pedestrian/bike bridge (see Attachment: PublicInv). **Outreach focused on recruiting community stakeholders from low-income and historically disadvantaged neighborhoods in and around the project study area who would benefit from the project.** Engagement included many open houses, CAC meetings, neighborhood



association outreach, and charettes. Special attention was paid to including involving the communities with the development of meaningful public art components that will enhance the unique characteristics of the surrounding community and significantly improve the quality of life and the nonmotorized travel experience. Tucson Pima Arts Council included community artists in developing opportunities on the south side with the Parkway Terrace neighborhood, and on the north side of 22nd Street with the Arroyo Chico neighborhood (see Attachment: PublicInv). Artwork and integrated aesthetic enhancements within the segment of 22nd Street from Kino Parkway to Tucson Boulevard exist generally at three locations: the open area on the south side of 22nd Street east of Wilson Avenue, the open area on the north side of 22nd Street east of Plumer Avenue, and the pedestrian/bike bridge over the Union Pacific Railroad/Barraza-Aviation Parkway.

Of the 1,475-foot pedestrian/bike bridge length, approximately 1,180 feet will be fully enclosed with maximum two-inch opening welded-wire fabric and/or laser-cut artistic panels. Decorative treatments building upon them of plants native to the Sonoran Desert is the central theme for the development of a visual language for the project. The use of Sonoran Desert plant structure responds to points raised by participants in the CAC process (see images: Attachment: PublicInv).

**CRITERIA D: Improves Mobility and Community Connectivity**

SNAPSHOT: This project has <i>significant</i> documented mobility and community connectivity benefits:	
Increase affordable transportation choices for underserved, overburdened, or disadvantaged communities	★
Increase the accessibility for all users of a project, particularly nonmotorized travelers (those walking, cycling, rolling, or using transit)	★
Encourage thriving communities for individuals to work, live, and play by creating transportation choices for individuals to move freely with or without a car	★
Proactively incorporate Universal Design	★
Increase multimodal freight movement and the movement of supply chains	★

This project has significant mobility and community connectivity benefits. The project meets the goals of Biden Administration’s Justice40 Initiative.<sup>5</sup> The 22nd Street Bridge project will increase affordable transportation choices for disadvantaged communities by providing safe, designated facilities for walking, bicycling, and other modes of active transportation within the project area. The project includes marked bike lanes and sidewalks on both sides of the road. 22nd Street provides a connection to an extensive system of bike and pedestrian facilities including the Golf-Links Aviation Path, which links to points east

<sup>5</sup> <https://www.transportation.gov/equity-Justice40>

including Davis-Monthan Air Force Base. As shown in **Figure 6**, there is currently a gap in the bike lane network with the project limits due to the narrow roadway and bridge.

The scale of the pedestrian/bike bridge offers a significant opportunity for connecting the community and integrating aesthetic enhancements that support added comfort for pedestrians and bicyclists, and especially for the residents on the south side living in the Parkway Terrace neighborhood, and on the north side of 22nd Street with the Arroyo Chico neighborhood.

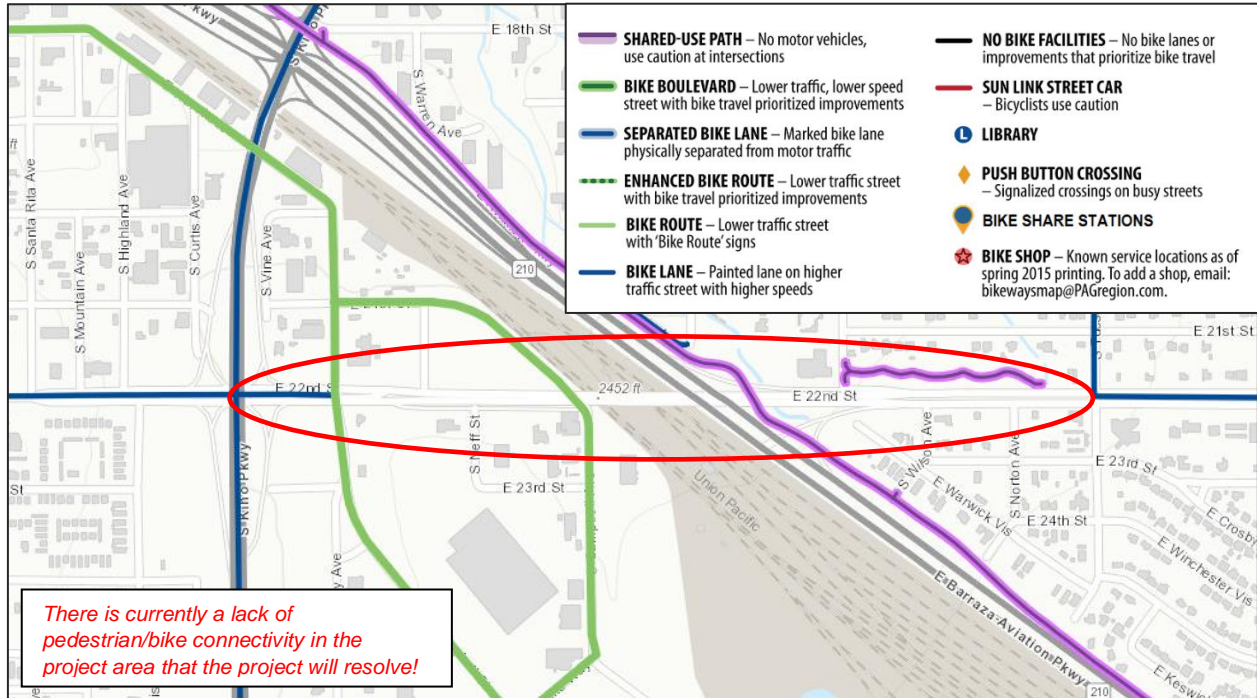


Figure 6: City of Tucson Bike Network around 22nd Street project area  
Source: <https://gismaps.pagnet.org/bikewaysmap/>

The 22nd Street project encourages the free movement of individuals without a car and incorporates **universal design**, which addresses the needs of people with disabilities and enhances the pedestrian experience of all transportation network users. Multimodal and accessible transportation has been an integral part of the planning process from the project's inception. The project benefits everyone and in addition to cyclists, accommodates all pedestrians in the transportation system by expanding the accessible pedestrian network which greatly improves neighborhood livability and community interactions. By engaging early with the CAC and soliciting active involvement of the community, the project's accessible features fulfill the principles of the Americans with Disabilities Act (ADA).

