



Final Project Assessment

State Route 86 Kinney Road to Santa Cruz River

**Federal Project No. 000-1(186)
ADOT Project No. P860058P**

October 2016



JACOBS™

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A. INTRODUCTION

Federal Project 000-1(186), ADOT Project Number P860058P is a project for the improvement of State Route (SR) 86 from 700-foot east of the intersection with Kinney Road at milepost (MP) 166.35 in unincorporated Pima County to the intersection with Holiday Isle Boulevard at MP 170.85 in the City of Tucson within Pima County, Arizona. The length of the project is approximately 4.5 miles. See **Figure A-1: Study Overview**.

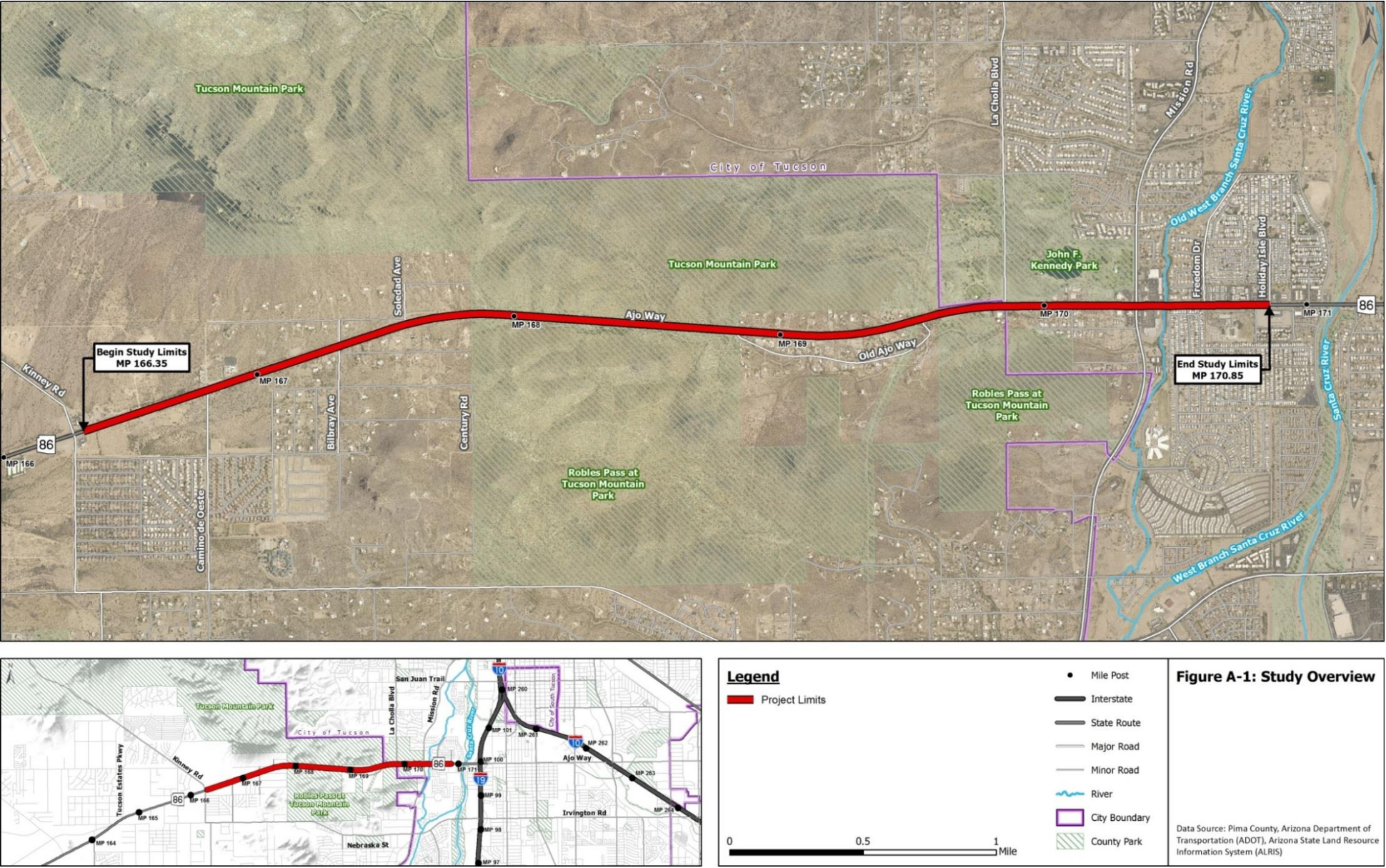
SR 86 (Ajo Way) is classified as a minor arterial and is located in the Arizona Department of Transportation (ADOT) Southcentral District in Pima County. As a regional transportation route connecting the Tucson metropolitan area to Kitt Peak, Sasabe and the sparsely populated areas in south-central Arizona, SR 86 is experiencing a steady increase of commuter traffic between the developing residential areas to the west and the employment destinations in Tucson. When completed, the large developments currently in the planning stages to the west of Kinney Road will accelerate the growth of traffic and contribute to commuter traffic on SR 86.

