Appendix P. Implementation Plan

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Implementation Plan

North-South Corridor Study

U.S. Route 60 to Interstate 10
Pinal County, Arizona

FHWA-AZ-EIS-19-02-D

prepared by
Arizona Department of Transportation

in cooperation with
Federal Railroad Administration
U.S. Army Corps of Engineers
U.S. Bureau of Indian Affairs – San Carlos Irrigation Project
U.S. Bureau of Land Management
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
Western Area Power Administration
Arizona Game and Fish Department

August 2021

ADOT

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by ADOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated April 16, 2019, and executed by FHWA and ADOT.

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Abbreviations and Acronyms

AADT	average annual daily traffic
ADOT	Arizona Department of Transportation
CAP	Central Arizona Project
CFR	Code of Federal Regulations
Corridor	North-South Corridor
DEIS	Draft Environmental Impact Statement
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
I-10	Interstate 10
NEPA	National Environmental Policy Act
PRTA	Pinal Regional Transportation Authority
PRTP	Pinal Regional Transportation Plan
ROD	Record of Decision
ROW	right-of-way
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SIU	Segment of Independent Utility
SR	State Route
US 60	U.S. Route 60
USC	United States Code

Introduction

The *Tier 1 Final Environmental Impact Statement and Record of Decision, North-South Corridor Study, U.S. Route 60 to Interstate 10* was completed in [date]. The study examined the environmental impacts of a new north-to-south transportation corridor in Pinal County, Arizona. The study's scoping period began with the publication of a Notice of Intent to complete a project-level environmental impact statement (EIS) in the *Federal Register* on September 20, 2010. A revised Notice of Intent was published in the *Federal Register* on October 3, 2016, when the study was converted to a Tier 1-level EIS. The Tier 1 Draft EIS (DEIS) was issued in September 2019, followed by the Tier 1 Final EIS (FEIS) in August 2021. The Tier 1 study concluded with the Arizona Department of Transportation (ADOT) issuing a Record of Decision (ROD) on August 20, 2021, selecting Alternative 7 (with the E1b and E3b Options) as the route for the new transportation facility (Figure 1).

The Tier 1 FEIS and ROD identifies an Eastern Alternative as the Selected Alternative—specifically Alternative 7 (with the E1b and E3b options), which is made up of the following action corridor alternatives: E1b in Segment 1 of the study area, E2a in Segment 2, E3b in Segment 3, and E4 in Segment 4.

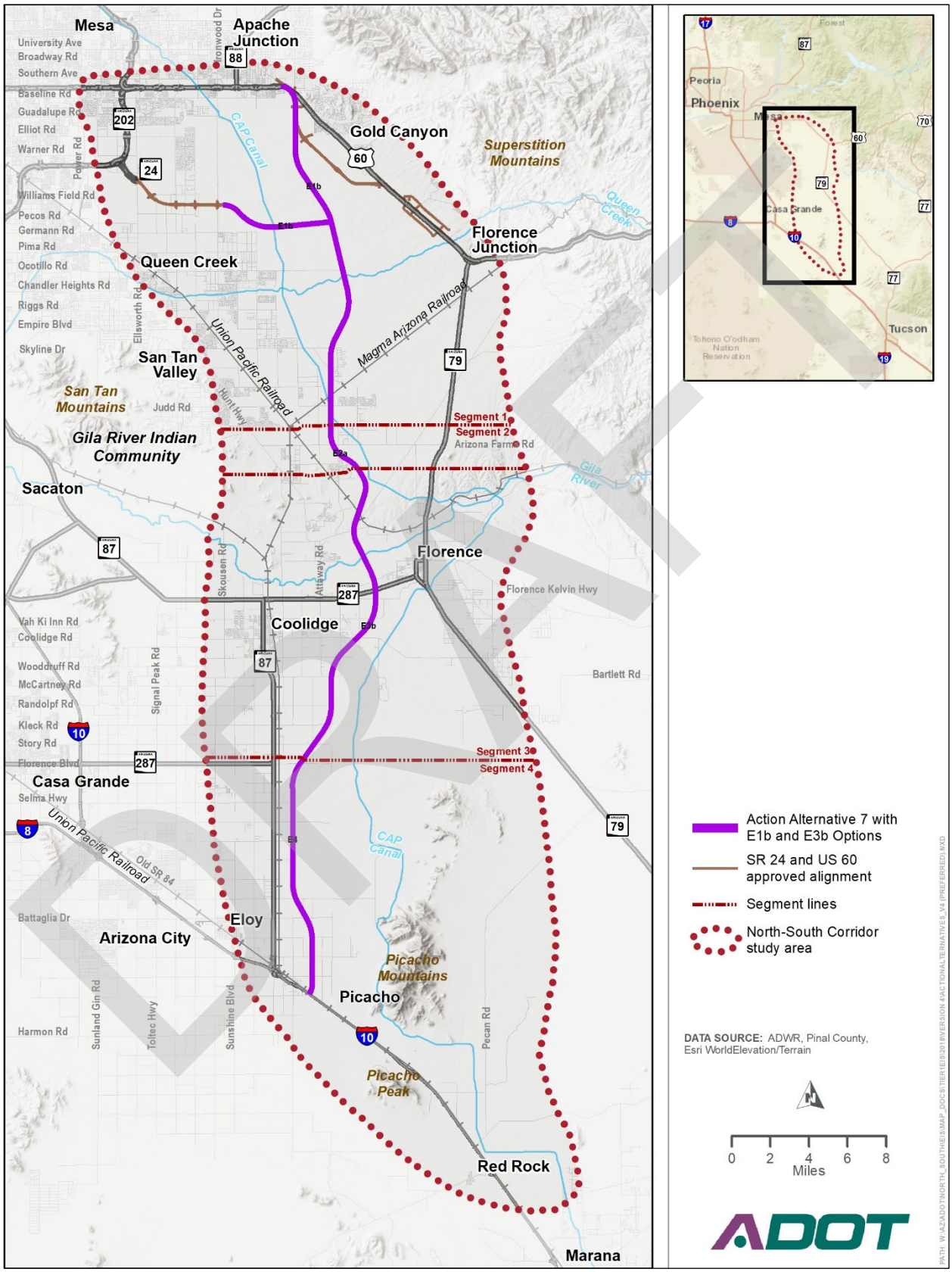
The concept of a new north-to-south transportation facility in Pinal County had been considered by state and regional transportation planners since the early 2000s; however, the formal process of studying the proposed corridor did not begin until the 2010 Notice of Intent to prepare a project-level EIS was published. ADOT is the sponsor and lead agency[1] for the construction and operation of the north-to-south transportation corridor (North-South Corridor, or Corridor) in Pinal County. The Corridor study area is bounded on the north by U.S. Route 60 (US 60) and extends south for approximately 55 miles to Interstate 10 (I-10). The Corridor's northern terminus is near Apache Junction on US 60, and the southern terminus is at I-10 between Eloy and Marana. Coolidge and Florence are in the central part of the study area. An extension of State Route (SR) 24 (in Queen Creek) from its currently designed terminus at Ironwood Drive to the Corridor is part of this study.

Overall, the project entails over 55 miles of freeway development in a largely undeveloped area—a significant undertaking, both in terms of the scope of the effort and the overall cost to construct. As a result, the project will likely be constructed with a phased approach, developed as the need and available funding dictate.

This report provides information regarding the project's implementation and describes an initial plan of action. This information is provided as guidance only. With the ROD issued for this project on August 20, 2021, a subsequent Tier 2 study (or studies) will study the Corridor (or a segment of the entire Corridor) to identify actual alignments for evaluation, and determine a specific alignment for approval and design. During subsequent Tier 2 studies, all efforts would be made to avoid, minimize, or mitigate adverse impacts. Information from a more detailed Tier 2 study may recommend a different approach to implementation, based on the available funding, interest, and need at that time.

[1] Pursuant to 23 United States Code (USC) 327 and a memorandum of understanding dated April 16, 2019, ADOT assumed NEPA Assignment for the project; prior to and up to that date, the Federal Highway Administration (FHWA) was the lead agency and was involved in the drafting of the DEIS up to the preparation of the document's administrative draft (reviewed by agencies prior to publication of the public draft in September 2019).

Figure 1. Corridor location and Selected Alternative



This implementation plan is intended to provide the framework for the implementation of transportation improvements, considering needs, funding, and requirements for future National Environmental Policy Act (NEPA) documentation. The Tier 1 FEIS and ROD provide the framework for the short-term implementation of the transportation strategies as funding becomes available, but do not provide the detailed analysis required to obtain approvals to begin design and construction. With the ROD approved for the project on August 20, 2021, a number of actions still need to occur before the identified strategies can be implemented.

Implementation Process

NEPA Process

The Tier 1 FEIS and ROD were prepared in accordance with requirements of NEPA (40 Code of Federal Regulations [CFR] §§ 1500–1508 and 23 CFR § 771) for the North-South Corridor.

Given the size of the Corridor and the need to identify future funding to build the Corridor, the study used a "tiered" approach. The Tier 1 FEIS and ROD analyzed the proposed action on a broad scale. During subsequent Tier 2 studies, additional NEPA documents would be prepared to analyze individual projects in greater detail, with the goal of advancing construction of certain portions of the Corridor. According to the Transportation Research Board (2009), a tiered approach may be used to address the complex NEPA process associated with lengthy corridors and to facilitate corridor preservation when construction would not occur for many years. This section provides background information on the NEPA process and the tiered approach to NEPA.

Tier 1

Tiering is a staged approach to NEPA described in the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR 1500–1508) and in FHWA's Environmental Impact and Related Procedures (23 CFR 771).

Tiering addresses broad programs and issues in initial (Tier 1) or systems-level analyses, and analyzes site-specific proposals and impacts in subsequent tier studies. The tiered process supports decision-making on issues that are ripe for decision and provides a means to preserve those decisions (Virginia Department of Transportation 2005).

The first tier EIS is meant to focus on broad issues such as the project's purpose and need, general location, modal choice, and land use implications of the alternatives. The second tier would address site-specific details regarding the project's specific alignment and design, impacts, costs, and mitigation measures.

Tier 2

Once the Tier 1 EIS results in a corridor being identified as the Selected Alternative, the project will proceed to Tier 2. Tier 2 consists of a series of individual environmental and engineering studies addressing location-specific design details and environmental impacts in smaller sections called sections of independent utility (SIUs). SIUs are portions of the Selected Alternative that can be constructed independently of each other. Tier 2 studies will focus on individual SIUs. Once the Tier 2 study is completed for an SIU, engineering plans will be developed and construction of that SIU can begin, once funding is secured.

The Tier 1 EIS provides the basis for the identification of individual, independent projects. If a "build" concept (or portion of a build concept) is advanced into Tier 2, subsequent Tier 2 NEPA documents prepared for individual projects would address site-specific details, before design and location decisions

are made. For example, final decisions on the precise location and configuration of lanes would be made at the conclusion of Tier 2, based on traffic projections or other factors, when detailed information is developed. A Tier 1 EIS can start prior to the proposed project being listed in the fiscally constrained regional transportation plan if the scope of the study entails corridor planning or determination of feasibility and does not include decisions directly resulting in project implementation activities of any kind (for example, the purchase of right-of-way [ROW]).

Compliance with all applicable environmental laws and regulations would occur for each project in Tier 2, if a build concept (or portion of a build concept) is advanced into Tier 2. The Tier 1 decisions do not preclude future avoidance and minimization measures as part of Tier 2. Furthermore, if a build concept (or portion of a build concept) is advanced into Tier 2, construction of individual projects could not occur until the completion of the subsequent Tier 2 NEPA documents.

For future tiered project studies (Tier 2 project studies), the Tier 1 decision provides a starting point; specific project sponsors and funding agencies will further define the scope, schedule, and pace of implementation for those subsequent Tier 2 project studies. An important element of the Tier 1 decision is recognizing the need to incrementally implement the investment program laid out in the Selected Alternative. The implementation plan describes a process for the collaboration needed to define an initial phase for the Selected Alternative. However, the Tier 1 FEIS and ROD will not provide specific project lists; such details may be developed after the Selected Alternative has been identified in the ROD.

While the Tier 1 study is an EIS, the Tier 2 study can be an EIS, an environmental assessment (EA), or a combination of different classes of actions. Note that FHWA has determined that a categorical exclusion (CE) also may be prepared at the Tier 2 stage, if the CE criteria are met.

Responsibilities

Implementing the vision for the North-South Corridor will involve a partnership of ADOT, the Sun Corridor Metropolitan Planning Organization, local jurisdictions, and numerous resource agencies (including the Arizona State Land Department, the primary landowner within the Corridor). The importance of collaboration among all stakeholders has been a hallmark of the North-South Corridor Study planning effort since the study was initiated over 10 years ago. As such, continuing these working relationships—with the Corridor's Tier 1 process completed upon issuance of the ROD on [date]—will be an essential element of implementation.

Defining an initial phase will require input from each of the key stakeholders, funding agencies, and the resource and regulatory entities responsible for permitting (a list of these agencies could include any of the North-South Corridor Study cooperating and participating agencies; see Section 1.1.3, *Study Partners*, of the Tier 1 FEIS and ROD). These decisions have yet to be made but will be an important first step upon completion of the NEPA process. As noted, this implementation plan identifies the logical sequence of project implementation, packages of improvements to be advanced together, but is not intended to be definitive. The vision of the Corridor as defined in the Selected Alternative, and identified in the ROD, will support a coordinated stakeholder effort to identify federal, state, and other possible funding sources to augment the identified project funding and bridge the funding gap that exists for the project.

Role of the Public

Public comments and concerns were an integral part of the process of defining the Preferred Alternative and will continue to be important to project-specific decisions necessary to advance the Selected Alternative after the ROD. Upon completion of the Tier 1 environmental review process, the public and interested entities will have opportunities to be involved in Tier 2 project studies as those projects are advanced. It is also expected that, given the breadth of programmatic objectives of the Tier 1 decision, ADOT will seek ongoing public involvement in the advancement of improvements to the Corridor. Likely

opportunities to promote further public involvement in the advancement of the Selected Alternative include continuation of ADOT's North-South Corridor Study website and email alerts to those signed up on the GoGoV email list. It is also anticipated that the initial phase will be integral to the Pinal Regional Transportation Plan (PRTP) planning process, which will be another opportunity for the public to stay informed about progress toward the Selected Alternative.

Funding

Funding has been a challenge for the Corridor. Immediate infrastructure needs to serve the existing population are difficult to keep up with in an area that has experienced rapid and continued growth. Existing funding is used to address the current needs. This situation resulted in the lead agency converting the North-South Corridor Study to a Tier 1 EIS in 2016 because fiscal constraint precluded a decision being reached on a selected alignment as a result of a project-level EIS.

Pinal Regional Transportation Plan Funding

In 2015, the Pinal Regional Transportation Authority (PRTA) was established by the Pinal County Board of Supervisors to be a public improvement and taxing subdivision of the State of Arizona to coordinate multijurisdictional transportation planning, improvements, and funding. The PRTA adopted the PRTP in June 2017 (Proposition 416), which identified key roadway and transportation projects to be developed over the next 20 years. The plan explained Proposition 416 and the need for an excise tax (Proposition 417) to complete the planned transportation projects. In November 2017, Pinal County voters simultaneously approved Proposition 416, to adopt the regional transportation plan, and Proposition 417, to enact an excise tax to fund the plan.

The tax has been challenged in court, and the tax revenue has been collected in escrow awaiting the outcome of litigation (the case was argued before the Arizona Supreme Court in December 2020, and a decision is pending). It was reported at a meeting of the East Valley Transportation Infrastructure Working Group (an ad-hoc committee of elected and public officials convened by State Senator Farnsworth to discuss advancing transportation priorities in the East Valley) that, as of December 2020, the PRTP tax fund had approximately $47 million in an escrow account awaiting disposition of the court case.

PRTA North-South Projects

The PRTP describes transportation projects in Pinal County that will be implemented over 20 years and that will be supported by the half-cent sales tax approved by Pinal County voters.