The 22nd Street project is in two US Census Tracts, Pima County Tract 8 (04019000800) and Tract 20 (040190020000). Both tracts exceed the 50th percentile for the USDOT's Environmental Indicator, Equity Indicator, and Economy Indicator. Tract 8 also exceeds the

50th percentile for Health Indicator and Transportation Indicator. Census tracts that exceed at least four of these indicators determine the tract to be Historically Disadvantaged.<sup>6</sup>

The 22nd Street project is in or immediately adjacent to four US Census tracts as shown in **Figure 7**. Analysis of these tracts using the USDOT Areas of Persistent Poverty Project (APP) and Historically Disadvantaged Community (HDC) Status Tool<sup>7</sup> and Council on Environmental Quality Climate and Economic Justice Screening Tool<sup>8</sup> determined that each tract includes levels of disadvantaged populations as summarized in **Table 1**.

Table 1: Summary of Disadvantaged Populations in Study Area

	USDOT Transportation Disadvantaged Census Tracts (Historically Disadvantaged Communities)			Council on Environmental Quality (CEQ) Climate and Economic Justice Screening Tool	
	Area of Persistent Poverty	Historically Disadvantaged Area	Indicators	Disadvantaged	Thresholds
<b>Tract 7 (04019000700)</b>	Yes	Yes	<ul style="list-style-type: none"> <li>• Environmental</li> <li>• Equity</li> <li>• Economy</li> <li>• Health</li> <li>• Transportation</li> </ul>	No	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<b>Tract 8 (04019000800)</b>	Yes	Yes	<ul style="list-style-type: none"> <li>• Environmental</li> <li>• Equity</li> <li>• Economy</li> <li>• Health</li> <li>• Transportation</li> </ul>	Yes	<ul style="list-style-type: none"> <li>• Clean Transportation</li> <li>• Clean Water and Waste infrastructure</li> </ul>
<b>Tract 20 (040190020000)</b>	No	No	<ul style="list-style-type: none"> <li>• Environmental</li> <li>• Equity</li> <li>• Economy</li> </ul>	Yes	<ul style="list-style-type: none"> <li>• Clean Transportation</li> <li>• Legacy Pollution</li> <li>• Health Burdens</li> </ul>
<b>Tract 22.02 (04019002202)</b>	Yes	Yes	<ul style="list-style-type: none"> <li>• Environmental</li> <li>• Equity</li> <li>• Economy</li> <li>• Health</li> <li>• Transportation</li> </ul>	Yes	<ul style="list-style-type: none"> <li>• Clean Transportation</li> <li>• Workforce Development</li> </ul>

<sup>6</sup> Transportation Disadvantaged Census Tracts, <https://usdot.maps.arcgis.com/apps/dashboards/d6f90dfcc8b44525b04c7ce748a3674a>

<sup>7</sup> RAISE Persistent Poverty Tool (transportation.gov), <https://datahub.transportation.gov/stories/s/tsyd-k6ij>

<sup>8</sup> <https://screeningtool.geoplatform.gov/en/>

Of the four Census tracts adjacent to the project area, three are identified as Historically Disadvantaged based on the USDOT Transportation Disadvantaged tool and the Climate and US Council on Environmental Quality Economic Justice Screening Tool.