The focus of this project is to present the results of the evaluation of the existing and future conditions of the corridor with respect to the roadway, access, drainage, capacity, and safety features. The project identified and assessed improvements needed to enhance the capacity and safety of the corridor. The inventory and evaluation of SR 86 will be documented in two documents: a Project Assessment (PA) document for the engineering features which will include preliminary design and a Planning and Environmental Linkages (PEL) for the environmental conditions. Information summarized in the PA is the culmination of three Working Papers and PEL compiled for this study.

Modifications included a continuous median for the length of the project with intersection channelization and widening to reduce congestions at study intersections. See **Section C, Traffic** and **Appendix A: Typical Roadway Sections and Plan Sheets** in this report. The Preliminary Design (includes development of project plans through 30% design), Right-of-Way Plans and Final Design will be accomplished under a separate contract with an On-Call Consultant.

Preparation of the Preliminary Design, Right-of-Way Plans, Acquisition of Right-of-Way and Final Design were not included in the ADOT State Transportation Improvement Program (STIP) Fiscal Year (FY) 2016-2020 or the Pima Association of Governments (PAG) FY 2016-2020 Regional Transportation Improvement Program (TIP).

ADOT STIP FY 2016-2020 listed the pavement preservation of SR 86 from Kinney Road to Santa Cruz River as a reserve project in the PAG FY 2016-2020 Regional TIP. Due to funding, reserve projects will be considered during the next TIP cycle.



Adopted in May 2016, the PAG 2045 Regional Mobility and Accessibility Plan (RMAP) recommends widening SR 86 to six-lanes (three-lanes in each direction) from Kinney Road to Mission Road by FY 2026-2035 with an estimated cost of \$9 million (M).

The 3.5 mile segment from 700-foot east of Kinney Road to La Cholla Boulevard is in the urban fringe area that passes through a saddle in the Tucson Mountain Range in the Tucson Mountain Park and Robles Pass at Tucson Mountain Park. The 1.0 mile segment from La Cholla Boulevard to Holiday Isle Boulevard is in the urban area and adjacent to John F. Kennedy Park, Mission Library, two shopping plazas, and an elementary school. The proposed roadway concept design reflects the requirement of the urban and fringe areas.

The purpose of the project is to widen SR 86 to six-lanes to increase capacity of the mainline and intersections for a safe and efficient highway for both the near future and through the design year 2040.

A Kickoff Meeting was held September 2, 2015 at the ADOT Tucson District Office with the Technical Advisory Committee (TAC) to introduce the SR 86 project, discuss the work plan, the schedule, and to identify issues to be addressed. Additional TAC meetings were held January 26, 2016, April 15, 2016 and August 17, 2016 to discuss project progress and preliminary roadway concepts for the improvement of SR 86, and provide feedback.

Agency and Public Scoping Meetings were held on November 10, 2015 and February 10, 2016 to present current and future transportation conditions along the SR 86 and obtain input from residents and local, State, and Federal Agencies. A Public Information Meeting was held on April 20, 2016 to present the recommend SR 86 improvements and obtain input from residents and local businesses.

B. BACKGROUND

Based on data provided by the ADOT, the following projects identified in **Table B-1: Previous Roadway Projects** have been completed within the project limits:

Table B-1: Previous Roadway Projects

Project No. / Name	Beginning	Ending	As-Built Date	Description
Non S-222-501	170.18	171.07	1962	Widen SR 86, Mission Road to the Santa Cruz River to a 4-lane divided roadway section
S-SU-222(23)	167.13	170.14	1966	Widen SR 86 to 40' wide roadway, Kinney Road to La Cholla and a 4-lane divided roadway section La Cholla to Mission Rd
F-056-1(1)	165.88	169.94	1980	Widen SR 86 to a 4-lane divided roadway section Kinney Road to La Cholla Blvd
F-056-1-510	165.14	169.69	1996	Pavement preservation (mill and overlay) w/ signal modification at Kinney Road
F-056-1-505	167.30	171.08	1998	WB mill and overlay to La Cholla, mill and overlay La Cholla to Santa Cruz River
086-A(203)A	166.50	169.67	2010	Pavement preservation - mill and overlay
086-A-NFA	166.79	166.82	2011	Widening and signalization of Camino de Oeste intersection

Existing land use in the vicinity of SR 86 is primarily comprised of single family residential housing, large mobile home communities, parks and recreational areas, commercial areas, and vacant land.