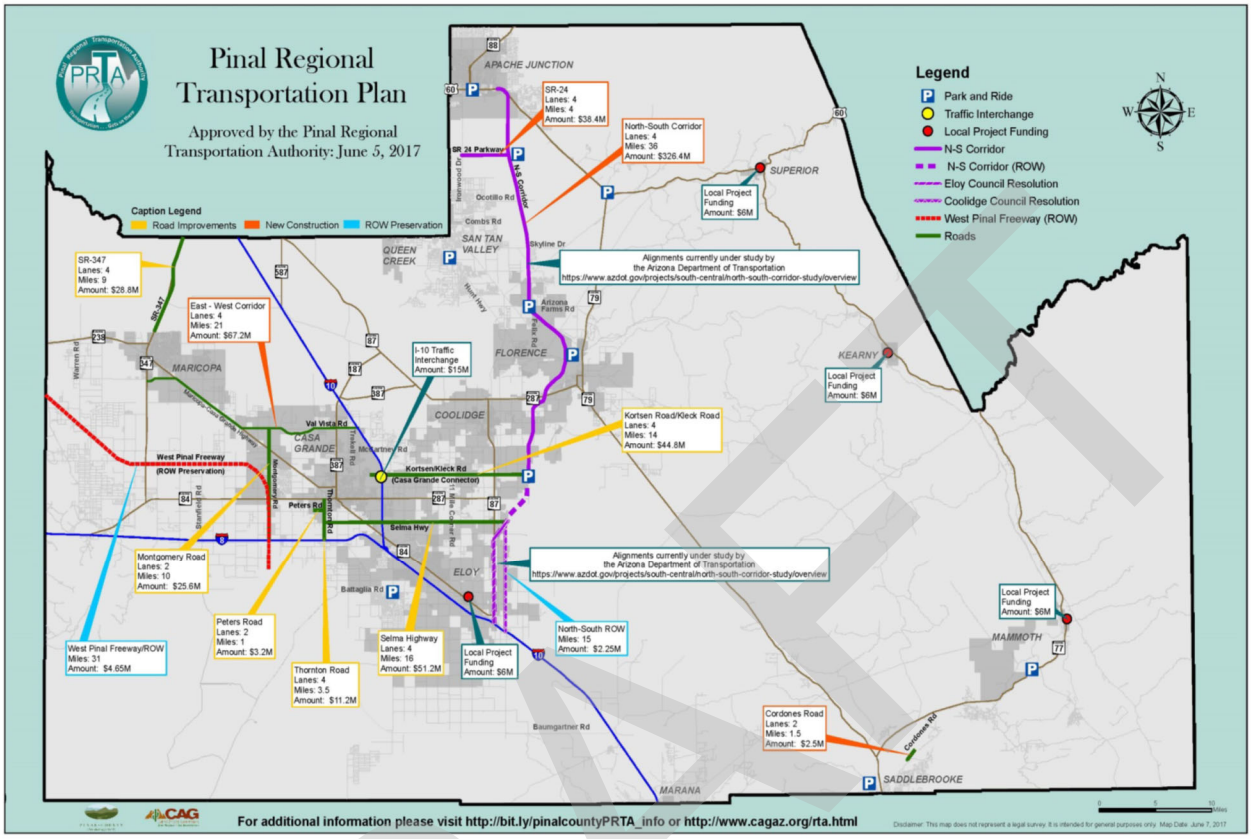
There are three elements of the plan: Roadway Element, Public Transportation Element, and Local Projects and Administrative Costs Element. Specific projects have been included in the roadway element that are intended to implement the North-South Freeway or to improve access to the facility.

The PRTP identifies the overall North-South Corridor on its map of future projects[2] (see Figure 2). The projects listed include funding for ROW acquisition and construction of portions of the Corridor.

The PRTP depiction of the Corridor alignment is conceptual in nature, noting: "Alignments currently under study by the Arizona Department of Transportation"—thus deferring the route definition to ADOT's ongoing NEPA process.

[2] The PRTP may be found online at: http://www.cagaz.org/RTA/maps/Approved_RTA_MapWithCaptions.pdf

Figure 2. Excerpt from Pinal Regional Transportation Plan



The PRTP also defines when construction will start for each project. Four 5-year construction periods have been identified. Fiscal year 2018 begins on July 1, 2017 and ends on June 30, 2018.

- Period 1 extends from fiscal year 2018 to fiscal year 2022.
- Period 2 extends from fiscal year 2023 to fiscal year 2027.
- Period 3 extends from fiscal year 2028 to fiscal year 2032.
- Period 4 extends from fiscal year 2033 to fiscal year 2037.

The following projects in the PRTP provide funding to advance the North-South facility or those connecting routes that would provide access to the facility (project descriptions are excerpted from the PRTA On Line Publicity Pamphlet Sample Ballot).

[note: the descriptions shown below are excerpts and therefore – suggest not accepting editor changes]

North-South Right-of-Way Preservation – $2.25 million – Phase I[3]

ROW will be acquired as part of the PRTP to allow for the preservation of future high-capacity transportation corridors. ROW will be preserved for the remainder of the North-South Corridor from the

[3] It is assumed that the PRTP uses the terms “Phases (I–IV)” and “Periods (1–4)” interchangeably.

Casa Grande Connector (Kortsen/Kleck roadway alignment) to the north and I-10 to the south. The estimated cost of this project is approximately $2.25 million of the PRTA funding.

North-South Corridor – $326.4 million – Phase II

This project involves the construction of a new 36-mile, north-to-south, limited-access four-lane principal facility between US 60 in Apache Junction to the north and Kortsen/Kleck Road to the south, in the city of Coolidge. The project scope involves purchasing land to establish a 300-foot-wide ROW corridor, to include design and construction. The estimated cost of this project is approximately $298.65 million, through PRTA funding. It is expected that Pinal County will contribute an additional $30 million in funding to this project.

State Route 24 Parkway – $38.4 million – Phase II

This project involves the construction of a new 4-mile, east-to-west, limited-access four-lane parkway facility with a median between SR 24 at Ironwood Road in the west to the future alignment of the North-South Corridor in the east. The project scope involves purchasing land to establish a 300-foot-wide ROW corridor, to include design and construction. The estimated cost of this project is approximately $38.4 million, through PRTA funding.

Casa Grande Connector – $44.8 million – Phase II

The Kortsen/Kleck Road alignment is also referred to as the “Casa Grande Connector.” This project calls for widening this facility from two lanes to four lanes from Henness Road in the west (in the city of Casa Grande) to the future alignment of the North-South Corridor in the east (in the city of Coolidge). The widening of the Casa Grande Connector will involve a 14-mile corridor, and represents a total of 28 additional lane miles of roadway construction. The estimated cost of this project is approximately $44.8 million.

Selma Highway – $51.2 million – Phase IV

The Selma Highway project calls for improvements to an existing two-lane roadway from Thornton Road in the west (in the city of Casa Grande) to the future North-South Corridor in the east (near the city of Coolidge). The project scope involves design and construction, and the purchase of ROW for various segments of the corridor. It also includes approximately 4 miles of new construction over graded, unpaved roadway segments, and a crossing over a drainage canal and railroad tracks at SR 84. The estimated cost of this project is approximately $51.2 million, through PRTA funding.

The projects and identified funding and phase (period or timeframe, as identified in the PRTP) are shown in Table 1.

Table 1. Pinal Regional Transportation Plan funded projects implementing the North-South Corridor and access roads

Location	Length (miles)	Funding ($ millions)	Phase (period)	Limits
North-South Corridor Right-of-Way	15	2.3	I	Kortsen-Kleck to I-10
North-South Corridor	36	326.4	II	US 60 to Kortsen-Kleck
State Route 24	4	38.4	II	Ironwood Dr to N/S Corridor
Kortsen-Kleck Road	14	44.8	II	Henness Rd to N/S Corridor
Selma Highway	16	51.2	IV	Thornton Rd to N/S Corridor

Source: Pinal Regional Transportation Plan

State Funding

In terms of state funding for the Corridor, funding was approved in the Arizona Fiscal Year 2022 budget to provide $4 million funding for a Tier 2 study related to the north-south corridor transportation project in Pinal County.

Approach to Implementation

Funding for the recommended strategies has not been identified at this time. Fiscal constraint requirements need to be satisfied for ADOT and PRTA to move the recommended strategies forward into the Tier 2 NEPA decision-making phase of study. Before ADOT can sign a final NEPA decision document (ROD, finding of no significant impact, or programmatic or nonprogrammatic CE), the proposed project, as defined in the NEPA document, must meet the following specific fiscal-constraint criteria:

- The proposed project or phases of the proposed project within the time horizon of the PRTP must be included in the fiscally constrained PRTP, and other phases of the project and associated costs beyond the PRTP horizon must be referenced in the fiscally unconstrained vision component of the PRTP.
- The project must be in a fiscally constrained Transportation Improvement Program (TIP), which includes: Federal-aid projects or project phases and state or locally funded regionally significant projects that require a federal action:
    - Full funding is reasonably available for the completion of all project phases within the time period anticipated for completion of the project.
    - At least one subsequent project phase, or the description of the next project phase, must be in the fiscally constrained TIP.
    - For project phases that are beyond the TIP years, the project must be in the fiscally constrained PRTP, and the estimated total project cost must be described within the financial element of the PRTP and/or applicable TIP.

The North-South Corridor Study considered a 20-year planning horizon, but it is estimated that full implementation of the Project would extend beyond 20 years. This implementation plan is focused on a potential interim implementation phase, which is the phase of the project that may be implemented within the 20-year planning horizon. Full implementation would be realized over many years of phased implementation as federal, state, and local funds are allocated to the project. The actual phasing of the project is not known at this time but will be determined as funding is allocated to the project.

Section of Independent Utility

A practical approach to implementing the Corridor through Pinal County is to segment the entire corridor into sections and undertake more detailed environmental studies on a series of projects that are consistent with the overall purpose and need identified in the Tier 1 EIS.

(Note that in the Tier 1 FEIS, the study area is divided into four segments that incorporate transition areas to allow the action corridor alternatives to shift east to west or west to east and to facilitate the evaluation of proposed action-related impacts. The four segments shown in Figure 1 are not representative of SIUs.)

Since it is likely that the project would be implemented in more than one phase, it is necessary that the system would operate acceptably at the conclusion of each phase. This is referred to as "independent utility"—the ability of each phase operating independently of each other. Mitigation measures needed in response to project impacts would be implemented with the phase in which the impacts occur, rather than deferred to a later phase. The implementation phases established as part of this project meet the following criteria:

- **Independent utility**. Each phase should have independent utility and logical termini to the extent that the phase provides transportation system benefits even in the absence of other phases.
- **Elements of purpose and need**. Each phase should contribute to meeting the purpose and need for the entire project.
- **Environmental impacts**. Individual phases should avoid the introduction of substantial additional environmental impacts that cannot be mitigated.

Based on traffic exchanges and service demands, each section should be independent, useful, and stand on its own merits within the framework of the Tier 1 FEIS and ROD. Each of these sections is referred to as an SIU. This implementation plan provides the basis for identifying individual, independent projects (SIUs).

If a build concept (or portion of a build concept) is advanced into Tier 2, subsequent Tier 2 NEPA documents prepared for these individual projects would address site-specific details before design and location decisions are made. As an example, final decisions on the precise location and configuration of lanes would be made at the conclusion of Tier 2, based on traffic projections or other factors, when more detailed alignment information is developed.

Using these criteria, the five SIUs shown in Figure 3 were developed. Tier 2 projects are not bound to the extents described in this implementation plan, and may be revised (consistent with the above criteria). This plan provides a starting point, identifies key issues and concerns that will need to be resolved before implementation, and provides a planning-level cost estimate (based on typical sections and broad assumptions consistent with the Tier 1 risk-based, corridor-level analysis).

The proposed SIUs are based on logical termini for the corridor, including connections to US 60, SR 24, and I-10. Interim SIUs would connect with the Pinal County Routes of Regional Significance and consider available funding sources (including the PRTP). The sections noted here are not binding—they provide a basis for consideration of the Corridor's implementation. It is anticipated that this implementation plan will be revisited regularly and updated as appropriate. Because of the unit basis of the cost estimates, the assumptions contained in this plan may be applied to sections that differ in length and termini.

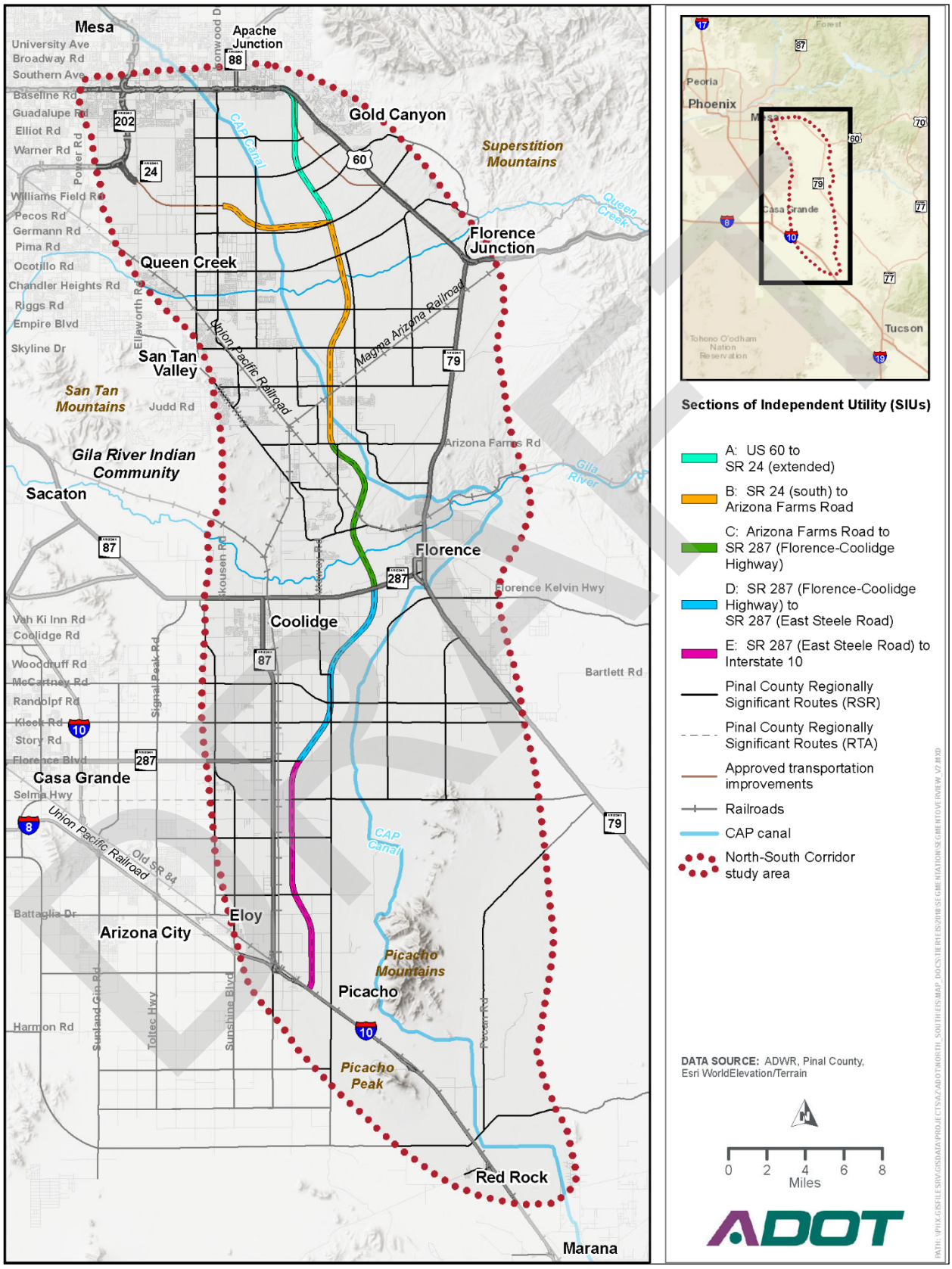
The five SIUs (Figure 3) are defined as:

- **SIU A**. US 60 to SR 24 (extended) – In this segment, the northern project terminus connects with US 60 in Apache Junction and extends south to the connection with SR 24 (when SR 24 is extended to Ironwood Drive by a currently programmed project).

- **SIU B**. SR 24 to Arizona Farms Road – Segment extends from SR 24 at Ironwood Drive south to Arizona Farms Road, notably crossing the Central Arizona Project (CAP) Canal (twice), the Rittenhouse Flood Retarding Structure, the Queen Creek, and the Magma Arizona Railroad.
- **SIU C**. Arizona Farms Road to SR 287 (Florence-Coolidge Highway) – Segment extends from Arizona Farms Road to SR 287 (Florence-Coolidge Highway), with crossings of the Copper Basin Railroad and the Gila River.
- **SIU D**. SR 287 (Florence-Coolidge Highway) to SR 287 (East Steele Road)
- **SIU E**. SR 287 (East Steele Road) to I-10 – Segment extends from SR 287 (East Steele Road) to I-10, crossing the Union Pacific Railroad before reaching the southern project terminus at I-10 between Eloy and Marana.

The next step in project implementation will be to prepare a Tier 2 study for the Selected Alternative, or SIU(s). Determination of the section or sections to advance first will be based on the need and local agency support. This plan has been prepared to provide information to aid this process.

Figure 3. Sections of Independent Utility for the North-South Corridor



Evaluation of the Sections of Independent Utility

Since an alignment is not determined, an initial concept of freeway construction was developed so that a planning-level estimate of the construction cost could be prepared for each segment. To accomplish this, broad assumptions were made to help define the facility.

The interim facility is intended to preserve the access control ultimately envisioned for this Corridor and it is anticipated that the facility will be built at or above grade throughout its length.

Roadway Design Elements

The ultimate future transportation facility in the Selective Alternative would be a controlled-access freeway with three travel lanes in each direction. It would have sufficient ROW to accommodate future passenger rail (identified as an option in the 2016 *Arizona Passenger Rail Corridor Study, Tucson to Phoenix, Final Tier 1 Environmental Impact Statement*).

The Tier 1 FEIS reports that traffic projections for the Selected Alternative will be below 40,000 average annual daily traffic (AADT) at the northern end (between Skyline Drive and Bella Vista Road) through the project planning horizon. Generalized AADT for freeways (uninterrupted flow facilities) with four lanes can accommodate more than 50 percent greater traffic at an acceptable level of service (64,000 AADT).

Typical Roadway Section

Modeling of traffic volumes for the Corridor was done at the system level; that is, the entire facility was modeled from end-to-end. Based on the overall system travel model, the greatest system-wide traffic volumes through the 2040 planning horizon would be served by a four-lane (two lanes in each direction) access-controlled facility. Although traffic volumes on some SIUs would be adequately served by a two-lane (one lane in each direction) facility, for the sake of consistency, and to provide improved regional mobility, for this plan, the facility was assumed with two lanes in each direction. It was also assumed that the roadway would have a rural section, as opposed to an urban section. Traffic modeling of individual SIUs was not performed.