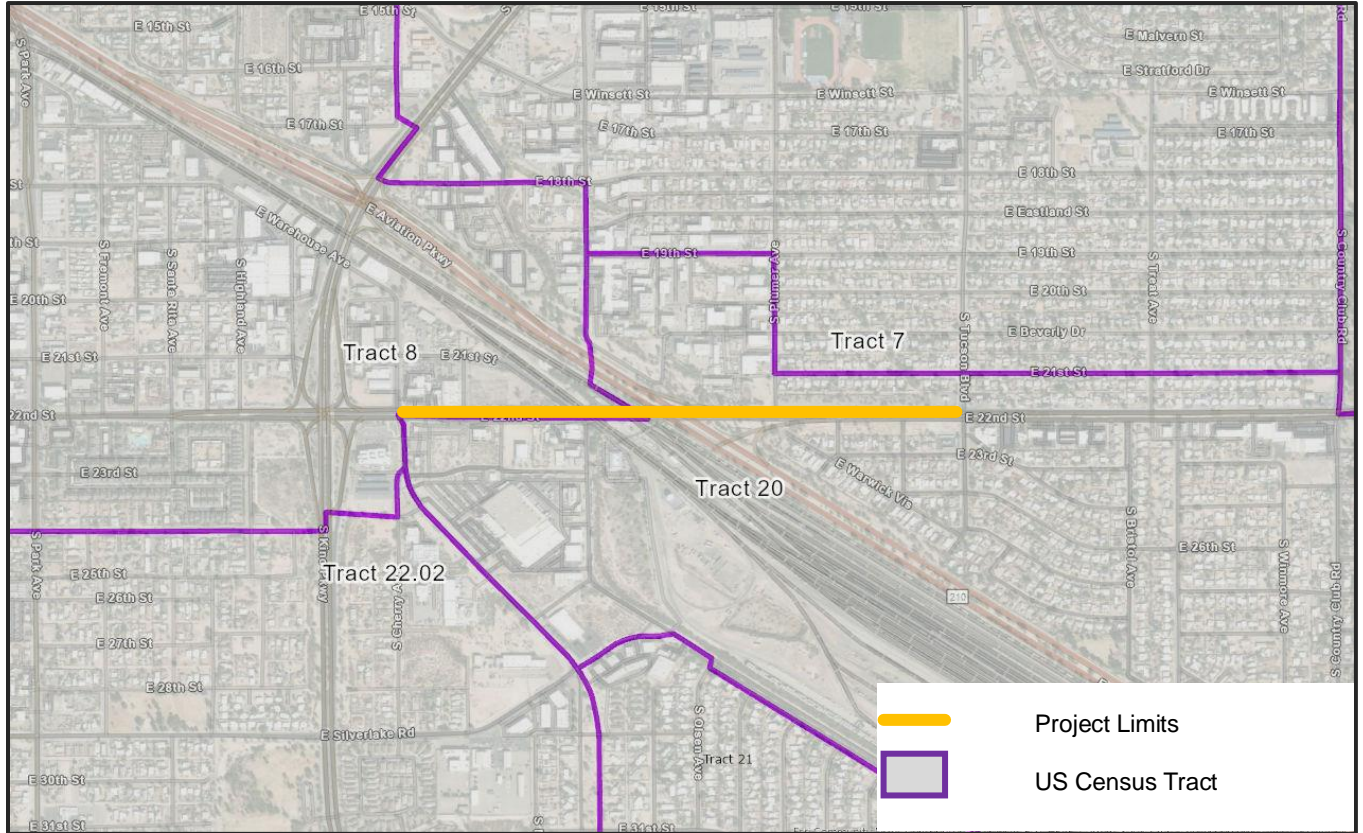


Figure 7: Census Tracts Adjacent to Project Area

The community has a vested interest in bolstering the nonmotorized network as is evident by the volunteer efforts to document usage of bike and pedestrian trips near the project area, which are summarized below in **Table 2**. The counts do not capture all users but do indicate demand. With two funded bike boulevards in and connecting to the project area (Treat and S. Campbell Avenue – “18<sup>th</sup> St Bike Boulevard”), the project is a crucial connection to the expanding bike and pedestrian network.

Table 2: PAG Volunteer Count - Total AM/PM Peak Hour Counts

Location	Count Year	Bikes	Pedestrians
22nd/Park	2018	21	116
22nd/Treat (funded/designed Bike Boulevard)	2019	12	31
22nd/Treat	2021	19	28

22nd Street provides a connection to Reid Park, which is a major public activity center that includes Reid Park Zoo, playgrounds, several baseball fields including the home field of University of Arizona baseball team, dog park, amphitheater, and is adjacent to the Randolph Golf Complex, which houses two 18-hole public golf courses.

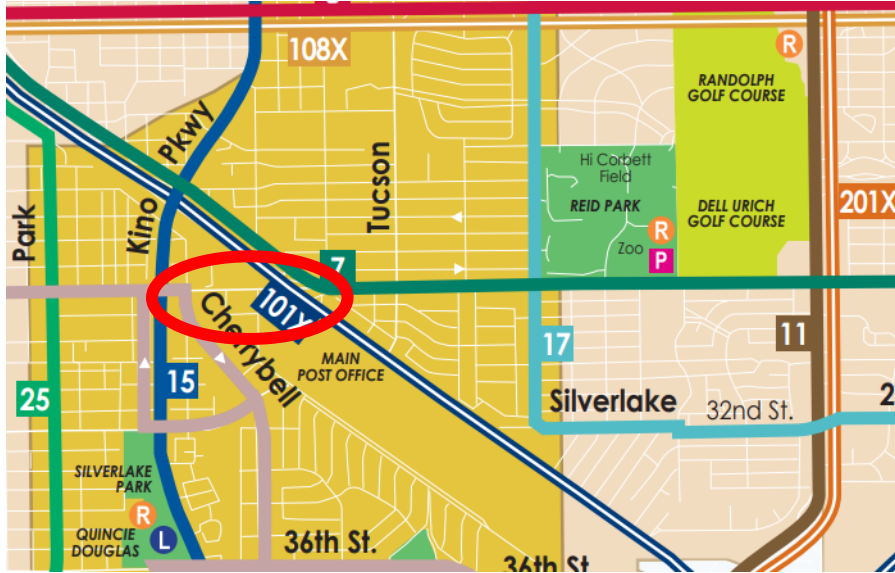


Figure 8: Project Area, Sun Tran Route Transit Map – disconnected service

The current condition of the 22nd Street bridge does not allow buses to travel efficiently across 22nd Street, and as a result, discourages transit use. Sun Tran, the area’s transit provider, operates several bus routes in and near the project area, but there are no routes that travel 22nd Street on both sides of the bridge, due to the weight restriction, requiring transit users to transfer routes once or more, as shown in

**Figure 8.** Replacing the 22nd Street bridge will allow buses to travel on it, enabling direct routes for Sun Tran and its users. It is anticipated that over 110 transit buses and over 120 school buses will travel over the bridge daily when replaced. **Figure 9** illustrates how a transit user living west of the bridge must travel a minimum of 30 minutes and make at least one route transfer to reach Reid Park, a major activity center located two miles directly to the east.