The 3.5 mile segment from 700-feet east of Kinney Road to La Cholla Boulevard is located in the unincorporated portion of Pima County and reflects an urban fringe setting with pockets of private residential property, park and recreational areas, commercial areas, and vacant land. Activity centers include:

- Just west of the project limit, a commercial area is located at the intersection of SR 86 and Kinney Road; businesses include McDonald’s and Tiny’s Steakhouse on the north side of SR 86 and Circle K on the south side of SR 86 just east of Kinney Road.

- West Ajo Feed and Supply store is located at the northwest corner of SR 86 and Camino de Oeste/Bopp Road intersection.
- There are three churches; Mt. Zion Lutheran Church on the north side of the SR 86 east of the Camino de Oeste/Bopp Road intersection; Holy Way Presbyterian Church on the southwest corner of SR 86 and Bilbray Avenue intersection, and Mission Park Baptist Church on the southwest corner of SR 86 and La Cholla Boulevard intersection.

Figure B-1: SR 86 west of Bilbray Avenue Looking East near Holy Way Presbyterian Church



- Tucson Mountain Park, a 31.5-square-mile regional Pima County park, is located on the north side of SR 86 and extends from approximately the Century Road alignment to Tucson City limits just east of Old Ajo Way (east access point).
- San Robles Pass at Tucson Mountain Pass, the 1.6-square-mile regional Pima County park, is located south of SR 86 and extends from roughly Century Road to west of Mission Road in the City of Tucson.
- Combined, the parks offer 78 linear miles of open trails that are utilized by hikers, bicyclists, and equestrian riders. Two box culverts, at MP 167.90 and MP 168.55, provide access and trail continuity to and from each of the parks. Two small gravel parking areas on the north side of SR 86 at MP 167.89 and MP 168.54 provide limited access to the parks and trails.

Figure B-2: Ledger Surfer Trail at San Robles Pass at Tucson Mountain Pass



- A 0.07-square-mile parcel of Arizona State Trust Land is located less than a quarter mile south of SR 86 at MP 169.
- Camino de Oeste/Bopp Road, Bilbray Avenue, and Old Ajo Way provide access to residential developments and pockets of residences located north and south of SR 86.

The 1.0-mile segment from La Cholla Boulevard to Holiday Isle Boulevard is located in the incorporated limits of the City of Tucson and reflects an urban setting with single family housing, mobile home communities, multi-family housing, commercial areas, an elementary school, and park and recreational areas.

- U.S. Customs and Border Protection is located on the north side of SR 86 and Crook Street intersection at MP 170.14.
- Mission Library, a branch of the Pima County Library, is located on the northwest corner of the SR 86 and Mission Road intersection.
- A commercial area is located at the intersection of SR 86 and Mission Road; businesses include McDonald’s, Bank of America, Title Max, Food City and P & A Tires. In addition, there are two shopping plazas in the vicinity of the intersection: Park View Plaza on the north side of the SR 86 and San Xavier Plaza on the south side.

Figure B-3: SR 86 west of Mission Road Looking East

- Plaza Del Sol, a 0.13-square-mile mobile home park, is adjacent to the south side of SR 86 at Via Canto.
- Ajo Freedom Self Storage is located on the north side of SR 86 just east of Freedom Drive.
- Lynn-Urquides Elementary School, pre-kindergarten to 5th grade, is located along the south side of SR 86 just east of Freedom Drive.
- Westlake Village Apartment Homes is located on the north side of SR 86 east of Freedom Drive.
- Two small commercial areas are located at the intersection of the SR 86 and Holiday Isle Boulevard; business include but are not limited to Circle K, Burger King, QuickTrip, and La Casita Day Care.
- Mesa Ridge, a 0.06-square-mile mobile home park, is located north of the SR 86 at Holiday Isle Boulevard.
- Additional business besides those previously mentioned are located along SR 86 between La Cholla Boulevard and Holiday Isle Boulevard.
- Via Canto, Freedom Drive, Phoebe Avenue, and Holiday Isle Boulevard provide access to residential areas or mobile home communities located north and south of SR 86.

Existing Roadway:

Basic through-lane configurations of SR 86 within the project limits are as follows:

- From 700-feet east of Kinney Road at MP 166.3 to just west of La Cholla Boulevard at MP 169.67, SR 86 is a four-lane divided roadway (two-lanes in each direction) with depressed median and exclusive left-turn lanes at median cross overs.

Figure B-4: SR 86 Eastbound Saddle View

- From west of La Cholla Boulevard at MP 169.67 to Holiday Isle Boulevard at MP 170.85, SR 86 is four-lanes (two-lanes in each direction) with a continuous two-way left-turn lane, concrete curb and gutter, sidewalk and street lights. At Mission Road there is a short section of raised median island present just east and west of the intersection.

Figure B-5: SR 86 at Mission Road Looking East

From Kinney Road to Camino de Oeste, SR 86 has paved shoulders and dedicated left-turn lanes at two median crossovers that provide access to adjacent properties.