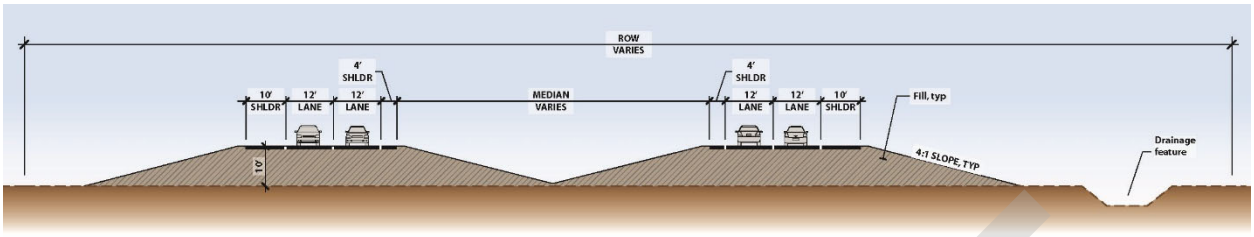
The study team envisioned that an alignment would typically be 400 feet wide, with accommodation of intercity rail at least for portions within the roadway ROW.[4] To facilitate future expansion of the roadway, it is anticipated that the initial lanes would be built to their maximum exterior width, accommodating two lanes in each direction for travel, inside and outside shoulders, and a wide median. This would provide for a wide center median, and would allow room to accommodate future widening into the median.

Figure 4 shows a typical roadway section. This figure shows a drainage feature on the east side of the freeway; drainage studies would be prepared as part of Tier 2 studies to define the types and locations of drainage infrastructure along the Corridor.

The typical roadway section is envisioned with two lanes in each travel direction. A drainage facility is shown on one side, where the primary drainage direction throughout much of the Corridor is east to west.

[4] The Arizona Passenger Rail Corridor Study ROD (approved in 2016) identified a routing option that would align with the Corridor from its southern terminus with I-10 to approximately the Magma Arizona Railroad, north of the Gila River. The rail study deferred to the North-South Corridor Study to identify which action corridor alternative would be followed by intercity passenger rail for this segment, should the build alternative be selected.

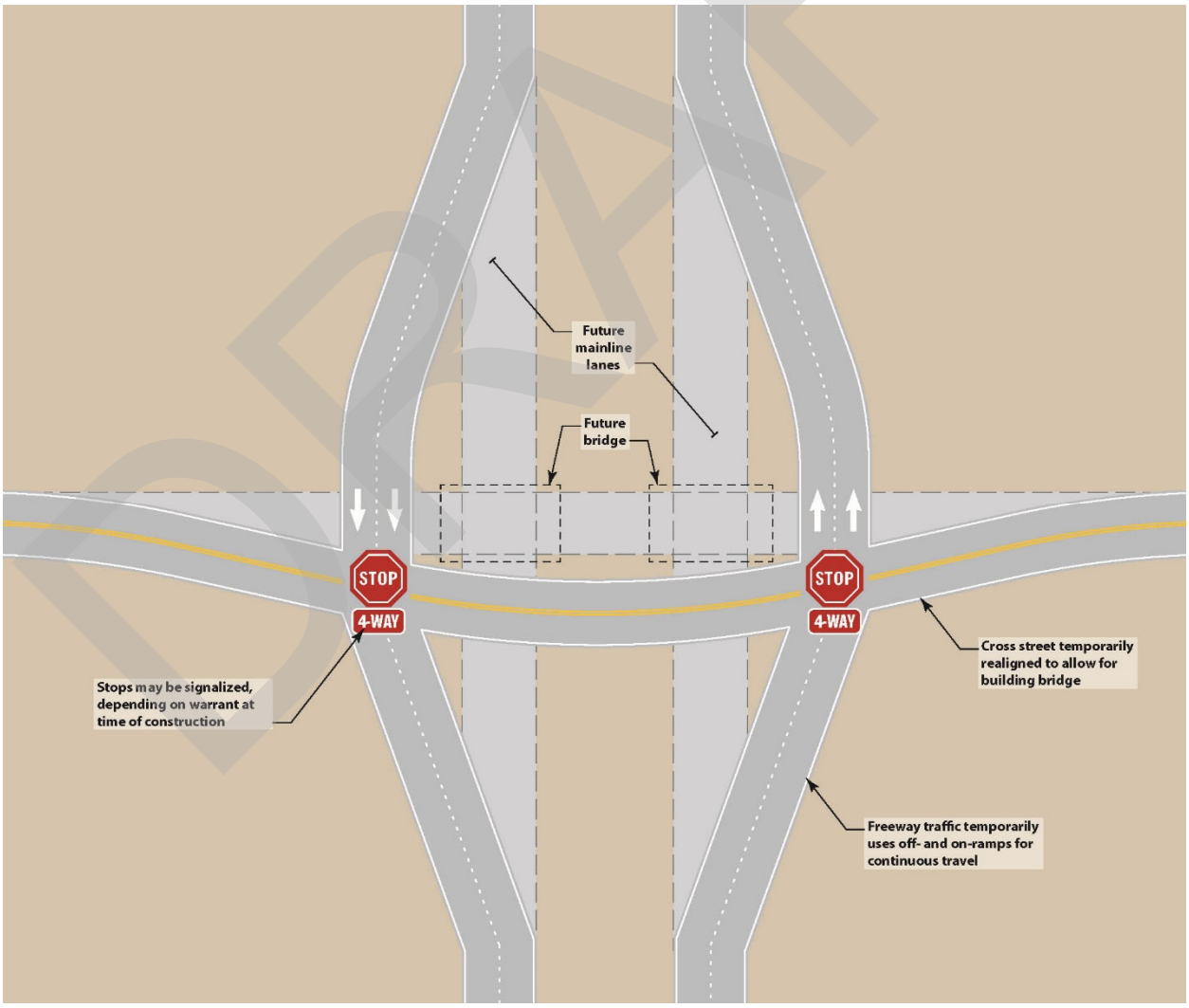
Figure 4. Roadway section



Intersection Treatment

For the interim facility, at-grade intersections are anticipated to be built at the potential traffic interchange locations (Figure 5; see Section 2.3.3, *Potential Traffic Interchanges*, of the Tier 1 FEIS and ROD). A subsequent phase of work would complete the freeway over the cross street. Whether the cross street is elevated over the freeway, or whether the freeway elevated over the cross street, is a design decision to be made during the Tier 2 process. Figure 5 shows how the interim at-grade intersections would be designed to accommodate a future grade separation involving the construction of bridges.

Figure 5. Interim facility at-grade traffic interchange



Potential traffic interchange locations identified in the Tier 1 FEIS and ROD (and subject to evaluation and changes in Tier 2 studies), with their corresponding SIU, are shown in Table 2. Most would be service traffic interchanges, connecting a cross street with the North-South Freeway. The traffic interchanges with US 60 and I-10 would be system traffic interchanges, which are freeway-to-freeway connections.

Table 2. Potential traffic interchanges, identified by Section of Independent Utility

SIU	Cross street	SIU	Cross street
A	U.S. Route 60 (system traffic interchange)	C	State Route 287
A	Elliot Road	D	Martin Road
B	State Route 24	D	Kleck Road
B	Ocotillo Road	D	Steele Road
B	Combs Road	E	Selma Highway
B	Skyline Drive	E	Hanna Road
B	Bella Vista Road	E	Houser Road
B	Arizona Farms Road	E	Interstate 10 (system traffic interchange)
C	Hunt Highway		

Note: SIU = Section of Independent Utility

Cross Streets

In the interim condition, existing cross streets (not anticipated to have access to the North-South facility) would be grade-separated from the facility (Table 3). Directional bridges at these locations could be expanded with future freeway improvements.

Table 3. Anticipated cross streets, identified by Section of Independent Utility

SIU	Cross street	SIU	Cross street	SIU	Cross street
A	Baseline Road (alignment)	B	Magma Road	D	McCartney Road
A	Warner Road (alignment)	C	Felix Road	D	Storey Road
A	Ray Road (alignment)	C	Heritage Road (alignment)	E	Earley Road
B	Germann Road (alignment)	C	Adamsville Road	E	Cornman Road
B	Hash Knife Draw Road (alignment)	D	Vah Ki Inn Road	E	Arica Road
B	Roberts Road	D	Valley Farms Road	E	Edgedale Road
B	Judys Road	D	Kenilworth Road	E	Milligan Road
B	Judd Road	D	Bartlett Road	E	Phillips Road

Note: SIU = Section of Independent Utility

Canals

In the interim condition, existing major canal crossings would be grade-separated from the facility (Table 4). Directional bridges at these locations could be expanded with future freeway improvements. Clear span and any dimensions are examples and not intended for design; engineering or design guidance would be verified with the canal owner and/or operator at the time of design.

Table 4. Anticipated canal crossings, identified by Section of Independent Utility

SIU	Canal crossing	SIU	Canal crossing
B	State Route 24 over Central Arizona Project Canal	C	North-South Freeway over North Side Canal, south of Hunt Highway
B	North-South Freeway over Central Arizona Project Canal	E	North-South Freeway over canal along Shedd Road

Note: SIU = Section of Independent Utility

Railroads

In the interim condition, railroad crossings would be grade-separated from the facility (Table 5). Directional bridges at these locations could be expanded with future freeway improvements. Clear span and any dimensions are examples and not intended for design; any engineering or design guidance would be verified with the railroad owner at the time of design.

Table 5. Anticipated railroad crossings, identified by Section of Independent Utility

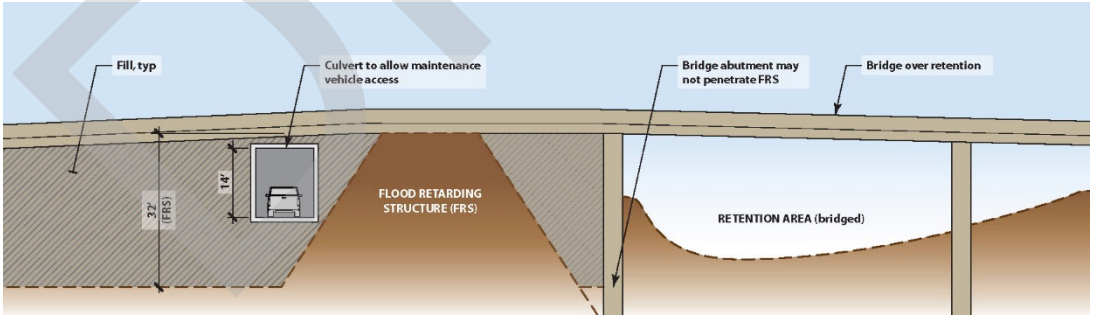
SIU	Railroad crossing	SIU	Railroad crossing
B	Magma Arizona Railroad	E	Union Pacific Railroad
C	Copper Basin Railroad		

Note: SIU = Section of Independent Utility

Unique Circumstances – Flood Control Structures

The Selected Alternative crosses the Rittenhouse Flood Retarding Structure to the east of the CAP Canal crossing. A concept crossing is shown in Figure 6 for illustrative purposes only and is not representative of planning for this crossing. Clear span and any dimensions are shown as examples, and are not intended for design; engineering or design guidance would be verified with the canal owner and/or operator at the time of design.

Figure 6. Conceptual crossing of the Rittenhouse Flood Retarding Structure



In the case of the crossing of the Rittenhouse Flood Retarding Structure, the freeway is envisioned as crossing the structure at grade, with a bridge over the area of floodwater detention upstream of the structure.

Phased Implementation Costs

Unit costs for each of the roadway design elements were prepared using planning-level general assumptions regarding the design. Then, by applying these unit costs to each of the SIUs, a generalized cost estimate was prepared.

Table 6 summarizes the overall project's construction cost estimate. More detailed information may be found in Appendix A, *Preliminary Cost Estimate*. This is a high-level cost estimate. As has been noted, an actual alignment identified in subsequent Tier 2 studies would provide substantially more clarity regarding costs. For example, while the Tier 1 FEIS and ROD estimated a cost per mile of an interim four-lane facility at $21.7 million, the published construction costs for the SR 24 project between Ellsworth Road and Ironwood Drive was $77 million for a 5-mile section, equating a cost of $15.4 million per mile (over 40 percent lower than the generalized unit cost per mile used for the Tier 1 EIS and ROD estimate).

Table 6. Estimated project construction costs

Category	Quantity	Unit cost ($ millions)	Construction cost ($ millions)	Assumptions
Centerline mile	56.6	22.2	1,256.7	Two lanes in each direction
Canal crossing	4	14.4	57.7	Assumes 80-foot-wide crossing
Flood-retarding structure crossing	1	20.0	20.0	Crosses perpendicular
Railroad crossing	3	18.4	55.1	Assumes 100-foot-wide crossing
U.S. Route 60 system traffic interchange	1	100.0	100.0	Unique cost element
Interstate 10 system traffic interchange	1	100.0	100.0	Unique cost element
Potential future service traffic interchange	14	7.4	104.2	Assumes at-grade
Grade-separated intersection	18	10.3	185.5	Assumes 100-foot-wide crossing
Bridge crossing (river)	1	29.0	29.0	Crosses perpendicular
Bridge crossing (wash)	1	3.6	3.6	Crosses perpendicular
Access road mile	12.6	8.9	112.3	One lane in each direction
		Total construction cost	**2,024.1**	

By applying simple unit costs to major freeway features (including centerline distance, bridges, intersections, and other features), a project construction cost estimate was produced for each of the SIUs. Table 7 shows the estimated project construction costs, by SIU.

Table 7. Estimated project construction costs in $ millions, by Sections of Independent Utility

Category	SIU A	SIU B	SIU C	SIU D	SIU E	Notes
Centerline mile	175.2	394.2	188.5	226.5	272.3	—
Canal crossing	0.0	28.9	14.4	0.0	14.4	—
Railroad crossing	0.0	18.4	18.4	0.0	18.4	—
Traffic interchange	7.4	37.2	14.9	22.3	22.3	—
Cross street intersection	0	41.2	20.6	61.8	61.8	—
Bridge	0.0	3.6	29.0	0.0	0.0	—
Access road (extensions)	46.3	39.2	0.0	8.9	17.8	—
Unique features (see notes for specific features, where identified)	100.0	20.0	0.0	0.0	100.0	SIU A – system interchange with US 60 SIU B – flood retarding structure SIU D – system interchange with I-10
Total	**$328.9**	**$582.7**	**$285.8**	**$319.5**	**$507.0**	

Notes: I-10 = Interstate 10, SIU = Section of Independent Utility, US 60 = U.S. Route 60

These provide a general planning-level estimate of the SIU preliminary costs.

Risk Factors

In the Tier 1 EIS, risk factors were used to describe potential impacts on specific resources within each corridor. The next step in implementation of the Selected Alternative is a Tier 2 analysis, which will result in a project alignment and design that seeks to avoid, minimize, and, when necessary, mitigate impacts on environmental resources. Several risk factors were identified with implementation of the Corridor. For this purpose, the risk factors are considered *low* (low or not applicable), *medium*, and *high*. The application of these factors is described below.

Structures

For the Corridor, structures will need to be built to carry the facility over natural features (such as rivers or washes) and built features (such as canals, railroads, and cross streets). Given the cost, possible Section 404 permits required under the Clean Water Act, and other requirements, structures present a project risk to be managed. In this case, the number of significant structures factors into the risk level.

Access

The project area is largely rural, and many of the roadway alignments in the area are unimproved, or yet to be developed. For those roadways that are identified as potential traffic interchange locations (see Section 2.3.3, *Potential Traffic Interchanges*, of the Tier 1 FEIS and ROD) the lack of through route capacity to the North-South Corridor is considered a risk because these roadways will need to be improved by the time of construction of the Corridor to facilitate access.

Right-of-Way

Without an alignment, nor a specific timeframe for construction, the ROW cost in the corridor is unknown. Risk related to ROW cost was determined based on the general level of development and the number of landowners in the Corridor. Increased development was interpreted as having a higher risk of increased ROW costs, whereas undeveloped land in the Corridor was interpreted as a lower risk. The greater number of landowners in the Corridor also increased the ROW costs and related risk level.

Environmental

Environmental risks relate to impacts on the natural and built environment. Archaeological sites, historic properties, protected communities (such as low-income and minority populations), and other environmental resources relate to the risks associated with each of the sections. Many of these impacts may be avoided, minimized, or mitigated, depending on the design determined in subsequent phases of work.