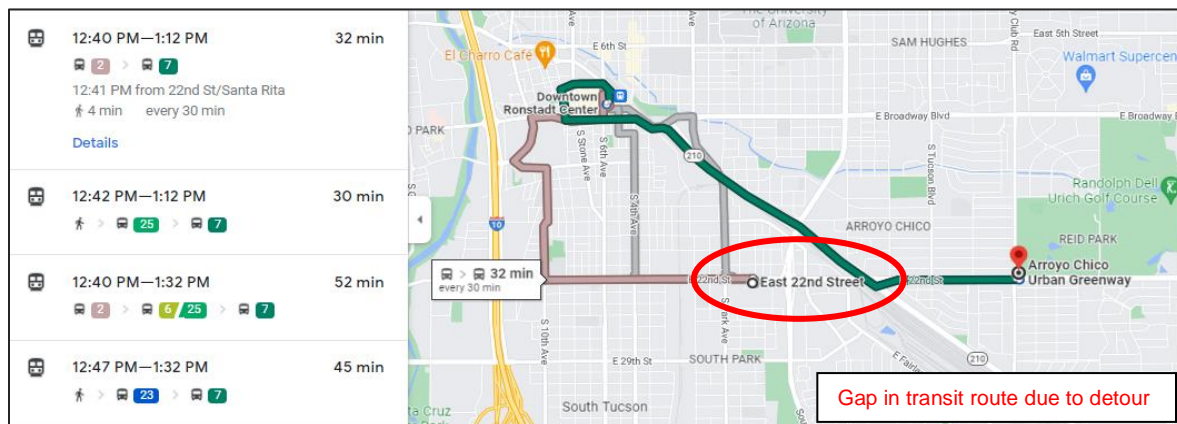


Figure 9: Example of Inefficient Transit Travel

The bridge will include a separated pedestrian/bike path to improve corridor accessibility for non-motorized users. This further enhances bike and pedestrian connections between



areas west of the bridge and Reid Park and between downtown and areas east of the bridge. Enhancing these safety improvements also enhance connectivity to the Golf Links-Aviation Shared Use Path, which is a nearly 10-mile path that connects to other local and regional multiuse trails and regional parks.

No vehicles over 30,000 pounds can travel over the existing bridge. Replacing the existing load-rated bridge and widening the roadway to six lanes will allow additional east-west freight movements to occur. The number of daily vehicles over 30,000 pounds GVW is estimated to be near 1,200 by the year 2052. This benefits the industrial areas west of the bridge, between 2nd Ave and S Euclid Ave, along the UPRR rail and southeast of the bridge, near E. Barraza-Aviation Parkway (SR 210) and S Palo Verde Rd. Additionally, the new bridge will exceed the minimum clearances required by UPRR, potentially enhancing rail movements under the bridge.

**CRITERIA E: Economic Competitiveness and Opportunity**

<b>SNAPSHOT:</b> This project has <b>significant</b> documented benefits to economic competitiveness and opportunity:	
Improve system operations to increase travel time reliability, velocity of goods movement, and multimodal freight mobility, especially for supply chain bottlenecks	★
Offer significant regional and national improvements in economic strength and opportunity by increasing the economic productivity of land, capital, or labor; create or expand high-quality, good-paying jobs; and improve the economic strength of regions and cities	★
Increase transportation options and system connectivity to revitalize underserved, overburdened, or disadvantaged communities; increase access to jobs and location-efficient affordable housing; or facilitate tourism opportunities	★

**Eliminate Supply Chain Bottlenecks**

This project has significant benefits to economic competitiveness and opportunity. Moving freight and traffic efficiently and safely through an urban area is a critical pillar of any community’s foundation for economic vitality. Tucson is unique in that freeway travel only occurs around the periphery of the metro area. Arterials such as 22nd Street are relied on for efficiently moving freight throughout the community from every direction. Therefore, arterials serve the community much more significantly than many other communities when it comes to providing freight movement through highly developed areas, adding additional importance to timely completion of the project. **Currently, no freight can use this corridor, and must be rerouted.**

The existing corridor conditions on 22nd Street correspond with a massive bottleneck that impacts travel time reliability, slows goods movement, and reduces freight mobility for both truck and rail freight. Furthermore, the PAG Regional Freight Plan gives the project corridor



a ‘Poor’ Composite Freight Performance rating. **Improving this corridor would increase economic productivity by reducing travel time and increasing access, while improving the economic productivity of the land by allowing for commercial infill in vacant parcels.**

The replacement of the deficient bridge over the UPRR will allow for future rail expansion at this rail hub, which will greatly increase the economic vitality associated with robust freight rail movement in the region and beyond. The project will provide the following significant improvements: Minimum Vertical Clearance measured directly vertical from the centerline of track will be 27’-11” (as compared to existing at 23’-0” for existing bridge) and Minimum Horizontal Clearance perpendicular to the track will be 37’-8” (as compared to 14.3 ft for the existing bridge). The project will provide 2.5 times more clearance than currently exists.

22nd Street is a critical link in the overall movement of freight. It currently has a deficient bridge which bottlenecks a prominent Regional Freight Corridor (RFC).

### Strengthen Local and Regional Economy

The City of Tucson lies within the boundaries of the Pima Association of Governments (PAG), which serves as the Metropolitan Planning Organization for the region. PAG recently published its Regional Freight Plan<sup>9</sup> which identifies trucking as the dominant mode for freight movement in this region, **with 84 percent of freight coming into Pima County and 64 percent of freight going out of Pima County traveling exclusively by truck.** This makes a bold statement for why the health of Tucson’s economy is so intrinsically tied to highly coordinated freight travel. The 22nd Street project is near one of the identified major freight-generating areas of Pima County, due to its proximity to the UPRR Classification Yard which is depicted in **Figure 10.**

To assist the movement of freight, the City of Tucson has focused on addressing issues along roadways within its jurisdiction designated as Regional Freight Corridors (RFCs). The plan proposes full reconstruction of the 22nd Street bridge to add capacity, eliminate weight