SR 86 and Camino de Oeste is a signalized intersection with dedicated left-turn lanes on all four approaches. SR 86 has two through-lanes in each direction at this intersection. The north leg of the intersection is a dirt road (Bopp Road) providing access to the residential properties

located north of the intersection. The south leg has one paved through lane in each direction providing access to residential subdivisions and a middle school farther south.

Figure B-6: SR 86 at Camino de Oeste Looking East

From Camino de Oeste to Bilbray Avenue, SR 86 has paved shoulders and dedicated left-turn lanes at one median cross over to provide access to adjacent properties.

SR 86 and Bilbray Avenue is a stop-controlled intersection with stop signs on the minor street and dedicated left-turn lanes on the eastbound and westbound approaches. The north leg of the intersection is a dirt road (Bilbray Ave.). The south leg is a two-lane paved roadway.

From Bilbray Avenue to Old Ajo Way (west access point), SR 86 has paved shoulders and dedicated left-turn lanes at one median cross over to provide access to adjacent properties. This segment passes through a saddle in the Tucson Mountain Range and borders the two regional County parks, Tucson Mountain Park (north side) and San Robles Pass at Tucson Mountain Park (south side).

SR 86 and Old Ajo Way (west access point) is a stop-controlled T-intersection with a stop sign on the minor street and dedicated left-turn lanes on the eastbound and westbound approaches.

From Old Ajo Way (west access point) to Old Ajo Way (east access point), SR 86 has paved shoulders and dedicated left-turn lanes at two median cross overs to provide access to adjacent properties. This segment passes through a saddle in the Tucson Mountain Range; rock cuts along the north side and steep fill slopes along the south side are present through much of this segment. Residences have access to SR 86 via steep driveways.

SR 86 and Old Ajo Way (east access point) is a stop-controlled T-intersection with a stop sign on the minor approach and dedicated left-turn lanes on the eastbound and westbound approaches.

From Old Ajo Way (east access point) to La Cholla Boulevard, SR 86 transitions from four-lanes (two-lanes in each direction) with a depressed median in the in the unincorporated Pima County to four-lanes with continuous two-way left-turn lane in the City of Tucson. Existing sidewalks, curb and gutter are located on the north and south side of SR 86, beginning from west of La Cholla Boulevard to Holiday Isle Boulevard.

SR 86 and La Cholla Boulevard is a signalized intersection with dedicated left-turn lanes on the east, west and north approaches. SR 86 has two-lanes in each direction at this intersection. The south leg of the intersection terminates into a driveway for a church located in the southwest corner of the intersection. The City of Tucson limits ends west of this intersection. The north lanes include one through lane in each direction and one dedicate southbound to westbound right-turn lanes

Figure B-7: SR 86 and La Cholla Boulevard Looking East



From La Cholla Boulevard to Cook Street, existing sidewalks and curb and gutter are located on the north and south side of SR 86 and several driveways provide access to adjacent property.

SR 86 and Cook Street is a stop controlled T-intersection with a stop sign on the minor street.

From Cook Street to Mission Road, existing sidewalks and curb and gutter are located on the north and south side of SR 86 and several driveways provide access to adjacent property.

SR 86 and Mission Road is signalized intersection with dedicated left-turn lanes and right-turn lanes on all four approaches. SR 86 and Mission Road have two through lanes approaching the intersection. There are several commercial properties located on three legs of this intersection and closely-spaced driveways in the vicinity of this intersection. Mission Library is located on the northwest corner with no adjacent commercial properties.

From Mission Road to Freedom Drive, existing sidewalks and curb and gutter are located on the north and south side of SR 86 and several driveways provide access to adjacent property.

Figure B-8: SR 86 and Mission Road Looking Northeast



SR 86 and Freedom Drive is a stop-controlled intersection with the vehicular movements along SR 86 controlled by a High-Intensity Activated Crosswalk (HAWK) signal and stop signs on the minor street. The south leg of the intersection is offset to the east of Freedom Drive and the vehicular movements out of the driveway are stop-controlled. The south leg of the intersection terminates into a driveway for an elementary school located in the southeast corner of the intersection. SR 86 has two-lanes in each direction at this location and the left-turn movements towards Freedom Drive and the elementary school occur from the center two-way left-turn lane.

Figure B-9: SR 86 and Freedom Drive Looking Southeast



From Freedom Drive to Holiday Isle Boulevard, existing sidewalks and curb and gutter are located on the north and south side of SR 86 and several driveways provide access to adjacent property.

SR 86 and Holiday Isle Boulevard is a signalized intersection with dedicated left-turn lanes on all four approaches. SR 86 has two-lanes in each direction and a dedicated right-turn lane in the eastbound direction. The south leg of the intersection terminates into a driveway for a gas station located in the southeast corner of the intersection. The north leg provides access to Mesa Ridge a mobile home park.