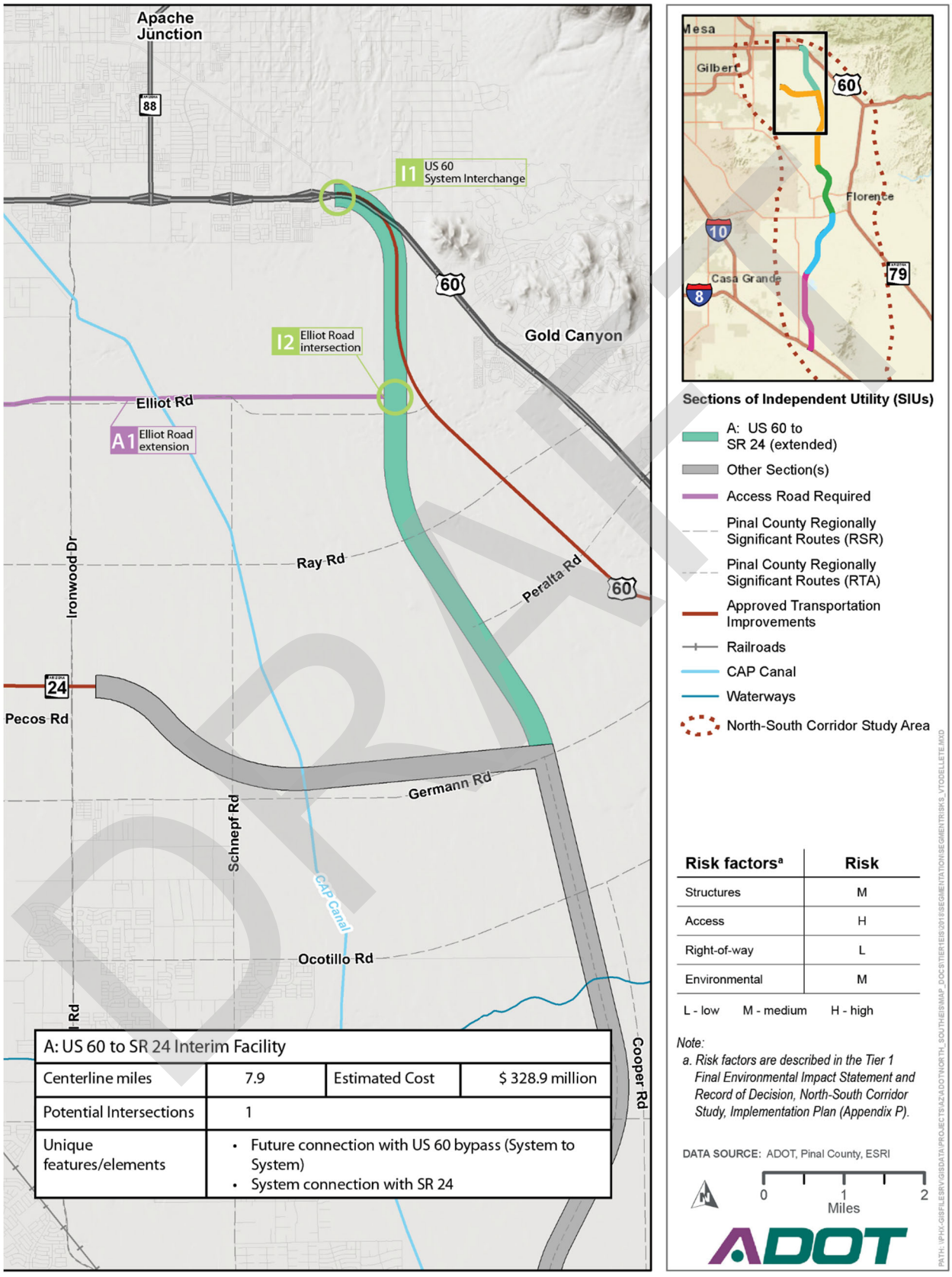
Other

Other risk factors include the level of public acceptance and support for the Selected Alternative. For example, in the northern portion of the study area, public acceptance for the Selected Alternative (an Eastern Alternative) is less than for a Western Alternative. Additionally, jurisdictions in the area have passed resolutions adopting the Western Alternative (specifically the W1b Alternative) as their preferred alternative.

Preliminary cost estimates were prepared for each of the typical roadway sections and elements, and the typical cost estimates are included in Appendix A. Figures 7 to 11 show features such as bridges and canal crossings that are considered risk factors. Risk factors introduce a *risk* of actual costs exceeding estimates; however, such risk factors were not applied to the estimate of costs.

In Figures 7 to 11, the risks are shown as low, medium, or high. A white circle represents a low risk, a half white and half black circle represents a medium risk, and a black circle represents a high risk.

Figure 7. Section of Independent Utility A – summary information



A: US 60 to SR 24 Interim Facility			
Centerline miles	7.9	Estimated Cost	$ 328.9 million
Potential Intersections	1		
Unique features/elements	• Future connection with US 60 bypass (System to System) • System connection with SR 24		

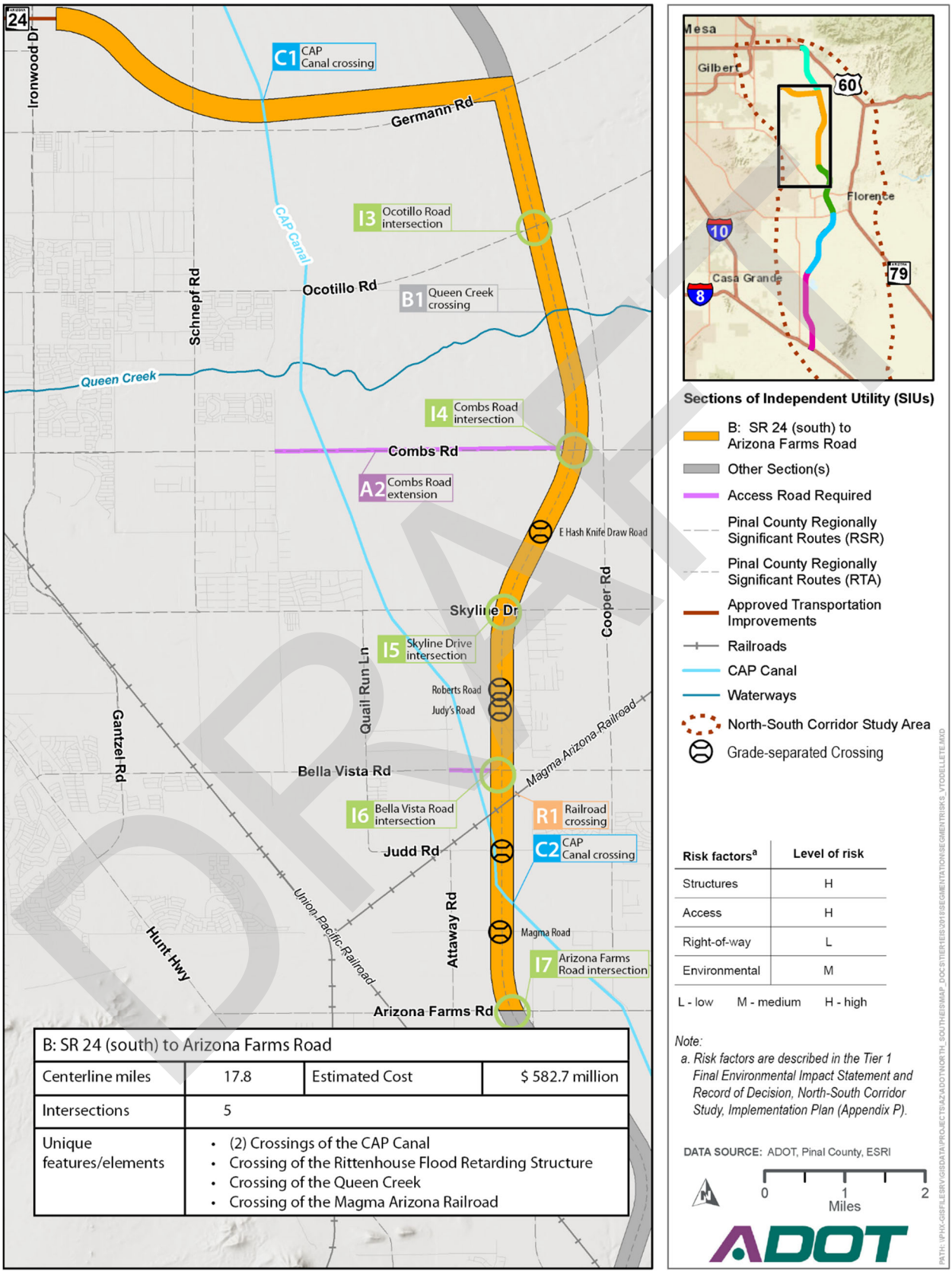
Risk factors[a]	Risk
Structures	M
Access	H
Right-of-way	L
Environmental	M

L - low M - medium H - high

Note:

a. Risk factors are described in the Tier 1 Final Environmental Impact Statement and Record of Decision, North-South Corridor Study, Implementation Plan (Appendix P).

Figure 8. Section of Independent Utility B – summary information



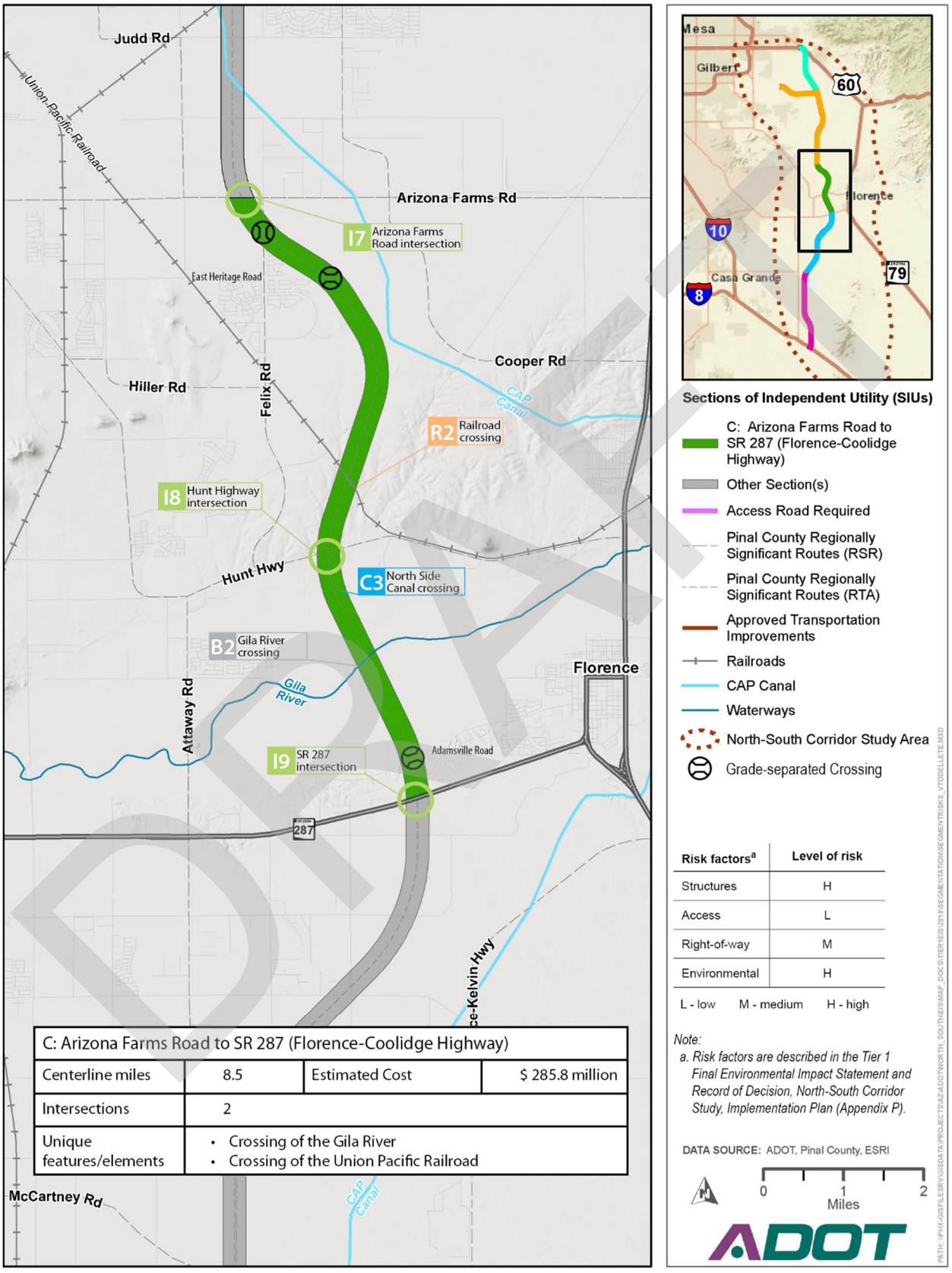
B: SR 24 (south) to Arizona Farms Road			
Centerline miles	17.8	Estimated Cost	$ 582.7 million
Intersections	5		
Unique features/elements	• (2) Crossings of the CAP Canal • Crossing of the Rittenhouse Flood Retarding Structure • Crossing of the Queen Creek • Crossing of the Magma Arizona Railroad		

Risk factors[a]	Level of risk
Structures	H
Access	H
Right-of-way	L
Environmental	M

L - low M - medium H - high

Note:
a. Risk factors are described in the Tier 1 Final Environmental Impact Statement and Record of Decision, North-South Corridor Study, Implementation Plan (Appendix P).

Figure 9. Section of Independent Utility C – summary information



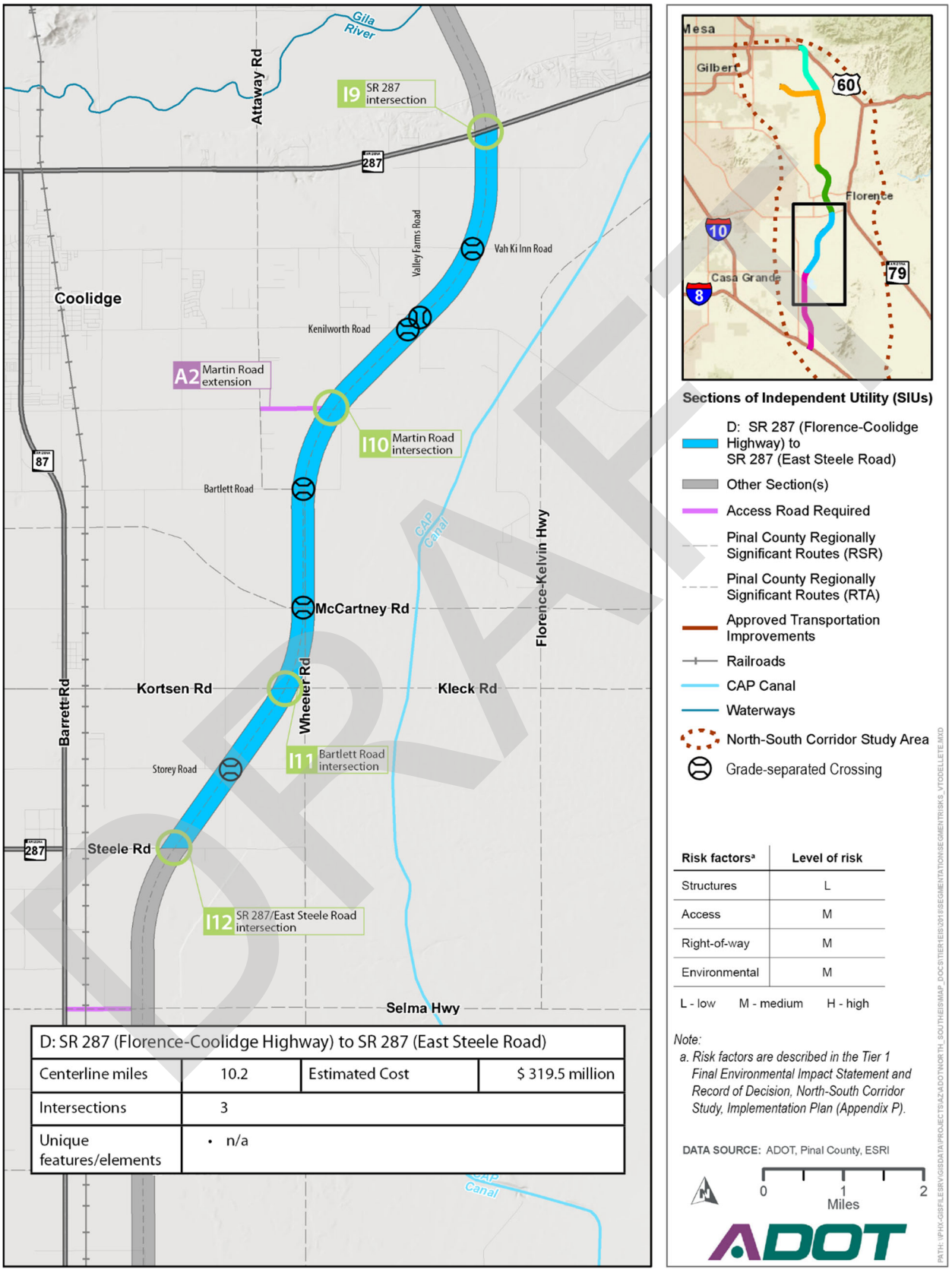
C: Arizona Farms Road to SR 287 (Florence-Coolidge Highway)			
Centerline miles	8.5	Estimated Cost	$ 285.8 million
Intersections	2		
Unique features/elements	• Crossing of the Gila River • Crossing of the Union Pacific Railroad		

Risk factors[a]	Level of risk
Structures	H
Access	L
Right-of-way	M
Environmental	H

L - low M - medium H - high

Note:
a. Risk factors are described in the Tier 1 Final Environmental Impact Statement and Record of Decision, North-South Corridor Study, Implementation Plan (Appendix P).