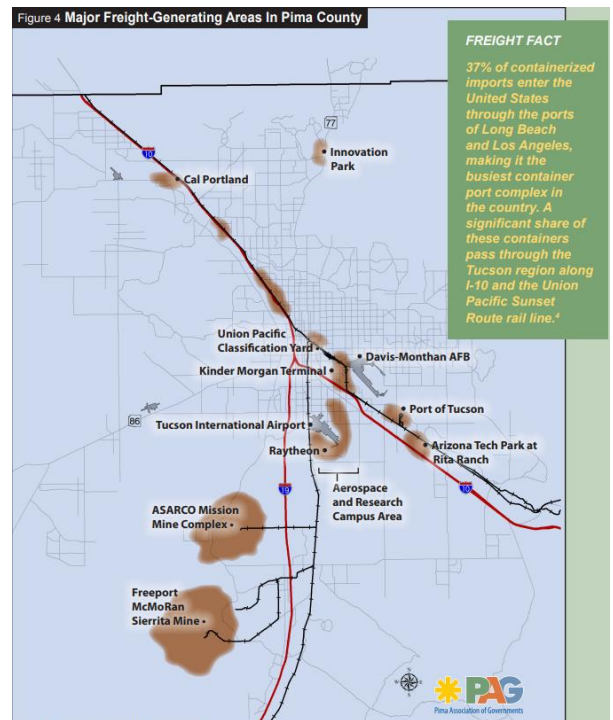


Figure 10: Major Freight-Generating Areas in Pima County

<sup>9</sup> <https://pagregion.com/mobility/transportation-planning/freight/?msclid=e6f26851adcc11ecada01475be2ae949>



restrictions, and upgrade the signalization and vehicle technologies to support more direct freight flow within the urbanized region to support economic health of the region.

Regional wages and household incomes trail those in similarly sized metropolitan areas because of the region’s economic makeup. Recent employment numbers from the U.S. Bureau of Labor Statistics show that freight on the PAG region’s roads directly supports nearly 130,000 jobs and \$10.6 billion in regional economic activity, or about one quarter of the region’s total jobs and 30 percent of its Gross Domestic Product (GDP). This project offers significant local, regional, and national improvements in economic strength and opportunity by increasing the economic productivity of land, capital, and labor.

**CRITERIA F: State of Good Repair**

<b>SNAPSHOT:</b> This project has <i>significant</i> documented benefits to a State of Good Repair:	
Restore and modernize core infrastructure assets	★
Address current or projected system vulnerabilities for underserved, overburdened, or disadvantaged communities	★
Maintain assets in a state of good repair	★

This project has significant benefits to a State of Good Repair. The project will restore and modernize core infrastructure assets by replacing existing infrastructure that is of major and growing concern due to its ‘structural deficient’ condition. The bridge inspection report for the existing bridge is included in the Attachments (BridgeDoc). The 22nd Street bridge was built in the 1960s and has had a weight restriction imposed since 2005 due to the declining condition. The restriction prohibits vehicles over 15 tons from using the bridge, thus having a direct impact on freight, transit, school transportation, and EMS response times. Heavy vehicles must use Kino Parkway and Barraza-Aviation Parkway as a detour. The proposed 22nd Street Revitalization Project will replace the existing weight-restricted bridge to eliminate the need for a detour and provide more direct lines of travel for freight and transit and other heavy vehicles that are currently being detoured.

Additionally, the project addresses current system vulnerabilities for underserved, overburdened, or disadvantaged communities by adding non-motorized transportation options including sidewalks, multiuse paths, and a dedicated bike and pedestrian structure. Improving the efficiency of transit services will also benefit the disadvantaged communities including AOPP. These connections are especially important due to the disconnection created by the railroad and resulting lack of east-west connectivity for all transportation modes.

The City has standard procedures for maintaining and repairing roadways and bridges that would be applied to this project after construction is complete, as well as standard sources of ongoing funding for related ongoing expenses. The project’s life cycle costs will be



supported by the region’s long-standing RTA and PAG partners to ensure the safety features and pavement are maintained throughout the life of the structure, ensuring that these assets will be maintained in a state of good repair.

Additional State of Good Repair benefits of the project resulting from shifting heavy vehicles from the detour routes include reduced VMT, benefiting those corridors in the form of reduced pavement damage and maintenance costs.

**CRITERIA G: Partnership and Collaboration**

SNAPSHOT: This project has <i>supported and engaged</i> diverse people and communities beyond common practice by partnership and collaboration:	
Collaborate with other public and private entities	★
Ensure that equity considerations for underserved, overburdened, or disadvantaged communities are meaningfully integrated into planning, development, and implementation of transportation investment	★
Support the creation or expansion of high-quality, good-paying jobs through workforce development programs that incorporate worker representatives and incorporate workforce strategy into project development	★
Incorporate private-sector entities, particularly DBEs, in transportation infrastructure planning, designing, or building	★

Throughout the project strong engagement has occurred with the project partners, private entities, and the public (See Attachment: LOS, PublicInv). The project was planned and designed with input from an established Citizen’s Advisory Committee (CAC). The City is committed to inclusive, equitable, collaborative, and clearly communicated community outreach for all transportation projects. Ensuring that public engagement is equitable and inclusive requires multiple methods and techniques to reach diverse populations. This project aligns with the City’s organizational commitment to equity-focused data collection and analyses related to project delivery and implementation. As part of this commitment, the City is currently updating its Title VI Annual Report and Title VI Non-Discrimination Plan.<sup>10</sup>

The project is a joint effort by the City of Tucson, RTA, the UPRR, Pima County, and ADOT. **Early efforts to minimize impacts to the effected stakeholders built a strong foundation for the communication channels necessary for a successful project.** Agency coordination efforts maximized the resource usage when determining the scope of the environmental documentation and the required level of analysis. The high potential impacts to the Union Pacific Rail yard required consistent communication throughout the


<sup>10</sup> <https://www.tucsonaz.gov/tdot/title-vi-civil-rights>


design phases. The public outreach meetings for the 22nd Street project provided the community a chance to meet and discuss issues with all project partners. There were six open houses held over the course of the project and numerous CAC meetings, postcard mailings, and media notifications including newspaper advertisements. This project is included in the RTA plan adopted in 2006 by Pima County voters.<sup>11</sup>


The project promotes the development of high-paying work force development jobs. It connects the [Joint Technical Education District](https://pimajted.org) (JTED – <https://pimajted.org>) to downtown. The Pima JTED Career and Technical Education District offers premier, tuition-free construction technology programs to high school students. Additionally, private sector DBEs were included in the preconstruction activities for this project. The bridge was designed by a women business enterprise (WBE) engineering firm, Structural Grace. Kaneen Advertising and Public Relations, another WBE firm, provided public relations during planning and design.