Figure B-10: SR 86 and Holiday Isle Boulevard Looking East



Property Ownership:

Property Ownership in the project limits is a mixture of public and private ownership. The following is from information and data obtained from the Pima County for the study.

County or City Park property is located generally as follows:

- On the north side, Tucson Mountain Park abuts SR 86 from MP 167.84 to MP 168.22, MP168.35 to 168.84, and again from MP 169.49 to MP 169.53.
- On the south side, San Robles Pass at Tucson Mountain Park extends along SR 86 from MP 167.84 to MP 167.86, MP 167.88 to MP 168.84, MP 169.48 to 169.52, and again from MP 169.67 to 169.78.
- Situated on the north side of SR 86, John F. Kennedy Park extends from MP 169.60 to MP 169.84, MP 169.87 to 169.95, and again from MP 170.17 to MP 170.33.

City of Tucson boundary is located generally as follows:

- On the north side of SR 86 from MP 169.60 to MP 169.84.
- On both sides of SR 86 east of La Cholla Boulevard at MP 169.84.

State of Arizona property is located generally as follows:

- Approximately a quarter mile south of SR 86 at MP 169.

Federal property, U.S. Department of Homeland Security, is located generally as follows:

- The U.S. Customs and Border Protection facility is on the north side of SR 86 at MP 170.14.

All other property adjacent to SR 86 is owned privately or by other non-private entities.

Existing Right-of-Way:

The existing right-of-way for SR 86 as described below from the beginning of the project to Holiday Isle Blvd was obtained from ADOT right-of-way plan sheets. Pima County geographical information system (GIS) records were used to verify the ADOT plan sheet information.

Begin of Project to La Cholla Boulevard

- Beginning of Project 950-feet east of Kinney Road to La Cholla Boulevard – 100-feet on each side of centerline. Additional right-of-way exists along the north side of SR 86 from 225-feet east to 1300-feet east of Kinney Road. The right-of-way expands to 140-feet from the centerline. Additional right-of-way exists along the north side of SR 86 from 800-feet west to 900-feet east of Soledad

Road. The existing right-of-way expands from 100-feet to 190-feet at Soledad Road and back to 100-feet following the Old SR 86 alignment.

La Cholla Boulevard to Mission Road

- From La Cholla Boulevard to Mission Road – 100-feet north of the Section Line.
- From La Cholla Boulevard to Cook Street – 50-feet south of the Section Line.
- From Cook Street to Mission Road – varies from 50-feet to 55-feet south of the Section Line.

Mission Road to Freedom Drive

- From Mission Road to Freedom Drive – varies from 60-feet to 90-feet north of the Section Line.
- From Mission Road to Freedom Drive – 75-feet south of the Section Line.
- From Freedom Drive to Holiday Isle Boulevard – 75-feet on each side of the Section Line.

Utilities:

The following organizations, along with representative contact information, have confirmed utility lines within the project limits.

- ADOT: Lighting and traffic signals.
Ron Passannanti; Ph. (520) 349-4819
- CenturyLink: Coaxial, Fiber.
Robert Jones; email: Robert.Jones@CenturyLink.com
- Cox Communications: CATV and fiber.
Thomas Bergeman Jr.; Ph. (623) 328-3465
- El Paso Natural Gas: Natural gas lines.
Kelley Sims; email: Kelley_Sims@Kindermorgan.com or
Bill Biggs; email: William_Biggs@kindermorgan.com
- Level 3 Communications: Fiber.
Masood Zeerak; Ph. (720) 888-5868
- Pima County Wastewater Management: Sewer.
Bob Machen, Blue Stake; Ph. (520) 724-6466 or
Luis Romero, Utility Coord.;Ph. (520) 724-6466
- Southwest Gas: Natural gas lines.
Robert Daniels; Ph. (520) 794-6128
- Sprint Communications: Coaxial and fiber.
Colin Sword; Ph. (520) 417-0970

- Trico Electric Cooperative: Electric.
Michael Blatcher; Ph. (520) 744-2944 ext. 1347
- Tucson Water: Water.
Maria Molina; Ph. (520) 791-5511
- Zayo Group: Fiber optic.
Michael Waites; Ph. (520) 233-7116

The following organizations, along with a representative contact information, could potentially have utility lines within the project limits.