Figure 10. Section of Independent Utility D – summary information



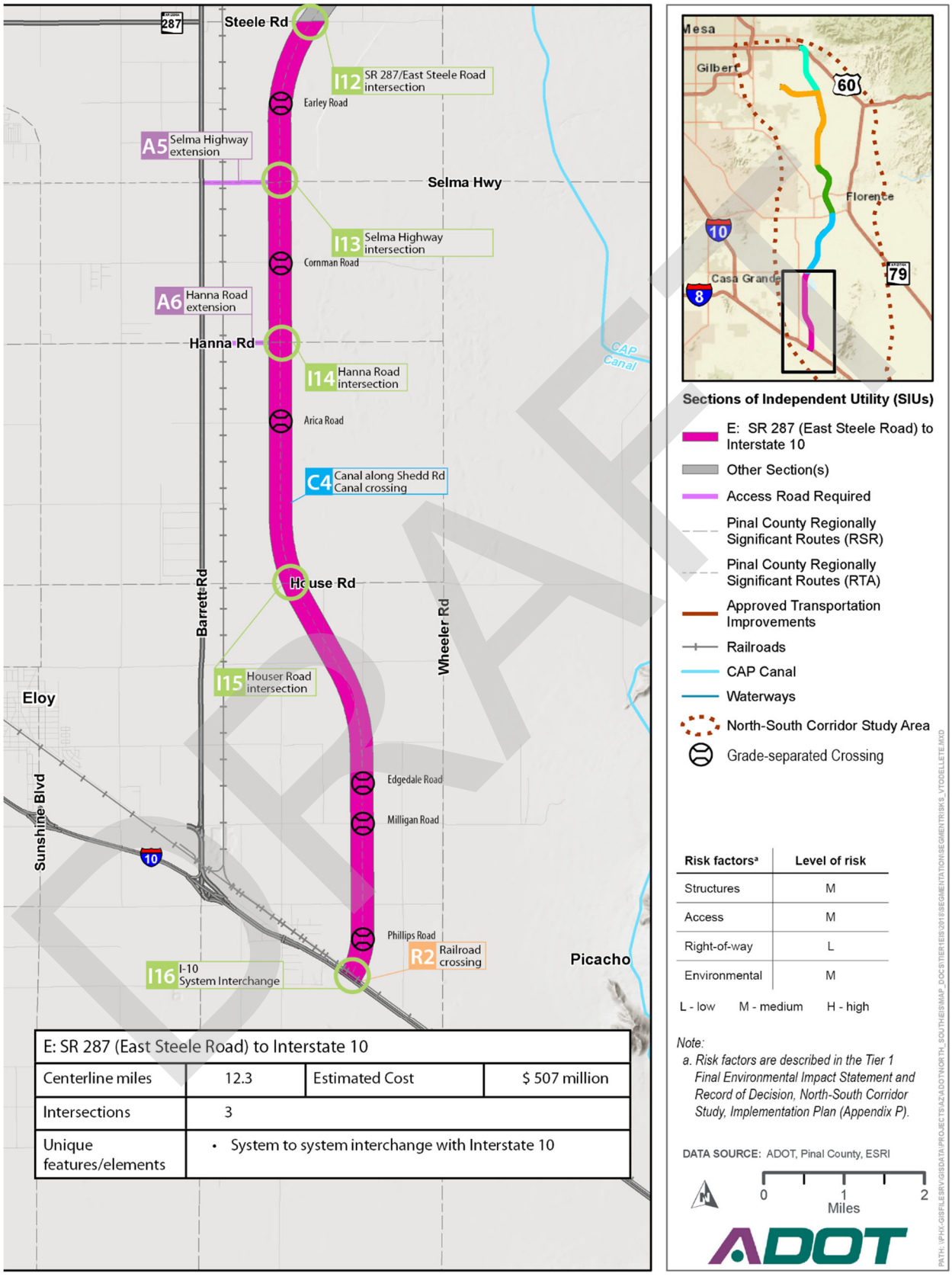
D: SR 287 (Florence-Coolidge Highway) to SR 287 (East Steele Road)			
Centerline miles	10.2	Estimated Cost	$ 319.5 million
Intersections	3		
Unique features/elements	• n/a		

Risk factors[a]	Level of risk
Structures	L
Access	M
Right-of-way	M
Environmental	M

L - low M - medium H - high

Note:
a. Risk factors are described in the Tier 1 Final Environmental Impact Statement and Record of Decision, North-South Corridor Study, Implementation Plan (Appendix P).

Figure 11. Section of Independent Utility E – summary information



E: SR 287 (East Steele Road) to Interstate 10			
Centerline miles	12.3	Estimated Cost	$ 507 million
Intersections	3		
Unique features/elements	• System to system interchange with Interstate 10		

Risk factors[a]	Level of risk
Structures	M
Access	M
Right-of-way	L
Environmental	M

L - low M - medium H - high

Note:
a. Risk factors are described in the Tier 1 Final Environmental Impact Statement and Record of Decision, North-South Corridor Study, Implementation Plan (Appendix P).

Phased Implementation

ADOT anticipates that the North-South Freeway would be incrementally funded and thus construction and operation of the facility would be phased. SIUs B, C, D, and E each have independent utility and logical termini and could go through Tier 2 studies independently. SIU A has no logical southern terminus without connecting with SR 24 or a regionally significant route farther to the south.

The Tier 1 FEIS and ROD (see Chapter 2, *Alternatives*, and Appendix B, *Traffic Information*) discussed how the greatest travel demand today—and through the planning horizon—is in the San Tan Valley area, where traffic is largely traveling to and from the Phoenix metropolitan area. This traffic observation was also noted in some of the comments on the Tier 1 DEIS from members of the public and from elected officials of the affected communities (see the Tier 1 FEIS and ROD Appendix O, *Agency and Public Comments*).

The PRTP identifies partial right-of-way preservation funding for the North-South Corridor from US 60 to I-10 in Phase I (2018 to 2022), and partial funding of the extension of SR 24 and the North-South facility (from US 60 to Kortsen/Kleck Road) in Phase II (2023 to 2027).

For these reasons, implementation of SIU A is anticipated to follow implementation of SIU B.

The Tier 1 FEIS and ROD reported that travel demand lessens as one travels south in the corridor, with the lowest demand occurring in the southern end of the corridor. Based on travel demand, the input of stakeholders, and the available funding,[5] it is anticipated that implementation would begin with SIU B, continuing south as funding and demand support, with SIU A following at some point, based on need and funding.

The next phase of implementation will be to authorize and begin a Tier 2 study on a SIU. With that information, the phased implementation plan may be revisited, and additional detail specific actions may be outlined to advance the development of the facility.

References

Transportation Research Board. 2009. “Guidelines on the Use of Tiered Environmental Impact Statements for Transportation Projects.” NCHRP 25-25, Task 38. Accessed December 1, 2020. http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP25-25(38)_FR.pdf.

Virginia Department of Transportation. 2005. “I-81 Corridor Improvement Study Tier 1 Draft Environmental Impact Statement.” Accessed December 1, 2020. http://www.virginiadot.org/projects/resources/Chapter_1_NEPA_Tiering_Process.doc.pdf.

[5] For the purposes of this implementation plan, it is assumed that Proposition 417 (Pinal County transportation excise tax) is upheld by the Arizona Supreme Court; a Tier 2 project requires a regional plan to identify project funding.

Appendix A. Preliminary Cost Estimate

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ARIZONA DEPARTMENT OF TRANSPORTATION
CONSTRUCTION COST ESTIMATE SUMMARY

ROUTE: North South Corridor **PROJECT DESCRIPTION:**
SEGMENT: Centerline Typical Section **ESTIMATE LEVEL:** Level 0
LENGTH: 1.00 miles **ADOT PROJECT NO.:** **DATE:** 2/9/21

ITEM	MAJOR ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST	Comments
200	**EARTHWORK**					
	CLEARING & REMOVALS	L.SUM	1	$ 350,000.00	350,000	Assume 350k per mile
	ROADWAY EXCAVATION	CU.YD.	0	$ 6.00	0	Assume only drainage excavation
	DRAINAGE EXCAVATION	CU.YD.	26,846	$ 8.00	214,770	Assume 3-ft deep, 20' bottom width, 2:1 sides, 12% shrink. One in each direction
	BORROW	CU.YD.	278,221	$ 15.00	4,173,310	Assume 10' high, 4:1 side slopes, remove drainage excavation
	SUBGRADE TREATMENT	SQ.YD.	0	$ 15.00	0	Assume none needed
	FURNISH WATER	MGAL	21,000	$ 10.00	210,000	Assume 60 Gallons for every CY of Ex and Borrow and AB
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 200				4,948,080	
300 & 400	**BASE AND SURFACE TREATMENT**					
	AGGREGATE BASE	SQ.YD.	44,587	$ 15.00	668,800	Assume AB equals PCCP + AC
	CONCRETE PAVEMENT	SQ.YD.	0	$ 55.00	0	Assume no PCCP on mainline
	ASP					
	HAL	SQ.YD.	44,587	$ 40.00	1,783,470	Assume 2 - 12' Lanes in both directions + 4' inside shoulder + 10' outside shoulder
	ARAC SURFACE	SQ.YD.	0	$ 6.00	0	Assume no ARAC on mainline
	MILLING & OVERLAY (1" AR-ACFC)	SQ.YD.	0	$ 16.00	0	Assume no mill and overlay due to new construction
	MISCELLANEOUS ITEMS	SQ.YD.				
	TOTAL ITEM 300 & 400				2,452,270	
500	**DRAINAGE**					
	DRAINAGE SYSTEM (CLOSED)	L.SUM	0	$ 10,000.00	0	Assume open drainage system only
	DRAINAGE SYSTEM (OPEN)	MILE	0.00	$ 1,000,000.00	0	Assume open drainage system only
	DRAINAGE SYSTEM (CHANNEL)	L.FT.	10,560	$ 100.00	1,056,000	Assume open drainage system only
	PUMP STATION (NEW)	EACH	0	$ 1,000,000.00	0	Assume open drainage system only
	PIPE CULVERTS	L.FT.	0	$ 370.00	0	Assume open drainage system only
	MISCELLANEOUS ITEMS	EACH				
	TOTAL ITEM 500				1,056,000	
600	**STRUCTURES**					
	FLYOVER RAMP (NEW SYSTEM TI)	SQ.FT.	0	$ 135.00	0	Assume no ramps in the typical mainline mile
	FLYOVER HOV RAMP	SQ.FT.	0	$ 135.00	0	Assume no ramps in the typical mainline mile
	OVERPASS TI BRIDGE (CONCRETE GIRDER)	SQ.FT.	0	$ 190.00	0	Assume no bridges in the typical mainline mile
	OVERPASS TI BRIDGE (STEEL GIRDER)	SQ.FT.	0	$ 300.00	0	Assume no bridges in the typical mainline mile
	RIVER CROSSING BRIDGE	SQ.FT.	0	$ 145.00	0	Assume no bridges in the typical mainline mile
	PEDESTRIAN BRIDGE	SQ.FT.	0	$ 180.00	0	Assume no bridges in the typical mainline mile
	BRIDGE WIDENING (STEEL GIRDER)	SQ.FT.	0	$ 180.00	0	Assume no bridge widening in the typical mainline mile
	BRIDGE REHABILITATION (DECK REPLACEMENT)	SQ.FT.	0	$ 100.00	0	Assume no bridge rehab in the typical mainline mile
	BOX CULVERT	L.FT./CELL	236	$ 1,330.00	313,880	Assumed one single cell box culvert per mile
	SIGN STRUCTURES (CANTILEVER)	EACH	4	$ 100,000.00	400,000	Assume 4 per mile
	ITS SIGN BRIDGE AND DMS PANEL	EACH	0	$ 200,000.00	0	Assume no sign bridges in typical mainline mile
	O&M CROSSING	EACH	0	$ 350,000.00	0	Assume no O&M crossings in typical mainline mile
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 600				713,880	
700	**TRAFFIC ENGINEERING**					
	SIGNING (FREEWAY)	MILE/DIR	2.00	$ 35,000.00	70,000	Assume 1 mile per direction
	SIGNING (CROSS STREET)	MILE	0.00	$ 65,000.00	0	Assume no cross streets in the typical mainline mile
	PAVEMENT MARKING	LANE-MILE	4.00	$ 5,000.00	20,000	Assume 2 lanes in each direction
	LIGHTING	MILE	0	$ 750,000.00	0	Assume no freeway lighting in rural area
	TRAFFIC SIGNAL	EACH	0	$ 250,000.00	0	Assume no traffic signals in the typical mainline mile
	INTELLIGENT TRANSPORTATION SYSTEM (ITS)	MILE	1.00	$ 525,000.00	525,000	Assume ITS will be put in place
	MISCELLANEOUS ITEMS	L.FT				
	TOTAL ITEM 700				615,000	
800	**ROADSIDE DEVELOPMENT**					
	LANDSCAPING AND TOPSOIL	SQ.YD.	0	$ 7.50	0	Assume no landscaping needed in rural area
	UTILITY RELOCATION	L.SUM	1	$ 50,000.00	50,000	Assume minimal utility impacts in typical mainline mile
	MISCELLANEOUS ITEMS	ACRE				
	TOTAL ITEM 800				50,000	
900	**INCIDENTALS**					
	RETAINING WALLS	SQ.FT.	0	$ 85.00	0	Assume no retaining wall in typical mainline mile
	SOUND WALLS	SQ.FT.	0	$ 40.00	0	Assume no sound wall in typical mainline mile
	ROADWAY APPURTENANCES	MILE	1.00	$ 400,000.00	400,000	Assume $400k/mile
	ADA IMPROVEMENTS	EACH	0	$ 1,000.00	0	Assume no ADA improvements in typical mainline mile
	TRANSIT APPURTENANCES	L.SUM				Assume no transit appurtenances in typical mainline mile
	RAILROAD ACCOMMODATIONS	L.SUM				Assume no railroad accommodations in typical mainline mile
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 900				400,000	
	SUBTOTAL A (ITEM SUBTOTAL)				**$10,235,200**	

PW	**PROJECT WIDE**						
	TRAFFIC CONTROL (2% OF SUBTOTAL A)				2.0%	204,700	
	DUST PALLIATIVE (1% OF SUBTOTAL A)(INCLUDED IN FURNISH WATER)				1.0%	102,400	
	QUALITY CONTROL (1% OF SUBTOTAL A)				1.0%	102,400	
	CONSTRUCTION SURVEYING (1.5% OF SUBTOTAL A)				1.5%	153,500	
	EROSION CONTROL (1% OF SUBTOTAL A)				1.0%	102,400	
	MOBILIZATION (10% OF SUBTOTAL A)				10.0%	1,023,500	
	UNIDENTIFIED ITEMS (30% OF SUBTOTAL A)				30.0%	3,070,600	
	SUBTOTAL B (SUBTOTAL A + PROJECT WIDE)					**$14,994,700**	
OTHER PROJ	**OTHER PROJECT COSTS**						
	DPS TRAFFIC CONTROL	HOUR	0	$	65.00	0	Assumed no DPS needed
	JOINT PROJECT AGREEMENT ITEMS					0	
	CONTRACTOR INCENTIVES	L.SUM	1	$	635,360.00	635,400	
	ENVIRONMENTAL MITIGATION	MILE	1.00	$	500,000.00	500,000	Assume $500,000 per mile
	PRESENT YEAR CONSTRUCTION BID COST (EXCLUDING UTILITIES & R/W)					**$16,130,100**	
INFL	**INFLATION AND BELOW THE LINE ITEMS**						
	POST DESIGN SERVICES (1% OF SUBTOTAL A)				1.0%	161,300	
	CONSTRUCTION CONTINGENCIES (5% OF SUBTOTAL A)				5.0%	806,500	
	CONSTRUCTION ENGINEERING (8% OF SUBTOTAL A)				8.0%	1,290,400	
	SUBTOTAL BASE YEAR CONSTRUCTION					**18,388,300**	
	INDIRECT COST ALLOCATION (10.14% OF SUBTOTAL B + OTHER PROJECT COSTS)				10.14%	1,864,600	
	CONSTRUCTION YEAR DEPARTMENT CONSTRUCTION COST (EXCLUDING UTILITIES & R/W)					**$20,252,900**	01C Estimate
DES	**PREDESIGN AND FINAL DESIGN**						
	PREDESIGN/NEPA/PI SERVICES (3% OF CONSTRUCTION YEAR COST)				3.0%	483,900	
	INDIRECT COST ALLOCATION (10.14% OF ALL PREDESIGN COSTS)				10.14%	49,100	
	SUBTOTAL PREDESIGN					**533,000**	
	FINAL DESIGN SERVICES (8% OF CONSTRUCTION YEAR COST)				8.0%	1,290,400	
	INDIRECT COST ALLOCATION (10.14% OF ALL DESIGN COSTS)				10.14%	130,800	
	SUBTOTAL FINAL DESIGN					**1,421,200**	
	TOTAL ESTIMATED DESIGN COST					**$1,954,200**	01L/01D Estimate
UTIL	**UTILITY RELOCATION**						
	PRIOR RIGHT UTILITY RELOCATIONS & SERVICE AGREEMENTS					0	
	INDIRECT COST ALLOCATION (10.14% OF ALL UTILITY COSTS)				10.14%	0	
	TOTAL ESTIMATED UTILITY COST					**$0**	01U Estimate
R/W	**RIGHT-OF-WAY**						
	RIGHT-OF-WAY / EASEMENT	ACRE	0.0	$	100,000.00	0	Assume ROW not included in the typical cost estimates
	INDIRECT COST ALLOCATION (10.14% OF ALL RIGHT-OF-WAY COSTS)				10.14%	0	
	ACQUISITION YEAR RIGHT-OF-WAY COSTS					**$0**	01R Estimate
	TOTAL ESTIMATED PROJECT COST					**$22,207,000**	

ARIZONA DEPARTMENT OF TRANSPORTATION
CONSTRUCTION COST ESTIMATE SUMMARY

ROUTE: North South Corridor **PROJECT DESCRIPTION:**
SEGMENT: Canal Crossing Typical Section **ESTIMATE LEVEL:** Level 0
LENGTH: 0.40 miles **ADOT PROJECT NO.:** **DATE:** 2/9/21

Assume typ canal = 80ft wide, 12' maint road either side, 1000' transition from 10' high to 25' high both sides of bridge