### CRITERIA H: Innovation

**SNAPSHOT:** This project includes the following innovations that result in *significant* benefits:

Deploy technologies and other practices that drive safety, equity, climate, and resilience, or economic outcomes for underserved, overburdened, or disadvantaged communities or augment workers 

Use practices that facilitate improved project delivery 

Incorporate innovative funding and financing 

The project will bring significant innovation to the area by **installing conduit and fiber throughout the project limits to facilitate broadband connectivity** to surrounding existing infrastructure, improving **broadband service to surrounding AOPP and disadvantaged communities. This area of the city has historically seen less public and private investment than other areas of the city.**

Another area of innovation that the project includes is segmental bridge construction, which allows for increased pier spacing and eliminates the need for falsework for the portion of the bridge over the UPRR. This method will minimize impacts to the UPRR during construction and allow it to remain operational. As indicated in the Letter of Support from the American Segmental Bridge Institute (see Attachment: LOS), this method is a type of Accelerated Bridge Construction and thereby supports the FHWA Every Day Counts (EDC)

<sup>11</sup> <https://rtamobility.com/who-we-are/rta-plan/>

<sup>12</sup> program. This method reduces construction time and produces a safer, more durable bridge with a longer service life than conventional bridges. **The 22nd Street bridge is the first segmental bridge in southern Arizona and only the second in the state.**

The project will utilize the innovative CMAR project delivery method, allowing City of Tucson to enter into an agreement with a proven segmental bridge construction contractor. This will reduce the inherent risks of the specialized project and maintain the timeliness of construction and the agreed upon. CMAR provides the opportunity for collaboration between the owner and contractor to ensure successful delivery of the 22nd Street Project.

The City of Tucson will utilize an innovative regional financing tool. The RTA, a state-established taxing district within Pima County, oversees implementation of a 2006 voter-approved transportation plan and half-cent tax, which funds the plan through June 2026 and will be used to leverage federal funding. The City will use state funding provided through Highway User Revenue Fund (HURF) monies to fund the non-federal portion of the project cost. HURF funding is allocated to jurisdictions from revenues generated by the state's gas tax. The HURF matching funds would be from the Fiscal Year (FY) 2023 allocation, which will become available in July of 2022.

## VI. PROJECT READINESS: ENVIRONMENTAL RISK REVIEW

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### Project Schedule

The project schedule is depicted in **Figure 11**. Project design is completed. Final approvals from the UPRR and Arizona Corporation Commission are anticipated this summer. The project is scheduled to begin construction in July 2022; however, funding from this RAISE grant program is necessary to fund the full project and get it across the finish line.

### Required Approvals

**Two decades of planning and investment have occurred to reach this opportunity.** The following describes the status of required approvals.

#### State and Local Approvals

The project is ID 131.00 in the PAG 2022-2026 Transportation Improvement Program (See Attachment: PAG TIP). The project is listed in the latest TIP, approved March 2, 2022. The project is in the State Transportation Improvement Program (STIP), MPO Long Range Transportation Plan, and State Long Range Transportation Plan. Funding sources include the RTA, whose revenues are generated by a voter-approved, 20-year half-cent sales tax, Pima County bonds, and State HURF. A total of \$70,454,000 is programmed in the approved PAG TIP in FY 2020, 2021, and 2022.

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<sup>12</sup> [https://www.fhwa.dot.gov/innovation/everydaycounts/edc-2/pdfs/edc\\_abc.pdf](https://www.fhwa.dot.gov/innovation/everydaycounts/edc-2/pdfs/edc_abc.pdf)