- ADOT: Culvert and storm drain.
Manuel Vasquez; Ph. (520) 349-8935 or
Tom Threlkeld
- City of Tucson Inlet Fiber: Fiber.
Theo Christenson; Ph. (520) 437-3083
- City of Tucson: Electric, gas, sewer, and water.
Doug Alewelt; Ph. (928) 341-8160
- City of Tucson DOT: Street lights, traffic signals, and irrigation.
Luis Murrieta; Ph. (520) 791-2351
- Comcast Communications: CATV and coaxial.
Graycliff Office; Ph. (520) 488-7496
- Conoco Phillips dba Cardo ATC: Monitoring well.
Sara Neuhaus; Ph. (480) 894-2056
- Desert Pueblo MHP.
Kim Wilkins; Ph. (650) 361-8350
- Mesa Ridge.
Pamela Miller; Ph. (520) 294-2617
- Tucson Electric Power: Electric.
Paula Polasky; Ph. (520) 917-2607

C. TRAFFIC

Working Papers prepared for the study evaluated and assessed the overall performance of the existing and future roadway system based on inventoried roadway attributes, current and projected population and employment in the area, and levels of congestion. The following is a summary of the traffic report.

C.1 Existing Traffic Conditions

Existing Traffic Conditions:

Posted speed on SR 86 varies from 55 miles per hour (mph) to 40 mph through the project limits:

- 55 mph from east of Kinney Road at MP 166.3 to La Cholla Boulevard at MP 169.85.
- 45 mph from La Cholla Boulevard at MP 169.85 to Mission Road at MP 170.35.
- 40 mph from Mission Road at MP 170.35 to Holiday Isle Boulevard at MP 170.9.

Existing Traffic Volumes:

As part of this traffic study, two 24-hour traffic counts were conducted along SR 86 on September 15, 2015. These counts were adjusted to annual average daily traffic (AADT) counts using ADOT seasonal factors. The remaining 24-hour counts were obtained from the ADOT Transportation Data Management System website. Traffic counts are presented in Table C-1: Year 2015 Existing Annual Average Daily Traffic.

Table C-1: Year 2015 Existing Annual Average Daily Traffic

SR 86 Locations	Annual Average Daily Traffic (AADT)
West of Camino de Oeste/Bopp Road	32,600
Camino de Oeste/Bopp Road to La Cholla Boulevard	32,800*
La Cholla Boulevard to Mission Road	30,300*
Mission Road to Holiday Isle Boulevard	44,100
East of Holiday Isle Boulevard	38,900*

*AADT obtained from the ADOT Transportation Data Management System

Vehicular turning movement counts and pedestrian counts were conducted on September 15, 2015 for the AM and PM peak hours at the five study intersections. The existing pedestrian volumes are displayed in Table C-2: Year 2015 Existing Pedestrian Crossing Volumes.

The current AM and PM peak hour vehicular traffic volumes and intersection approaches lane configurations are shown in Appendix B: Traffic Conditions, Lane Configurations and LOS.

Table C-2: Year 2015 Existing Pedestrian Crossing Volumes

Intersection	Crossing Leg	AM	PM
SR 86 and Camino de Oeste/Bopp Road	EB	0	0
	WB	0	0
	NB	0	1
	SB	0	0
SR 86 and La Cholla Boulevard	EB	0	0
	WB	2	0
	NB	1	0
	SB	3	0
SR 86 and Mission Road	EB	3	11
	WB	0	10
	NB	1	15
	SB	4	17
SR 86 and Freedom Drive	EB	0	0
	WB	18	6
	NB	7	8
	SB	6	2
SR 86 and Holiday Isle Boulevard	EB	13	22
	WB	36	5
	NB	12	21
	SB	2	3

EB – Eastbound, WB – Westbound, NB – Northbound, and SB – Southbound

C.2 Future Traffic Conditions

Future Transportation Network:

Proposed improvements for the urban fringe section in the unincorporated portion of the Pima County for the year 2025 include the widening of SR 86 to six-lanes (three-lanes in each direction) from 700-feet east of Kinney Road to Camino de Oeste/Bopp Road.

Improvements in the urban section from La Cholla Boulevard to Holiday Isle Boulevard at the eastern terminus include widening SR 86 to six-lanes with a raised median and the addition of dedicated left-turn and right-turn lanes at major intersecting roadways.

Proposed Improvement for the year 2040 include widening SR 86 to six-lanes (three-lanes in each direction) from Camino de Oeste/Bopp Road to La Cholla Boulevard with a median barrier between east of

Bilbray Avenue to west of Old Ajo Way (east) and the addition of dedicated left-turn and right-turn lanes at major intersecting roadways and at median crossovers that provide access to adjacent properties.

Future Traffic Volumes:

The PAG regional travel demand model, base year 2014, was obtained for the study. The model covers approximately 4,300 square miles in Pima County and includes the more populated urban areas of Tucson, Marana, Oro Valley and Green Valley. For the purpose of the study, the modeling efforts were focused in the area of influence. The PAG model 2014 traffic forecast was validated against current traffic counts to verify how well the model replicates the traffic flow patterns in the area.

PAG 2025 and 2045 travel demand models were obtained and utilized to forecast travel needs and deficiencies in the project limits for the future horizon years 2025 and 2040. Future AADT volumes for SR 86 are presented in Table C-3: Future Annual Average Daily Traffic.