ITEM	MAJOR ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST	Comments
200	**EARTHWORK**					
	CLEARING & REMOVALS	L.SUM	1	$ 140,000.00	140,000	Assume 350k per mile
	ROADWAY EXCAVATION	CU.YD.	0	$ 6.00	0	Assume only drainage excavation
	DRAINAGE EXCAVATION	CU.YD.	10,169	$ 8.00	81,350	Assume 3-ft deep, 20' bottom width, 2:1 sides, 12% shrink. One in each direction
	BORROW	CU.YD.	148,350	$ 15.00	2,225,240	Assume 10' high at start then transistion to 25' high over 1000 ft, 4:1 side slopes, remove drainage excavation
	SUBGRADE TREATMENT	SQ.YD.	0	$ 15.00	0	Assume none needed
	FURNISH WATER	MGAL	11,000	$ 10.00	110,000	Assume 60 Gallons for every CY of Ex and Borrow
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 200				2,556,590	
300 & 400	**BASE AND SURFACE TREATMENT**					
	AGGREGATE BASE	SQ.YD.	17,835	$ 15.00	267,520	Assume AB equals PCCP + AC
	CONCRETE PAVEMENT	SQ.YD.	0	$ 45.00	0	Assume no PCCP on mainline
	ASPHALT PAVEMENT	SQ.YD.	17,835	$ 40.00	713,390	Assume 2 - 12' Lanes in both directions + 4' inside shoulder + 10' outside shoulder
	ARAC SURFACE	SQ.YD.	0	$ 6.00	0	Assume no ARAC on mainline
	MILLING & OVERLAY (1" AR-ACFC)	SQ.YD.	0	$ 16.00	0	Assume no mill and overlay due to new construction
	MISCELLANEOUS ITEMS	SQ.YD.				
	TOTAL ITEM 300 & 400				980,910	
500	**DRAINAGE**					
	DRAINAGE SYSTEM (CLOSED)	L.SUM		$ 10,000.00		Assume open drainage system only
	DRAINAGE SYSTEM (OPEN)	MILE		$ 1,000,000.00		Assume open drainage system only
	DRAINAGE SYSTEM (CHANNEL)	L.FT.	4,000	$ 100.00	400,000	Assume open drainage system only
	PUMP STATION (NEW)	EACH		$ 1,000,000.00		Assume open drainage system only
	PIPE CULVERTS	L.FT.		$ 370.00		Assume open drainage system only
	MISCELLANEOUS ITEMS	EACH				
	TOTAL ITEM 500				400,000	
600	**STRUCTURES**					
	FLYOVER RAMP (NEW SYSTEM TI)	SQ.FT.	0	$ 135.00	0	Assume no ramps in the typical canal crossing
	FLYOVER HOV RAMP	SQ.FT.	0	$ 135.00	0	Assume no ramps in the typical canal crossing
	OVERPASS TI BRIDGE (CONCRETE GIRDER)	SQ.FT.	10,800	$ 150.00	1,620,000	Assume 120' length bridge, 45' wide. Assume 2 bridges
	OVERPASS TI BRIDGE (STEEL GIRDER)	SQ.FT.	0	$ 300.00	0	Assume no bridges in the typical canal crossing
	RIVER CROSSING BRIDGE	SQ.FT.	0	$ 145.00	0	Assume no bridges in the typical canal crossing
	PEDESTRIAN BRIDGE	SQ.FT.	0	$ 180.00	0	Assume no bridges in the typical canal crossing
	BRIDGE WIDENING (STEEL GIRDER)	SQ.FT.	0	$ 180.00	0	Assume no bridge widening in the typical canal crossing
	BRIDGE REHABILITATION (DECK REPLACEMENT)	SQ.FT.	0	$ 100.00	0	Assume no bridge rehab in the typical canal crossing
	BOX CULVERT	L.FT./CELL	0	$ 1,330.00	0	Assume no box culverts in the typical canal crossing
	SIGN STRUCTURES (CANTILEVER)	EACH	2	$ 100,000.00	200,000	Assume 2 per canal crossing
	ITS SIGN BRIDGE AND DMS PANEL	EACH	0	$ 200,000.00	0	Assume no sign bridges in typical canal crossing
	O&M CROSSING	EACH	0	$ 350,000.00	0	Assume no O&M crossings in typical canal crossing
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 600				1,820,000	
700	**TRAFFIC ENGINEERING**					
	SIGNING (FREEWAY)	MILE/DIR	0.80	$ 35,000.00	28,000	Assume 0.4 mile per direction
	SIGNING (CROSS STREET)	MILE	0.00	$ 65,000.00	0	Assume no cross streets in the typical canal crossing
	PAVEMENT MARKING	LANE-MILE	1.60	$ 5,000.00	8,000	Assume 2 lanes in each direction
	LIGHTING	MILE	0.00	$ 750,000.00	0	Assume no lighting in rural area
	TRAFFIC SIGNAL	EACH	0	$ 250,000.00	0	Assume no traffic signals in the typical canal crossing
	INTELLIGENT TRANSPORTATION SYSTEM (ITS)	MILE	0.00	$ 525,000.00	0	Assume no ITS in rural area
	MISCELLANEOUS ITEMS	L.FT				
	TOTAL ITEM 700				36,000	
800	**ROADSIDE DEVELOPMENT**					
	LANDSCAPING AND TOPSOIL	SQ.YD.	0	$ 7.50	0	Assume no landscaping in rural area
	UTILITY RELOCATION	L.SUM	1	$ 50,000.00	50,000	Assume minimal utility impacts in typical canal crossing
	MISCELLANEOUS ITEMS	ACRE				
	TOTAL ITEM 800				50,000	
900	**INCIDENTALS**					
	RETAINING WALLS	SQ.FT.	7,500	$ 85.00	637,500	4 sides, assume bridge is 25-ft high. Retaining wall shaped like triangle is coming down at 3 to 1 to tie into existing. Giving a triangle area of 937.5 SF.
	SOUND WALLS	SQ.FT.	0	$ 40.00	0	Assume no sound wall in typical canal crossing
	ROADWAY APPURTENANCES	MILE	0.40	$ 400,000.00	160,000	Assume $1M/mile
	ADA IMPROVEMENTS	EACH	0	$ 1,000.00	0	Assume no ADA improvements in typical canal crossing
	TRANSIT APPURTENANCES	L.SUM				Assume no transit appurtenances in typical canal crossing
	RAILROAD ACCOMMODATIONS	L.SUM				Assume no railroad accommodations in typical canal crossing
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 900				797,500	
	SUBTOTAL A (ITEM SUBTOTAL)				**$6,641,000**	
PW	**PROJECT WIDE**					
	TRAFFIC CONTROL (2% OF SUBTOTAL A)			2.0%	132,800	
	DUST PALLIATIVE (1% OF SUBTOTAL A)(INCLUDED IN FURNISH WATER)			1.0%	66,400	
	QUALITY CONTROL (1% OF SUBTOTAL A)			1.0%	66,400	
	CONSTRUCTION SURVEYING (1.5% OF SUBTOTAL A)			1.5%	99,600	
	EROSION CONTROL (1% OF SUBTOTAL A)			1.0%	66,400	
	MOBILIZATION (10% OF SUBTOTAL A)			10.0%	664,100	
	UNIDENTIFIED ITEMS (30% OF SUBTOTAL A)			30.0%	1,992,300	
	SUBTOTAL B (SUBTOTAL A + PROJECT WIDE)				**$9,729,000**	
OTHER PROJ	**OTHER PROJECT COSTS**					
	DPS TRAFFIC CONTROL	HOUR	0	$ 65.00	0	Assumed no DPS needed
	JOINT PROJECT AGREEMENT ITEMS				0	
	CONTRACTOR INCENTIVES	L.SUM	1	$ 555,104.00	555,100	
	ENVIRONMENTAL MITIGATION	MILE	0.40	$ 500,000.00	200,000	Assume $500,000 per mile
	PRESENT YEAR CONSTRUCTION BID COST (EXCLUDING UTILITIES & R/W)				**$10,484,100**	
INFL	**INFLATION AND BELOW THE LINE ITEMS**					
	POST DESIGN SERVICES (1% OF SUBTOTAL A)			1.0%	104,800	
	CONSTRUCTION CONTINGENCIES (5% OF SUBTOTAL A)			5.0%	524,200	
	CONSTRUCTION ENGINEERING (8% OF SUBTOTAL A)			8.0%	838,700	
	SUBTOTAL BASE YEAR CONSTRUCTION				**11,951,800**	
	INDIRECT COST ALLOCATION (10.14% OF SUBTOTAL B + OTHER PROJECT COSTS)			10.14%	1,211,900	
	CONSTRUCTION YEAR DEPARTMENT CONSTRUCTION COST (EXCLUDING UTILITIES & R/W)				**$13,163,700**	01C Estimate
DES	**PREDESIGN AND FINAL DESIGN**					
	PREDESIGN/NEPA/PI SERVICES (3% OF CONSTRUCTION YEAR COST)			3.0%	314,500	
	INDIRECT COST ALLOCATION (10.14% OF ALL PREDESIGN COSTS)			10.14%	31,900	
	SUBTOTAL PREDESIGN				**346,400**	
	FINAL DESIGN SERVICES (8% OF CONSTRUCTION YEAR COST)			8.0%	838,700	

	INDIRECT COST ALLOCATION (10.14% OF ALL DESIGN COSTS)				10.14%	85,000	
	SUBTOTAL FINAL DESIGN					**923,700**	
	TOTAL ESTIMATED DESIGN COST					**$1,270,100**	01L/01D Estimate
UTIL	**UTILITY RELOCATION**						
	PRIOR RIGHT UTILITY RELOCATIONS & SERVICE AGREEMENTS					0	
	INDIRECT COST ALLOCATION (10.14% OF ALL UTILITY COSTS)				10.14%	0	
	TOTAL ESTIMATED UTILITY COST					**$0**	01U Estimate
R/W	**RIGHT-OF-WAY**						
	RIGHT-OF-WAY / EASEMENT	ACRE	0.0	$ 100,000.00		0	Assume ROW not included in the typical cost estimates
	INDIRECT COST ALLOCATION (10.14% OF ALL RIGHT-OF-WAY COSTS)				10.14%	0	
	ACQUISITION YEAR RIGHT-OF-WAY COSTS					**$0**	01R Estimate
	TOTAL ESTIMATED PROJECT COST					**$14,434,000**	

ARIZONA DEPARTMENT OF TRANSPORTATION
CONSTRUCTION COST ESTIMATE SUMMARY

ROUTE: North South Corridor **PROJECT DESCRIPTION:**
SEGMENT: Railroad Crossing Typical Section **ESTIMATE LEVEL:** Level 0
LENGTH: 0.41 miles **ADOT PROJECT NO.:** **DATE:** 1/20/21

Assume typ RR crossing = 150ft wide (accounting for 50' rail track and 50' clearance for access rds on each side), 1000' transition from 10' high to 30' high both sides of bridge

ITEM	MAJOR ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST	Comments
200	**EARTHWORK**					
	CLEARING & REMOVALS	L.SUM	1	$ 142,518.94	142,520	Assume 350k per mile
	ROADWAY EXCAVATION	CU.YD.	0	$ 6.00	0	Assume only drainage excavation
	DRAINAGE EXCAVATION	CU.YD.	10,169	$ 8.00	81,350	Assume 3-ft deep, 20' bottom width, 2:1 sides, 12% shrink. One in each direction
	BORROW	CU.YD.	172,053	$ 15.00	2,580,800	Assume 10' high at start then transistion to 30' high over 1000 ft, 4:1 side slopes, remove d
	SUBGRADE TREATMENT	SQ.YD.	0	$ 15.00	0	Assume none needed
	FURNISH WATER	MGAL	13,000	$ 10.00	130,000	Assume 60 Gallons for every CY of Ex and Borrow
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 200				2,934,670	
300 & 400	**BASE AND SURFACE TREATMENT**					
	AGGREGATE BASE	SQ.YD.	18,156	$ 15.00	272,330	Assume AB equals PCCP + AC
	CONCRETE PAVEMENT	SQ.YD.	0	$ 45.00	0	Assume no PCCP on mainline
	ASPHALT PAVEMENT	SQ.YD.	18,156	$ 40.00	726,220	Assume 2 - 12' Lanes in both directions + 4' inside shoulder + 10' outside shoulder
	ARAC SURFACE	SQ.YD.	0	$ 6.00	0	Assume no ARAC on mainline
	MILLING & OVERLAY (1" AR-ACFC)	SQ.YD.	0	$ 16.00	0	Assume no mill and overlay due to new construction
	MISCELLANEOUS ITEMS	SQ.YD.				
	TOTAL ITEM 300 & 400				998,550	
500	**DRAINAGE**					
	DRAINAGE SYSTEM (CLOSED)	L.SUM		$ 10,000.00		Assume open drainage system only
	DRAINAGE SYSTEM (OPEN)	MILE		$ 1,000,000.00		Assume open drainage system only
	DRAINAGE SYSTEM (CHANNEL)	L.FT.	2,150	$ 100.00	215,000	Assume open drainage system only
	PUMP STATION (NEW)	EACH		$ 1,000,000.00		Assume open drainage system only
	PIPE CULVERTS	L.FT.		$ 370.00		Assume open drainage system only
	MISCELLANEOUS ITEMS	EACH				
	TOTAL ITEM 500				215,000	
600	**STRUCTURES**					
	FLYOVER RAMP (NEW SYSTEM TI)	SQ.FT.	0	$ 135.00	0	Assume no ramps in the typical railroad crossing
	FLYOVER HOV RAMP	SQ.FT.	0	$ 135.00	0	Assume no ramps in the typical railroad crossing
	OVERPASS TI BRIDGE (CONCRETE GIRDER)	SQ.FT.	13,500	$ 190.00	2,565,000	Assume 150' length bridge, 45' wide. Assume 2 bridges
	OVERPASS TI BRIDGE (STEEL GIRDER)	SQ.FT.	0	$ 300.00	0	Assume no bridges in the typical railroad crossing
	RIVER CROSSING BRIDGE	SQ.FT.	0	$ 145.00	0	Assume no bridges in the typical railroad crossing
	PEDESTRIAN BRIDGE	SQ.FT.	0	$ 180.00	0	Assume no bridges in the typical railroad crossing
	BRIDGE WIDENING (STEEL GIRDER)	SQ.FT.	0	$ 180.00	0	Assume no bridge widening in the typical railroad crossing
	BRIDGE REHABILITATION (DECK REPLACEMENT)	SQ.FT.	0	$ 100.00	0	Assume no bridge rehab in the typical railroad crossing
	BOX CULVERT	L.FT./CELL	0	$ 1,330.00	0	Assume no box culverts in the typical railroad crossing
	SIGN STRUCTURES (CANTILEVER)	EACH	2	$ 100,000.00	200,000	Assume 4 per mile
	ITS SIGN BRIDGE AND DMS PANEL	EACH	0	$ 200,000.00	0	Assume no sign bridges in typical railroad crossing
	O&M CROSSING	EACH	0	$ 350,000.00	0	Assume no O&M crossings in typical railroad crossing
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 600				2,765,000	
700	**TRAFFIC ENGINEERING**					
	SIGNING (FREEWAY)	MILE/DIR	0.81	$ 35,000.00	28,500	Assume 0.41 mile per direction
	SIGNING (CROSS STREET)	MILE	0.00	$ 65,000.00	0	Assume no cross streets in the typical railroad crossing
	PAVEMENT MARKING	LANE-MILE	1.63	$ 5,000.00	8,140	Assume 2 lanes in each direction
	LIGHTING	MILE	0.00	$ 750,000.00	0	Assume no freeway lighting in rural area
	TRAFFIC SIGNAL	EACH	0	$ 250,000.00	0	Assume no traffic signals in the typical railroad crossing
	INTELLIGENT TRANSPORTATION SYSTEM (ITS)	MILE	0.00	$ 525,000.00	0	Assume no ITS needed in rural area
	MISCELLANEOUS ITEMS	L.FT				
	TOTAL ITEM 700				36,640	
800	**ROADSIDE DEVELOPMENT**					
	LANDSCAPING AND TOPSOIL	SQ.YD.	0	$ 7.50	0	Assume no landscaping in rural area
	UTILITY RELOCATION	L.SUM	1	$ 50,000.00	50,000	Assume minimal utility impacts in typical railroad crossing
	MISCELLANEOUS ITEMS	ACRE				
	TOTAL ITEM 800				50,000	
900	**INCIDENTALS**					
	RETAINING WALLS	SQ.FT.	10,800	$ 85.00	918,000	4 sides, assume bridge is 30-ft high. Retaining wall shaped like triangle is coming down at 3 to 1 to tie into existing. Giving a triangle area of 1350 SF.
	SOUND WALLS	SQ.FT.	0	$ 40.00	0	Assume no sound wall in typical railroad crossing
	ROADWAY APPURTENANCES	MILE	0.41	$ 400,000.00	162,880	Assume $400k/mile
	ADA IMPROVEMENTS	EACH	0	$ 1,000.00	0	Assume no ADA improvements in typical railroad crossing
	TRANSIT APPURTENANCES	L.SUM				Assume no transit appurtenances in typical railroad crossing
	RAILROAD ACCOMMODATIONS	L.SUM	1	$ 500,000.00	500,000	Assume railroad coordination and personnel needed
	MISCELLANEOUS ITEMS	L.SUM		.		
	TOTAL ITEM 900				1,580,880	
	SUBTOTAL A (ITEM SUBTOTAL)				**$8,580,700**	