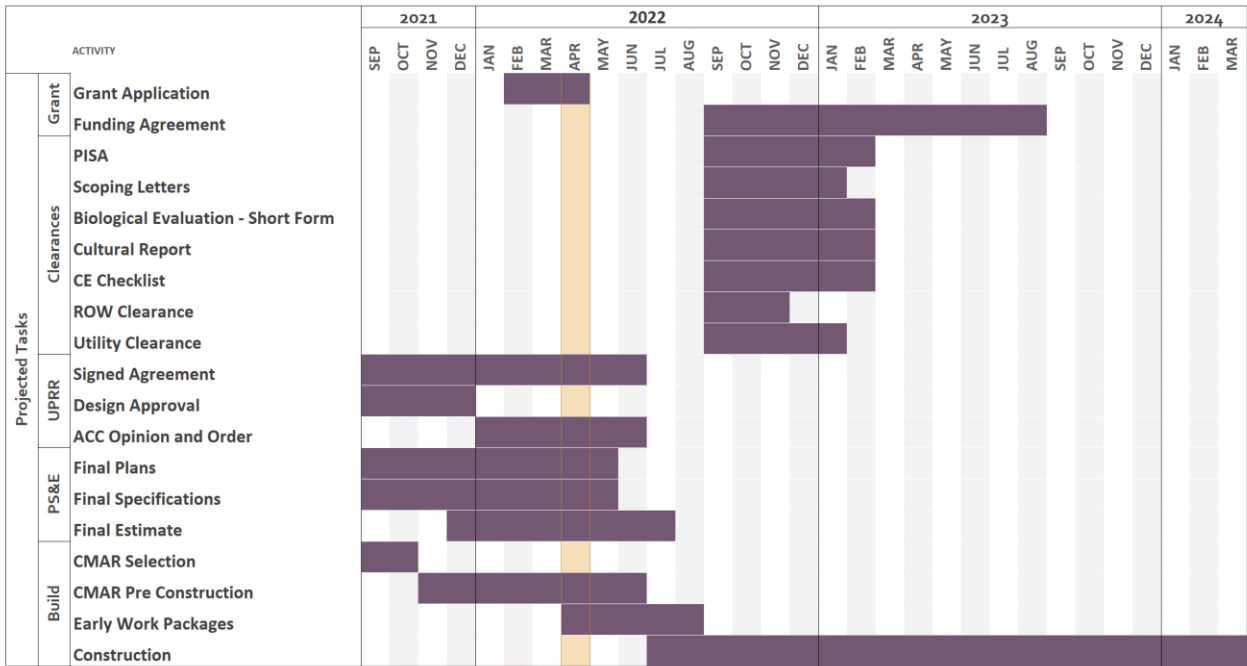


Figure 11. Project Timeline/Schedule

## Federal Transportation Requirements Affecting State and Local Planning

**NEPA Document Type** – Categorical Exclusion (“unlisted” CE). The bridge replacement project meets the definition of a CE under 23 CFR 771.117 (d) Categorical Exclusion – bridge replacement, but because of the added capacity and right-of-way acquisition, approval from FHWA is required under the 327 Memorandum of Understanding (MOU) with ADOT. The project replaces a bridge on current alignment, minor right-of-way acquisition, and no relocation of residences or businesses. There are no 23 CFR 771.117 Constraints: No significant environmental impacts, no substantial controversy based on environmental grounds, no significant impacts to Section 4(f) resources or Section 106 resources, and no inconsistencies with federal, state, or local laws. A CE Checklist document and Environmental Commitments Memorandum will be developed through the ADOT Local Project Assistance (LPA) program. A MOU under 23 U.S.C. 326 between ADOT and FHWA was signed on June 3, 2018, giving ADOT the lead role in NEPA compliance. The City of Tucson and ADOT are expected to have NEPA clearance through CE (d) list completed by spring 2023, as shown in the project schedule. The prior completion of several NEPA-level studies will help expedite project implementation. All required NEPA studies will be updated or completed prior to approval of the environmental document.

Once the appropriate level of environmental documentation is verified with ADOT, agency scoping letters will be sent to all appropriate federal, state, and local agencies and officials to gather additional input on the proposed project. The responses from the various agencies will be incorporated into the NEPA document. The level of continued public engagement will also be determined, as appropriate. The NEPA document will be approved

4-6 months after initiation, and at least six months prior to the obligation of federal funding (See Attachment: NEPA).

**Environmental Review** – The City of Tucson completed a comprehensive environmental review and public involvement program during planning for the project in conjunction with their Roadway Development Policies. The document considered the full range of social, economic, and environmental issues consistent with NEPA. Extensive public involvement including a Citizen Advisory Committee was utilized. Subsequently the City has updated various technical studies including 22nd Street Environmental Design and Mitigation Report Kino Parkway to Tucson Boulevard (COT 2009).

**Biological Resources** – A Biological Evaluation Short Form was completed March 12, 2020. The report concludes no potential to impact threatened or endangered species under the Endangered Species Act.

**Cultural Resources** – Survey has been done on project limits with recommendation of no adverse effect on cultural or historic properties. Section 106 Consultation is pending and would be initiated through the LPA process. The project area and vicinity have been previously subject to Class III intensive pedestrian survey. The results are reported in A Class III Cultural Resource Survey for the Proposed Road Improvements Along 22nd Street, from Freemont Avenue to Tucson Boulevard, and along Kino Parkway, from 28th Street to Warehouse Avenue, in Tucson, Pima County, Arizona (Jones 2009); A Cultural Resources Inventory of 11.73 Acres at the 22nd Street Overpass and Union Pacific Railroad Yard, Tucson, Pima County, Arizona (King 2017); and 22nd Street: Kino Parkway to Tucson Boulevard Bridge and Structure Documentation, City of Tucson, Pima County, Arizona (Avann 2018).

**Hazardous Materials** – Phase I Environmental Site Assessment was prepared in July 2018 as reported in the 22nd Street Bridge Replacement Project: 22nd Street between Kino Parkway and Tucson Boulevard (Ninyo and Moore 2018). The report identified Recognized Environmental Concerns (petroleum hydrocarbons) related to the UPRR property and further analysis will be required prior to construction. 22nd Street Bridge Replacement Project: 22nd Street between Kino Parkway and Tucson Boulevard (Ninyo and Moore 2018).

**Agency and Public Scoping** – Agency and public scoping letters will be developed in support of the CE through the ADOT LPA process. General project understanding and support has been demonstrated through previous outreach in 2007-2008. The City of Tucson will continue the public outreach.

### Assessment of Project Risks and Mitigation Strategies

An assessment of potential project risks indicates that the project will not be affected by procurement delays, environmental uncertainties, or real estate acquisition costs as right-of-way has already been acquired following federal guidelines. The project is 'shovel-ready'



which further reduces risks. The City is experienced in these types of projects and no procurement delays of any significance are anticipated. The project site is currently utilized for highway purposes and is situated within an active transportation corridor.

Final design is complete, and the project has been let as a Construction Manager at Risk (CMAR) delivery method project, which reduces risks by enhancing collaboration, transparency, and synergies throughout the process between all parties. The CMAR method yields positive results including reduced change orders, higher quality of construction, improved communication, accelerated schedule, and increased cost certainty throughout the life of the project.

No public controversy is expected as the public has been engaged since early in the project development process. **Table 3** summarizes project risks and mitigation strategies.