Utilizing the 2045 PAG travel demand model, the projected traffic volumes for the peak periods of analysis for the years 2025 and 2040 were determine through interpolation methods and other adjustments. The ratio of the existing peak hour volumes to the existing peak period volumes for the eastbound and westbound movements at the five study intersections was applied to the 2025 and 2040 peak period traffic volumes to estimate the corresponding future AM and PM peak hour volumes.

The peak travel periods for this corridor are between 7 AM and 9 AM in the morning and between 4 PM and 6 PM in the afternoon.

Table C-3: Future Annual Average Daily Traffic

SR 86 Locations	Year 2015	Year 2025	Year 2040
West of Camino de Oeste/Bopp Road	32,600	44,600	55,500
Camino de Oeste/Bopp Road to La Cholla Boulevard	32,800*	43,500	51,600
La Cholla Boulevard to Mission Road	30,300*	41,300	50,200
Mission Road to Holiday Isle Boulevard	44,100	46,700	56,500
East of Holiday Isle Boulevard	38,900*	49,900	59,800

*AADT obtained from the ADOT Transportation Data Management System

The future (2025 and 2040) No-Build AM and PM peak-hour traffic volumes and lane configurations are shown in Appendix B: Future No-Build Intersection Lane Configurations and LOS.

The future (2025 and 2040) Build AM and PM peak-hour traffic volumes and lane configurations are shown in Appendix B: Future Traffic Volumes, Proposed Lane Configurations, and Resulting LOS.

Traffic Analysis:

Operational analysis of the study intersections assessed the AM and PM peak-hour capacity and Level of Service (LOS) for the following scenarios:

- Existing Year 2015 Conditions
- Future Years (2025 and 2040) without the proposed improvements – No-Build
- Future Years (2025 and 2040) with the proposed improvements - Build

Synchro and SimTraffic software were utilized to evaluate the operational performance of the SR 86 corridor during the AM and PM peak hours. The results of the analyses are shown in Table C-4: AM LOS Summary and Table C-5: PM LOS Summary.

Table C-4: AM LOS Summary

Intersection	Approach	Existing Year 2015		Year 2025 No-Build		Year 2025 Build		Year 2040 No-Build		Year 2040 Build	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
SR 86 and Camino de Oeste/Bopp Road	EB	27	C	181.4	F	55.4	E	350.1	F	48.0	D
	WB	16.7	B	40.4	D	29.0	C	66.2	E	22.1	C
	NB	56.7	E	133.0	F	71.6	E	189.4	F	7.0	A
	SB	38.1	D	121.7	F	72.7	E	208.3	F	54.6	D
	Overall	28.4	C	136.3	F	51.7	D	247.8	F	37.8	D
SR 86 and La Cholla Boulevard	EB	12.1	B	23.7	C	20.0	B	64.2	E	21.5	C
	WB	21.1	C	89.7	F	39.6	D	137.1	F	50.5	D
	NB	30.2	C	33.7	C	30.7	C	34.0	C	28.6	C
	SB	24.6	C	30.8	C	20.1	C	36.3	D	20.2	C
	Overall	14.9	B	41.7	D	25.1	C	79.7	E	29.0	C
SR 86 and Mission Road	EB	33	C	55.5	E	40.7	D	122.8	F	48.4	D
	WB	38.4	D	61.5	E	43.0	D	115.5	F	49.1	D
	NB	38	D	61.2	E	45.3	D	81.7	F	54.9	D
	SB	32.2	D	49.2	D	43.5	D	70.1	E	50.3	D
	Overall	35.4	D	57.5	E	42.8	D	103.7	F	50.4	D
SR 86 and Freedom Drive*	EB	-	-	-	-	10.7	B	-	-	0.1	A
	WB	-	-	-	-	21.5	C	-	-	5.5	A
	NB	22.9	C	66.0	F	10.0	A	-	F	10.8	B
	SB	13.2	B	19.9	C	11.1	B	28.4	D	12.2	B
	Overall	-	-	-	-	-	-	-	-	-	-
SR 86 and Holiday Isle Boulevard	EB	7	A	5.1	A	5.6	A	1.4	A	7.6	A
	WB	3.1	A	4.6	A	8.3	A	5.9	A	10.0	A
	NB	37	D	53.0	D	47.2	D	46.6	D	48.5	D
	SB	35.9	C	43.7	D	45.6	D	45.5	D	44.7	D
	Overall	8.7	A	8.4	A	9.8	A	8.0	A	11.5	B

* Overall LOS not reported for two-way stop controlled intersections. Delays/LOS reported only for stop/yield movements at this intersection