PW	**PROJECT WIDE**						
	TRAFFIC CONTROL (2% OF SUBTOTAL A)				2.0%	171,600	
	DUST PALLIATIVE (1% OF SUBTOTAL A)(INCLUDED IN FURNISH WATER)				1.0%	85,800	
	QUALITY CONTROL (1% OF SUBTOTAL A)				1.0%	85,800	
	CONSTRUCTION SURVEYING (1.5% OF SUBTOTAL A)				1.5%	128,700	
	EROSION CONTROL (1% OF SUBTOTAL A)				1.0%	85,800	
	MOBILIZATION (10% OF SUBTOTAL A)				10.0%	858,100	
	UNIDENTIFIED ITEMS (30% OF SUBTOTAL A)				30.0%	2,574,200	
	SUBTOTAL B (SUBTOTAL A + PROJECT WIDE)					**$12,570,700**	
OTHER PROJ	**OTHER PROJECT COSTS**						
	DPS TRAFFIC CONTROL	HOUR	0	$	65.00	0	Assumed no DPS needed
	JOINT PROJECT AGREEMENT ITEMS					0	
	CONTRACTOR INCENTIVES	L.SUM	1	$	556,066.67	556,100	Used same equation as SR30
	ENVIRONMENTAL MITIGATION	MILE	0.41	$	500,000.00	203,600	Assume $500,000 per mile
	PRESENT YEAR CONSTRUCTION BID COST (EXCLUDING UTILITIES & R/W)					**$13,330,400**	
INFL	**INFLATION AND BELOW THE LINE ITEMS**						
	POST DESIGN SERVICES (1% OF SUBTOTAL A)				1.0%	133,300	
	CONSTRUCTION CONTINGENCIES (5% OF SUBTOTAL A)				5.0%	666,500	
	CONSTRUCTION ENGINEERING (8% OF SUBTOTAL A)				8.0%	1,066,400	
	SUBTOTAL BASE YEAR CONSTRUCTION					**15,196,600**	
	INDIRECT COST ALLOCATION (10.14% OF SUBTOTAL B + OTHER PROJECT COST				10.14%	1,540,900	
	CONSTRUCTION YEAR DEPARTMENT CONSTRUCTION COST (EXCLUDING UTILITIES & R/W)					**$16,737,500**	01C Estimate
DES	**PREDESIGN AND FINAL DESIGN**						
	PREDESIGN/NEPA/PI SERVICES (3% OF CONSTRUCTION YEAR COST)				3.0%	399,900	
	INDIRECT COST ALLOCATION (0% OF ALL PREDESIGN COSTS)				10.14%	40,500	
	SUBTOTAL PREDESIGN					**440,400**	
	FINAL DESIGN SERVICES (8% OF CONSTRUCTION YEAR COST)				8.0%	1,066,400	
	INDIRECT COST ALLOCATION (10.14% OF ALL DESIGN COSTS)				10.14%	108,100	
	SUBTOTAL FINAL DESIGN					**1,174,500**	
	TOTAL ESTIMATED DESIGN COST					**$1,614,900**	01L/01D Estimate
UTIL	**UTILITY RELOCATION**						
	PRIOR RIGHT UTILITY RELOCATIONS & SERVICE AGREEMENTS					0	
	INDIRECT COST ALLOCATION (10.14% OF ALL UTILITY COSTS)				10.14%	0	
	TOTAL ESTIMATED UTILITY COST					**$0**	01U Estimate
R/W	**RIGHT-OF-WAY**						
	RIGHT-OF-WAY / EASEMENT	ACRE	0.0	$	100,000.00	0	Assume ROW not included in the typical cost estimates
	INDIRECT COST ALLOCATION (10.14% OF ALL RIGHT-OF-WAY COSTS)				10.14%	0	
	ACQUISITION YEAR RIGHT-OF-WAY COSTS					**$0**	01R Estimate
	TOTAL ESTIMATED PROJECT COST					**$18,352,000**	

ARIZONA DEPARTMENT OF TRANSPORTATION
CONSTRUCTION COST ESTIMATE SUMMARY

ROUTE: North South Corridor **PROJECT DESCRIPTION:**
SEGMENT: TI Typical Section **ESTIMATE LEVEL:** Level 0
LENGTH: 0.57 miles **ADOT PROJECT NO.:** **DATE:** 1/20/21

ITEM	MAJOR ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST	Comments
200	**EARTHWORK**					
	CLEARING & REMOVALS	L.SUM	1	$ 198,863.64	198,860	Assume 350k per mile
	ROADWAY EXCAVATION	CU.YD.	0	$ 6.00	0	Assume only drainage excavation
	DRAINAGE EXCAVATION	CU.YD.	15,253	$ 8.00	122,030	Assume 3-ft deep, 20' bottom width, 2:1 sides, 12% shrink. One in each direction
	BORROW	CU.YD.	51,520	$ 15.00	772,800	Assume 10' high at start then transistion to 2' high over 1500 ft, 4:1 side slopes, assume 2' high crossroad over 1500', remove drainage excavation
	SUBGRADE TREATMENT	SQ.YD.	0	$ 15.00	0	Assume none needed
	FURNISH WATER	MGAL	5,000	$ 10.00	50,000	Assume 60 Gallons for every CY of Ex and Borrow
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 200				1,143,690	
300 & 400	**BASE AND SURFACE TREATMENT**					
	AGGREGATE BASE	SQ.YD.	16,444	$ 15.00	246,670	Assume AB equals PCCP + AC
	CONCRETE PAVEMENT	SQ.YD.		$ 45.00		Assume no PCCP in intersection
	ASPHALT PAVEMENT	SQ.YD.	16,444	$ 40.00	657,780	Assume 2 - 12' Lanes in both directions + 4' inside shoulder + 10' outside shoulder and assume 1 - 12' Lanes in both directions + 2-6' outside shoulder
	ARAC SURFACE	SQ.YD.	0	$ 6.00	0	Assume ARAC on all concrete pavement
	MILLING & OVERLAY (1" AR-ACFC)	SQ.YD.	0	$ 16.00	0	Assume no mill and overlay due to new construction
	MISCELLANEOUS ITEMS	SQ.YD.				
	TOTAL ITEM 300 & 400				904,450	
500	**DRAINAGE**					
	DRAINAGE SYSTEM (CLOSED)	L.SUM	0	$ 10,000.00	0	Assume open drainage system only
	DRAINAGE SYSTEM (OPEN)	MILE	0.00	$ 1,000,000.00	0	Assume open drainage system only
	DRAINAGE SYSTEM (CHANNEL)	L.FT.	3,000	$ 100.00	300,000	Assume open drainage system only
	PUMP STATION (NEW)	EACH	0	$ 1,000,000.00	0	Assume open drainage system only
	PIPE CULVERTS	L.FT.	0	$ 370.00	0	Assume open drainage system only
	MISCELLANEOUS ITEMS	EACH				
	TOTAL ITEM 500				300,000	
600	**STRUCTURES**					
	FLYOVER RAMP (NEW SYSTEM TI)	SQ.FT.	0	$ 135.00	0	Assume no ramps in the typical TI
	FLYOVER HOV RAMP	SQ.FT.	0	$ 135.00	0	Assume no ramps in the typical TI
	OVERPASS TI BRIDGE (CONCRETE GIRDER)	SQ.FT.	0	$ 190.00	0	Assume no bridges in the typical TI
	OVERPASS TI BRIDGE (STEEL GIRDER)	SQ.FT.	0	$ 300.00	0	Assume no bridges in the typical TI
	RIVER CROSSING BRIDGE	SQ.FT.	0	$ 145.00	0	Assume no bridges in the typical TI
	PEDESTRIAN BRIDGE	SQ.FT.	0	$ 180.00	0	Assume no bridges in the typical TI
	BRIDGE WIDENING (STEEL GIRDER)	SQ.FT.	0	$ 180.00	0	Assume no bridge widening in the typical TI
	BRIDGE REHABILITATION (DECK REPLACEMENT)	SQ.FT.	0	$ 100.00	0	Assume no bridge rehab in the typical TI
	BOX CULVERT	L.FT./CELL	0	$ 1,330.00	0	Assume no box culverts in the typical TI
	SIGN STRUCTURES (CANTILEVER)	EACH	2	$ 100,000.00	200,000	Assume 1 per direction
	ITS SIGN BRIDGE AND DMS PANEL	EACH	0	$ 200,000.00	0	Assume no sign bridges in typical TI
	O&M CROSSING	EACH	0	$ 350,000.00	0	Assume no O&M crossings in typical TI
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 600				200,000	
700	**TRAFFIC ENGINEERING**					
	SIGNING (FREEWAY)	MILE/DIR	1.14	$ 35,000.00	39,770	Assume .57 mile per direction
	SIGNING (CROSS STREET)	MILE	0.28	$ 65,000.00	18,470	Assume 1500ft crossroad (180' between ramps, 660' either side for access control)
	PAVEMENT MARKING	LANE-MILE	2.84	$ 5,000.00	14,200	Assume 2 lanes in each direction for mainline, 2 lane crossroad (1500ft)
	LIGHTING	MILE	0.00	$ 750,000.00	0	Assume no lighting in rural area
	TRAFFIC SIGNAL	EACH	0	$ 250,000.00	0	
	INTELLIGENT TRANSPORTATION SYSTEM (ITS)	MILE	0.00	$ 525,000.00	0	Assume no ITS in rural area
	MISCELLANEOUS ITEMS	L.FT				
	TOTAL ITEM 700				72,440	
800	**ROADSIDE DEVELOPMENT**					
	LANDSCAPING AND TOPSOIL	SQ.YD.	0	$ 7.50	0	Assume no landscaping in rural area
	UTILITY RELOCATION	L.SUM	1	$ 50,000.00	50,000	Assume minimal utility impacts in typical TI
	MISCELLANEOUS ITEMS	ACRE				
	TOTAL ITEM 800				50,000	
900	**INCIDENTALS**					
	RETAINING WALLS	SQ.FT.	0	$ 85.00	0	Assume no retaining walls in typical TI
	SOUND WALLS	SQ.FT.	0	$ 40.00	0	Assume no sound wall in typical TI
	ROADWAY APPURTENANCES	MILE	1.00	$ 400,000.00	400,000	Assume $400k/mile
	ADA IMPROVEMENTS	EACH	8	$ 1,000.00	8,000	Assume 4 per intersection
	TRANSIT APPURTENANCES	L.SUM				Assume no transit appurtenances in typical TI
	RAILROAD ACCOMMODATIONS	L.SUM				Assume no railroad accommodations in typical TI
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 900				408,000	
	SUBTOTAL A (ITEM SUBTOTAL)				**$3,078,600**	

PW	**PROJECT WIDE**						
	TRAFFIC CONTROL (4% OF SUBTOTAL A)				4.0%	123,100	
	DUST PALLIATIVE (1% OF SUBTOTAL A)(INCLUDED IN FURNISH WATER)				1.0%	30,800	
	QUALITY CONTROL (1% OF SUBTOTAL A)				1.0%	30,800	
	CONSTRUCTION SURVEYING (1.5% OF SUBTOTAL A)				1.5%	46,200	
	EROSION CONTROL (1% OF SUBTOTAL A)				1.0%	30,800	
	MOBILIZATION (10% OF SUBTOTAL A)				10.0%	307,900	
	UNIDENTIFIED ITEMS (30% OF SUBTOTAL A)				30.0%	923,600	
	SUBTOTAL B (SUBTOTAL A + PROJECT WIDE)					**$4,571,800**	
OTHER PROJ	**OTHER PROJECT COSTS**						
	DPS TRAFFIC CONTROL	HOUR		$	65.00	0	Assumed no DPS needed
	JOINT PROJECT AGREEMENT ITEMS					0	
	CONTRACTOR INCENTIVES	L.SUM	1	$	550,933.33	550,900	
	ENVIRONMENTAL MITIGATION	MILE	0.57	$	500,000.00	284,100	Assume $500,000 per mile
	PRESENT YEAR CONSTRUCTION BID COST (EXCLUDING UTILITIES & R/W)					**$5,406,800**	
INFL	**INFLATION AND BELOW THE LINE ITEMS**						
	POST DESIGN SERVICES (1% OF SUBTOTAL A)				1.0%	54,100	
	CONSTRUCTION CONTINGENCIES (5% OF SUBTOTAL A)				5.0%	270,300	
	CONSTRUCTION ENGINEERING (8% OF SUBTOTAL A)				8.0%	432,500	
	SUBTOTAL BASE YEAR CONSTRUCTION					**6,163,700**	
	INDIRECT COST ALLOCATION (10.14% OF SUBTOTAL B + OTHER PROJECT COSTS)				10.14%	625,000	
	CONSTRUCTION YEAR DEPARTMENT CONSTRUCTION COST (EXCLUDING UTILITIES & R/W)					**$6,788,700**	01C Estimate
DES	**PREDESIGN AND FINAL DESIGN**						
	PREDESIGN/NEPA/PI SERVICES (3% OF CONSTRUCTION YEAR COST)				3.0%	162,200	
	INDIRECT COST ALLOCATION (0% OF ALL PREDESIGN COSTS)				10.14%	16,400	
	SUBTOTAL PREDESIGN					**178,600**	
	FINAL DESIGN SERVICES (8% OF CONSTRUCTION YEAR COST)				8.0%	432,500	
	INDIRECT COST ALLOCATION (10.14% OF ALL DESIGN COSTS)				10.14%	43,900	
	SUBTOTAL FINAL DESIGN					**476,400**	
	TOTAL ESTIMATED DESIGN COST					**$655,000**	01L/01D Estimate
UTIL	**UTILITY RELOCATION**						
	PRIOR RIGHT UTILITY RELOCATIONS & SERVICE AGREEMENTS					0	
	INDIRECT COST ALLOCATION (10.14% OF ALL UTILITY COSTS)				10.14%	0	
	TOTAL ESTIMATED UTILITY COST					**$0**	01U Estimate
R/W	**RIGHT-OF-WAY**						
	RIGHT-OF-WAY / EASEMENT	ACRE	0.0	$	100,000.00	0	Assume ROW not included in the typical cost estimates
	INDIRECT COST ALLOCATION (10.14% OF ALL RIGHT-OF-WAY COSTS)				10.14%	0	
	ACQUISITION YEAR RIGHT-OF-WAY COSTS					**$0**	01R Estimate
	TOTAL ESTIMATED PROJECT COST					**$7,444,000**	

ARIZONA DEPARTMENT OF TRANSPORTATION
CONSTRUCTION COST ESTIMATE SUMMARY

ROUTE: North South Corridor **PROJECT DESCRIPTION:**
SEGMENT: Access Crossroad Typical Section **ESTIMATE LEVEL:** Level 0
LENGTH: 1.00 miles **ADOT PROJECT NO.:** **DATE:** 1/20/21

ITEM	MAJOR ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST	Comments
200	**EARTHWORK**					
	CLEARING & REMOVALS	L.SUM	1	$ 350,000.00	350,000	Assume 350k per mile
	ROADWAY EXCAVATION	CU.YD.	0	$ 6.00	0	Assume only drainage excavation
	DRAINAGE EXCAVATION	CU.YD.	16,521	$ 8.00	132,160	Assume 3-ft deep, 10' bottom width, 2:1 sides, 12% shrink. One in each direction
	BORROW	CU.YD.	2,253	$ 15.00	33,790	Assume 2' high, 6:1 side slopes, remove drainage excavation
	SUBGRADE TREATMENT	SQ.YD.	0	$ 15.00	0	Assume none needed
	FURNISH WATER	MGAL	3,000	$ 10.00	30,000	Assume 60 Gallons for every CY of Ex and Borrow
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 200				545,950	
300 & 400	**BASE AND SURFACE TREATMENT**					
	AGGREGATE BASE	SQ.YD.	28,160	$ 15.00	422,400	Assume AB equals PCCP + AC
	CONCRETE PAVEMENT	SQ.YD.	0	$ 45.00	0	Assume no PCCP on access crossroad
	ASPHALT PAVEMENT	SQ.YD.	28,160	$ 40.00	1,126,400	Assume 1 - 12' Lanes in both directions + 2-6' outside shoulder
	ARAC SURFACE	SQ.YD.	0	$ 6.00	0	Assume ARAC on all concrete pavement
	MILLING & OVERLAY (1" AR-ACFC)	SQ.YD.	0	$ 16.00	0	Assume no mill and overlay due to new construction
	MISCELLANEOUS ITEMS	SQ.YD.				
	TOTAL ITEM 300 & 400				1,548,800	
500	**DRAINAGE**					
	DRAINAGE SYSTEM (CLOSED)	L.SUM	0	$ 10,000.00	0	Assume open drainage system only
	DRAINAGE SYSTEM (OPEN)	MILE	0.00	$ 1,000,000.00	0	Assume open drainage system only
	DRAINAGE SYSTEM (CHANNEL)	L.FT.	10,560	$ 100.00	1,056,000	Assume open drainage system only
	PUMP STATION (NEW)	EACH	0	$ 1,000,000.00	0	Assume open drainage system only
	PIPE CULVERTS	L.FT.	0	$ 370.00	0	Assume open drainage system only
	MISCELLANEOUS ITEMS	EACH				
	TOTAL ITEM 500				1,056,000	
600	**STRUCTURES**					
	FLYOVER RAMP (NEW SYSTEM TI)	SQ.FT.	0	$ 135.00	0	Assume no ramps in access crossroad
	FLYOVER HOV RAMP	SQ.FT.	0	$ 135.00	0	Assume no ramps in access crossroad
	OVERPASS TI BRIDGE (CONCRETE GIRDER)	SQ.FT.	0	$ 190.00	0	Assume no bridges in access crossroad
	OVERPASS TI BRIDGE (STEEL GIRDER)	SQ.FT.	0	$ 300.00	0	Assume no bridges in access crossroad
	RIVER CROSSING BRIDGE	SQ.FT.	0	$ 145.00	0	Assume no bridges in access crossroad
	PEDESTRIAN BRIDGE	SQ.FT.	0	$ 180.00	0	Assume no bridges in access crossroad
	BRIDGE WIDENING (STEEL GIRDER)	SQ.FT.	0	$ 180.00	0	Assume no bridge widening in access crossroad
	BRIDGE REHABILITATION (DECK REPLACEMENT)	SQ.FT.	0	$ 100.00	0	Assume no bridge rehab in access crossroad
	BOX CULVERT	L.FT./CELL	0	$ 1,330.00	0	Assume no box culverts in access crossroad
	SIGN STRUCTURES (CANTILEVER)	EACH	0	$ 100,000.00	0	Assume no sign structures on access crossroad
	ITS SIGN BRIDGE AND DMS PANEL	EACH	0	$ 200,000.00	0	Assume no sign bridges on access crossroad
	O&M CROSSING	EACH	0	$ 350,000.00	0	Assume no O&M crossings in typical mainline mile
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 600				0	
700	**TRAFFIC ENGINEERING**					
	SIGNING (FREEWAY)	MILE/DIR	0.00	$ 35,000.00	0	Assume no freeway signing in access crossroad
	SIGNING (CROSS STREET)	MILE	1.00	$ 65,000.00	65,000	Assume 1 mile
	PAVEMENT MARKING	LANE-MILE	2.00	$ 5,000.00	10,000	Assume 1 lane in each direction
	LIGHTING	MILE	0	$ 750,000.00	0	Assume no lighting in rural area
	TRAFFIC SIGNAL	EACH	0	$ 250,000.00	0	Assume no traffic signals in access crossroad
	INTELLIGENT TRANSPORTATION SYSTEM (ITS)	MILE	0.00	$ 525,000.00	0	Assume no ITS in rural area
	MISCELLANEOUS ITEMS	L.FT				
	TOTAL ITEM 700				75,000	
800	**ROADSIDE DEVELOPMENT**					
	LANDSCAPING AND TOPSOIL	SQ.YD.	0	$ 7.50	0	Assume no landscaping in rural area
	UTILITY RELOCATION	L.SUM	1	$ 50,000.00	50,000	Assume minimal utility impacts in access crossroad
	MISCELLANEOUS ITEMS	ACRE				
	TOTAL ITEM 800				50,000	
900	**INCIDENTALS**					
	RETAINING WALLS	SQ.FT.	0	$ 85.00	0	Assume no retaining wall in access crossroad
	SOUND WALLS	SQ.FT.	0	$ 40.00	0	Assume no sound wall in access crossroad
	ROADWAY APPURTENANCES	MILE	1.00	$ 400,000.00	400,000	Assume $400k/mile
	ADA IMPROVEMENTS	EACH	0	$ 1,000.00	0	Assume no ADA improvements in access crossroad
	TRANSIT APPURTENANCES	L.SUM				Assume no transit appurtenances in access crossroad
	RAILROAD ACCOMMODATIONS	L.SUM				Assume no railroad accommodations in access crossroad
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 900				400,000	
	SUBTOTAL A (ITEM SUBTOTAL)				**$3,675,800**	