*Table 3: Summary of 22nd Street Revitalization Project Risks and Mitigation Strategies*

Project Risk	Magnitude	Mitigation Strategies
Procurement delays	Low	The project is shovel-ready; funds will be obligated before 9/30/2026.
Potential environmental impacts may delay project	Low	Update NEPA studies to verify that there are no risks that will impact the schedule.
Cultural resource impacts may delay project	Low	Survey has been done on project limits with recommendation of no adverse effect on cultural or historic properties.
NEPA document completion	Low	Coordination with ADOT regarding previously completed NEPA studies is underway. CE approval is expected 4-6 months from initiation.
Change in City leadership may impact project priority	Low	The project is supported by the current City Council and Mayor.
Lack of support for project	Low	Early public engagement. Many letters from all levels show strong local support for the project. Voters supported this project.
Public perspective	Low	Public involvement has been a part of this project since inception, including the formation of a dedicated CAC. Public outreach will continue.
Hazardous Materials	Low	Studies have been conducted. If identified in additional studies, mitigation will be addressed. No impact to the schedule is expected.
Program management resources	Low	The City has experience administering federal grants and is very familiar with the requirements and time/staff commitments.
Utilities	Low	Utilities: 100% plans were sent to the utilities in August 2018. Comments have been addressed



Project Risk	Magnitude	Mitigation Strategies
		and clearance letters will be requested upon award notification.
Railroad Agreement	Low	Coordination with UPRR has been ongoing and an agreement is expected shortly.
Railroad disruptions	Low	Segmental Bridge Construction method minimized risks to railroad operations and was selected in large part for this reason.
Construction funding authorization	Low	The 100% PS&E package was submitted in July 2018 for review. The project has been advertised for construction and has already been awarded.
Project schedule delays	Low	CMAR project delivery method reduces risks by enhancing collaboration, transparency, and synergies throughout the process between all parties. The CMAR method yields positive results including reduced change orders, higher quality of construction, and improved communication. Furthermore, segmental bridge construction is being utilized.
Project cost escalation	Low	CMAR project delivery method increases cost certainty throughout the life of the project. Costs savings from Value Engineering will be applied where practical. Contingencies have been included in the project budget.
Federal funding match	Low	All necessary non-federal funding has been secured to match a \$25 million RAISE grant award.

## VII. BENEFIT COST ANALYSIS

A benefit-cost analysis (BCA) was completed for the 22nd Street bridge project. The BCA shows that the project has significant benefits of \$122M with a benefit-cost ratio (BCR) of 1.35 at a 7 percent discount (see Attachment: BCA and BCA Memo).

The project delivers significant economic benefits through:

- **Safety Savings:** The decrease in congestion and vehicle miles traveled because of the project will produce a reduction in crashes along the corridor.
- **Travel Time Savings:** The project will result in more efficient routes and decreased congestion which will decrease network vehicle hours traveled.
- **Operating Cost Savings:** The project will result in operating cost savings due to the anticipated reduction in freight/large vehicle detours.

Table 4 Benefit-Cost Analysis

	22nd Street Revitalization Project
	20 Year Benefits Period (2024-2044)
	Values in \$2020
	Discounted at 7% (3% for CO <sub>2</sub> )
<b>Costs (2020\$)</b>	
<b>Capital Costs</b>	\$90,569,451
<b>Total Costs</b>	\$91,031,569
<b>Benefits (2020\$)</b>	
<b>Safety</b>	
<b>Fatalities and Crashes</b>	\$3,027,222
<b>Mobility</b>	
<b>Residual Value</b>	\$10,713,277
<b>Travel Time Savings (Peak)</b>	\$79,719,982
<b>Travel Time Savings (Non-Peak)</b>	\$19,475,896
<b>Vehicle Operating Savings</b>	\$4,075,615
<b>Emissions Savings</b>	\$4,693,140
<b>Life-Cycle Costs</b>	<b>\$91,031,569</b>
<b>Life Cycle Benefits</b>	<b>\$122,685,903</b>
<b>BC Ratio</b>	<b>1.35</b>
<b>Net Present Value</b>	<b>\$31,654,334</b>

- **Vehicle Emissions Savings:** The decrease in vehicle hours traveled because of the project will also result in decreased CO<sub>2</sub>, NO<sub>x</sub>, and PM<sub>2.5</sub> emissions.
- **Facility and Vehicle Amenity Benefits:** The pedestrian/bike bridge is anticipated to benefit the nearby population, resulting in increased usage of the bridge under the build condition.
- **Health Benefits:** The facility is anticipated to have a significant impact on bike and pedestrian use within the area; therefore, is likely to provide additional health benefits to the local community.

In addition to these monetized benefits, there are other benefits that are difficult to monetize as discussed in both this Project Narrative and the BCA Technical Memorandum.

## **VIII. CONCLUSION**

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This RAISE grant is needed to replace a critical east-west connection that currently requires detour routes for heavier vehicles including freight, transit, school buses, and EMS. The existing bridge structure is rated in 'structural deficient' condition and is among only 1.3% of bridges in the entire state of Arizona that are rated 'structural deficient,' which places it in a category of the highest need for replacement. What makes the timely replacement of this structure even more grave is the limited remaining life of the structure and the east-west connectivity issues created by the railroad corridor that has historically divided this area of Tucson, with large populations of historically disadvantaged communities. Additionally, the current bridge spans a railroad corridor with substandard clearance, which will adversely affect freight movement, resulting in a negative economic impact to the region. This project will reduce delay and increase reliability and capacity for both truck and rail freight supply chains in the project study area and well beyond.

With the project's substantial multimodal improvements, the many benefits of non-motorized transportation choices will be realized, including the public health benefits of increased cycling and walking. This project would particularly benefit historically disadvantaged communities, including AOPP Census Tracts in the project area and surrounding area. An important east-west connection in an area with minimal connectivity will be improved and allow better nonmotorized access to destinations including essential services, grocery stores, restaurants, retail, places of worship, and recreational opportunities.

Public transit services will significantly improve due to reduced travel times after the project is in place and a detour route is no longer needed. Similarly, EMS response times will be reduced resulting in potentially life-saving time savings.

The project reduces greenhouse gas emissions by reducing VMT of heavy vehicles by eliminating a detour route and encouraging active transportation.

The 22nd Street Revitalization Project will result in safety benefits, increased traffic capacity and operations improvements, and removal of a major bottleneck, resulting in positive economic impacts due to improved movement of freight (truck and rail), transit services, school buses, EMS, bicyclists, and pedestrian access across a railroad corridor that has long divided low-income communities from each other, as well as from essential services and recreational resources. There are numerous benefits to this critically important and time-sensitive project including benefits to the surrounding AOPP, low-income and disadvantaged communities, the economy, and the environment.