PW	**PROJECT WIDE**						
	TRAFFIC CONTROL (2% OF SUBTOTAL A)				2.0%	73,500	
	DUST PALLIATIVE (1% OF SUBTOTAL A)(INCLUDED IN FURNISH WATER)				1.0%	36,800	
	QUALITY CONTROL (1% OF SUBTOTAL A)				1.0%	36,800	
	CONSTRUCTION SURVEYING (1.5% OF SUBTOTAL A)				1.5%	55,100	
	EROSION CONTROL (1% OF SUBTOTAL A)				1.0%	36,800	
	MOBILIZATION (10% OF SUBTOTAL A)				10.0%	367,600	
	UNIDENTIFIED ITEMS (30% OF SUBTOTAL A)				30.0%	1,102,700	
	SUBTOTAL B (SUBTOTAL A + PROJECT WIDE)					**$5,385,100**	
OTHER PROJ	**OTHER PROJECT COSTS**						
	DPS TRAFFIC CONTROL	HOUR	0	$ 65.00		0	Assumed included in traffic control
	JOINT PROJECT AGREEMENT ITEMS					0	
	CONTRACTOR INCENTIVES	L.SUM	1	$ 586,080.00		586,100	
	ENVIRONMENTAL MITIGATION	MILE	1.00	$ 500,000.00		500,000	Assume $500,000 per mile
	PRESENT YEAR CONSTRUCTION BID COST (EXCLUDING UTILITIES & R/W)					**$6,471,200**	
INFL	**INFLATION AND BELOW THE LINE ITEMS**						
	POST DESIGN SERVICES (1% OF SUBTOTAL A)				1.0%	64,700	
	CONSTRUCTION CONTINGENCIES (5% OF SUBTOTAL A)				5.0%	323,600	
	CONSTRUCTION ENGINEERING (8% OF SUBTOTAL A)				8.0%	517,700	
	SUBTOTAL BASE YEAR CONSTRUCTION					**7,377,200**	
	INDIRECT COST ALLOCATION (10.14% OF SUBTOTAL B + OTHER PROJECT COSTS)				10.14%	748,000	
	CONSTRUCTION YEAR DEPARTMENT CONSTRUCTION COST (EXCLUDING UTILITIES & R/W)					**$8,125,200**	01C Estimate
DES	**PREDESIGN AND FINAL DESIGN**						
	PREDESIGN/NEPA/PI SERVICES (3% OF CONSTRUCTION YEAR COST)				3.0%	194,100	
	INDIRECT COST ALLOCATION (0% OF ALL PREDESIGN COSTS)				10.14%	19,700	
	SUBTOTAL PREDESIGN					**213,800**	
	FINAL DESIGN SERVICES (8% OF CONSTRUCTION YEAR COST)				8.0%	517,700	
	INDIRECT COST ALLOCATION (10.14% OF ALL DESIGN COSTS)				10.14%	52,500	
	SUBTOTAL FINAL DESIGN					**570,200**	
	TOTAL ESTIMATED DESIGN COST					**$784,000**	01L/01D Estimate
UTIL	**UTILITY RELOCATION**						
	PRIOR RIGHT UTILITY RELOCATIONS & SERVICE AGREEMENTS					0	
	INDIRECT COST ALLOCATION (10.14% OF ALL UTILITY COSTS)				10.14%	0	
	TOTAL ESTIMATED UTILITY COST					**$0**	01U Estimate
R/W	**RIGHT-OF-WAY**						
	RIGHT-OF-WAY / EASEMENT	ACRE	0.0	$ 100,000.00		0	Assume ROW not included in the typical cost estimates
	INDIRECT COST ALLOCATION (10.14% OF ALL RIGHT-OF-WAY COSTS)				10.14%	0	
	ACQUISITION YEAR RIGHT-OF-WAY COSTS					**$0**	01R Estimate
	TOTAL ESTIMATED PROJECT COST					**$8,909,000**	

ARIZONA DEPARTMENT OF TRANSPORTATION
CONSTRUCTION COST ESTIMATE SUMMARY

ROUTE: North South Corridor
SEGMENT: Access Crossroad Typical Section
PROJECT DESCRIPTION:
ESTIMATE LEVEL: Level 0
LENGTH: 0.43 miles
ADOT PROJECT NO.:
DATE: 1/20/21

Assume typ crossing = 150ft wide, 500' transition from 2' high to 25' high both sides of bridge

ITEM	MAJOR ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST	Comments
200	**EARTHWORK**					
	CLEARING & REMOVALS	L.SUM	0.43	$ 350,000.00	149,150	Assume 350k per mile
	ROADWAY EXCAVATION	CU.YD.	0	$ 6.00	0	Assume only drainage excavation
	DRAINAGE EXCAVATION	CU.YD.	16,521	$ 8.00	132,160	Assume 3-ft deep, 10' bottom width, 2:1 sides, 12% shrink. One in each direction
	BORROW	CU.YD.	61,479	$ 15.00	922,190	Assume 2' high at start then transistion to 25' high over 1000 ft, 4:1 side slopes, remove drainage excavation
	SUBGRADE TREATMENT	SQ.YD.	0	$ 15.00	0	Assume none needed
	FURNISH WATER	MGAL	6,000	$ 10.00	60,000	Assume 60 Gallons for every CY of Ex and Borrow
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 200				1,263,500	
300 & 400	**BASE AND SURFACE TREATMENT**					
	AGGREGATE BASE	SQ.YD.	9,000	$ 15.00	135,000	Assume AB equals PCCP + AC
	CONCRETE PAVEMENT	SQ.YD.	0	$ 45.00	0	Assume no PCCP on access crossroad
	ASPHALT PAVEMENT	SQ.YD.	9,000	$ 40.00	360,000	Assume 1 - 12' Lanes in both directions + 2-6' outside shoulder
	ARAC SURFACE	SQ.YD.	0	$ 6.00	0	Assume ARAC on all concrete pavement
	MILLING & OVERLAY (1" AR-ACFC)	SQ.YD.	0	$ 16.00	0	Assume no mill and overlay due to new construction
	MISCELLANEOUS ITEMS	SQ.YD.				
	TOTAL ITEM 300 & 400				495,000	
500	**DRAINAGE**					
	DRAINAGE SYSTEM (CLOSED)	L.SUM	0	$ 10,000.00	0	Assume open drainage system only
	DRAINAGE SYSTEM (OPEN)	MILE		$1,000,000.00		Assume open drainage system only
	DRAINAGE SYSTEM (CHANNEL)	L.FT.	4,000	$ 100.00	400,000	Assume open drainage system only
	PUMP STATION (NEW)	EACH	0	$1,000,000.00	0	Assume open drainage system only
	PIPE CULVERTS	L.FT.	0	$ 370.00	0	Assume open drainage system only
	MISCELLANEOUS ITEMS	EACH				
	TOTAL ITEM 500				400,000	
600	**STRUCTURES**					
	FLYOVER RAMP (NEW SYSTEM TI)	SQ.FT.	0	$ 135.00	0	Assume no ramps in access crossroad
	FLYOVER HOV RAMP	SQ.FT.	0	$ 135.00	0	Assume no ramps in access crossroad
	OVERPASS TI BRIDGE (CONCRETE GIRDER)	SQ.FT.	6,750	$ 190.00	1,282,500	Assume 150' length bridge, 45' wide
	OVERPASS TI BRIDGE (STEEL GIRDER)	SQ.FT.	0	$ 300.00	0	Assume no bridges in access crossroad
	RIVER CROSSING BRIDGE	SQ.FT.	0	$ 145.00	0	Assume no bridges in access crossroad
	PEDESTRIAN BRIDGE	SQ.FT.	0	$ 180.00	0	Assume no bridges in access crossroad
	BRIDGE WIDENING (STEEL GIRDER)	SQ.FT.	0	$ 180.00	0	Assume no bridge widening in access crossroad
	BRIDGE REHABILITATION (DECK REPLACEMENT)	SQ.FT.	0	$ 100.00	0	Assume no bridge rehab in access crossroad
	BOX CULVERT	L.FT./CELL	0	$ 1,330.00	0	Assume no box culverts in access crossroad
	SIGN STRUCTURES (CANTILEVER)	EACH	0	$ 100,000.00	0	Assume no sign structures on access crossroad
	ITS SIGN BRIDGE AND DMS PANEL	EACH	0	$ 200,000.00	0	Assume no sign bridges on access crossroad
	O&M CROSSING	EACH	0	$ 350,000.00	0	Assume no O&M crossings in typical mainline mile
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 600				1,282,500	
700	**TRAFFIC ENGINEERING**					
	SIGNING (FREEWAY)	MILE/DIR	0.00	$ 35,000.00	0	Assume no freeway signing in access crossroad
	SIGNING (CROSS STREET)	MILE	1.00	$ 65,000.00	65,000	Assume 1 mile
	PAVEMENT MARKING	LANE-MILE	2.00	$ 5,000.00	10,000	Assume 1 lane in each direction
	LIGHTING	MILE	0	$ 750,000.00	0	Assume no lighting in rural area
	TRAFFIC SIGNAL	EACH	0	$ 250,000.00	0	Assume no traffic signals in access crossroad
	INTELLIGENT TRANSPORTATION SYSTEM (ITS)	MILE	0.00	$ 525,000.00	0	Assume no ITS in rural area
	MISCELLANEOUS ITEMS	L.FT				
	TOTAL ITEM 700				75,000	
800	**ROADSIDE DEVELOPMENT**					
	LANDSCAPING AND TOPSOIL	SQ.YD.	0	$ 7.50	0	Assume no landscaping in rural area
	UTILITY RELOCATION	L.SUM	1	$ 50,000.00	50,000	Assume minimal utility impacts in access crossroad
	MISCELLANEOUS ITEMS	ACRE				
	TOTAL ITEM 800				50,000	
900	**INCIDENTALS**					
	RETAINING WALLS	SQ.FT.	7,500	$ 85.00	637,500	4 sides, assume bridge is 25-ft high. Retaining wall shaped like triangle is coming down at 3 to 1 to tie into existing. Giving a triangle area of 937.5 SF.
	SOUND WALLS	SQ.FT.	0	$ 40.00	0	Assume no sound wall in access crossroad
	ROADWAY APPURTENANCES	MILE	1.00	$ 400,000.00	400,000	Assume $400k/mile
	ADA IMPROVEMENTS	EACH	0	$ 1,000.00	0	Assume no ADA improvements in access crossroad
	TRANSIT APPURTENANCES	L.SUM				Assume no transit appurtenances in access crossroad
	RAILROAD ACCOMMODATIONS	L.SUM				Assume no railroad accommodations in access crossroad
	MISCELLANEOUS ITEMS	L.SUM				
	TOTAL ITEM 900				1,037,500	
	SUBTOTAL A (ITEM SUBTOTAL)				**$4,603,500**	
PW	**PROJECT WIDE**					
	TRAFFIC CONTROL (2% OF SUBTOTAL A)			2.0%	92,100	
	DUST PALLIATIVE (1% OF SUBTOTAL A)(INCLUDED IN FURNISH WATER)			1.0%	46,000	
	QUALITY CONTROL (1% OF SUBTOTAL A)			1.0%	46,000	
	CONSTRUCTION SURVEYING (1.5% OF SUBTOTAL A)			1.5%	69,100	
	EROSION CONTROL (1% OF SUBTOTAL A)			1.0%	46,000	
	MOBILIZATION (10% OF SUBTOTAL A)			10.0%	460,400	
	UNIDENTIFIED ITEMS (30% OF SUBTOTAL A)			30.0%	1,381,100	
	SUBTOTAL B (SUBTOTAL A + PROJECT WIDE)				**$6,744,200**	
OTHER PROJ	**OTHER PROJECT COSTS**					
	DPS TRAFFIC CONTROL	HOUR	0	$ 65.00	0	Assumed none needed
	JOINT PROJECT AGREEMENT ITEMS				0	
	CONTRACTOR INCENTIVES	L.SUM	1	$ 528,600.00	528,600	
	ENVIRONMENTAL MITIGATION	MILE	0.43	$ 500,000.00	213,100	Assume $500,000 per mile
	PRESENT YEAR CONSTRUCTION BID COST (EXCLUDING UTILITIES & R/W)				**$7,485,900**	
INFL	**INFLATION AND BELOW THE LINE ITEMS**					
	POST DESIGN SERVICES (1% OF SUBTOTAL A)			1.0%	74,900	
	CONSTRUCTION CONTINGENCIES (5% OF SUBTOTAL A)			5.0%	374,300	
	CONSTRUCTION ENGINEERING (8% OF SUBTOTAL A)			8.0%	598,900	
	SUBTOTAL BASE YEAR CONSTRUCTION				**8,534,000**	
	INDIRECT COST ALLOCATION (10.14% OF SUBTOTAL B + OTHER PROJECT COSTS			10.14%	865,300	

	CONSTRUCTION YEAR DEPARTMENT CONSTRUCTION COST (EXCLUDING UTILITIES & R/W			**$9,399,300**	01C Estimate
DES	**PREDESIGN AND FINAL DESIGN**				
	PREDESIGN/NEPA/PI SERVICES (3% OF CONSTRUCTION YEAR COST)		3.0%	224,600	
	INDIRECT COST ALLOCATION (10.14% OF ALL PREDESIGN COSTS)		10.14%	22,800	
	SUBTOTAL PREDESIGN			**247,400**	
	FINAL DESIGN SERVICES (8% OF CONSTRUCTION YEAR COST)		8.0%	598,900	
	INDIRECT COST ALLOCATION (10.14% OF ALL DESIGN COSTS)		10.14%	60,700	
	SUBTOTAL FINAL DESIGN			**659,600**	
	TOTAL ESTIMATED DESIGN COST			**$907,000**	01L/01D Estimate
UTIL	**UTILITY RELOCATION**				
	PRIOR RIGHT UTILITY RELOCATIONS & SERVICE AGREEMENTS			0	
	INDIRECT COST ALLOCATION (10.14% OF ALL UTILITY COSTS)		10.14%	0	
	TOTAL ESTIMATED UTILITY COST			**$0**	01U Estimate
R/W	**RIGHT-OF-WAY**				
	RIGHT-OF-WAY / EASEMENT	ACRE	0.0 $ 100,000.00	0	Assume ROW not included in the typical cost estimates
	INDIRECT COST ALLOCATION (10.14% OF ALL RIGHT-OF-WAY COSTS)		10.14%	0	
	ACQUISITION YEAR RIGHT-OF-WAY COSTS			**$0**	01R Estimate
	TOTAL ESTIMATED PROJECT COST			**$10,306,000**	