Table C-5: PM LOS Summary

Intersection	Approach	Existing Year 2015		Year 2025 No-Build		Year 2025 Build		Year 2040 No-Build		Year 2040 Build	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
SR 86 and Camino de Oeste/Bopp Road	EB	18.7	B	38.7	D	22.4	C	92.3	F	26.1	C
	WB	16.3	B	29.8	C	21.1	C	75.5	E	22.6	C
	NB	11.1	B	48.0	D	27.9	C	84.6	F	23.7	C
	SB	21.5	C	33.0	C	35.3	D	37.5	D	35.6	D
	Overall	16.5	B	34.2	C	22.4	C	81.1	F	24.3	C
SR 86 and La Cholla Boulevard	EB	24.7	C	46.1	D	17.4	B	68.5	E	18.7	B
	WB	63.5	E	129.1	F	15.9	B	246.9	F	14.3	B
	NB	13.4	B	21.9	C	31.2	C	20.9	C	28.3	C
	SB	76.9	F	139.1	F	15.1	B	184.2	F	14.7	B
	Overall	56.5	E	101.5	F	16.3	B	169.1	F	16.0	B
SR 86 and Mission Road	EB	31.3	C	58.4	E	44.5	D	86.5	F	58.6	E
	WB	39.2	D	57.1	E	42.3	D	122.8	F	44.2	D
	NB	31.7	C	46.9	D	42.2	D	74.9	E	48.0	D
	SB	40.4	D	66.7	E	46.7	D	108.4	F	60.2	E
	Overall	36.3	D	58.1	E	43.9	D	103.1	F	52.0	D
SR 86 and Freedom Drive*	EB	-	-	-	-	22.1	C	-	-	35.5	E
	WB	-	-	-	-	10.6	B	-	-	12.1	B
	NB	14.3	B	28.8	D	9.0	A	41.7	E	9.3	A
	SB	30.5	D	69.9	F	15.6	C	159.3	F	19.5	C
	Overall	-	-	-	-	-	-	-	-	-	-
SR 86 and Holiday Isle Boulevard	EB	7.4	A	2.9	A	11.6	B	4.7	A	6.5	A
	WB	7.1	A	13.4	B	15.8	B	59.0	E	15.5	B
	NB	46.2	D	62.2	E	64.8	E	68.5	E	62.1	E
	SB	32.6	C	49.1	D	52.9	D	53.6	D	40.0	D
	Overall	10	A	12.9	B	17.5	B	40.4	D	14.9	B

* Overall LOS not reported for two-way stop controlled intersections. Delays/LOS reported only for stop/yield movements at this intersection

Conclusions:

Based on the inventory and analysis of existing and future traffic operations, key findings and observations include:

Existing Year 2015 Conditions

SR 86 in the project limits varies in from 30,000 to 44,000 vehicles per day (vpd) and gradually increases eastward with the highest demand east of Freedom Drive. Traffic patterns along SR 86 are reflective of commuter traffic.

Majority of the SR 86 corridor operates at LOS E or F with the exception of the segment from west of La Cholla Boulevard to Freedom Drive which operates at LOS D and is located in the urban section of the project limit.

All existing signalized intersections within the project limits operate at LOS D or better during the AM and PM peak hour, except

- The intersection of SR 86 and La Cholla Boulevard, which operates at LOS E during the PM peak hour.

Future Conditions Without Improvements – No-Build

Traffic volumes on SR 86 in the project limits are projected to range from 41,000 to 49,939 vpd by the year 2025 and 50,000 to 59,000 vpd by the year 2040.

The SR 86 corridor in the project limits will operate at LOS F by the year 2025 and will continue to operate at LOS F in the year 2040.

Nearly all of the signalized intersections within the project limits in the future horizon years (2025 and 2040) operate at LOS E or worse during one or both of the peak hours, except:

- The intersection of SR 86 and Camino de Oeste/Bopp Road operates at LOS C during the PM peak hour in the year 2025.
- The intersection of SR 86 and La Cholla Boulevard operates at LOS D during the AM peak hour in the year 2025.
- The intersection of SR 86 and Holiday Isle Boulevard operates at LOS B or better during AM and PM peak hours in the year 2025 and 2040.

Future Conditions With Improvements - Build

With the proposed improvements for the future years 2025 and 2040, all signalized intersections within the project limits operate at LOS D or better during the AM and PM peak hour.

Table C-6: Minimum Storage Lengths shows the minimum recommended storage lengths for left- and right-turn lanes at the intersections.

Table C-6: Minimum Storage Lengths

Intersection	Approach	Storage Length	
		Left Lane	Right Lane
SR 86 and Camino de Oeste/Bopp Road	EB	150	
	WB	250	
	NB	150	300
	SB	50	
SR 86 and La Cholla Boulevard	EB	400	
	WB	250	300
	NB		
	SB	250	300
SR 86 and Mission Road	EB	400	300
	WB	400	300
	NB	300	300
	SB	300	300
SR 86 and Freedom Drive	EB	150	
	WB	150	
	NB		
	SB		
SR 86 and Holiday Isle Boulevard	EB	150	150
	WB	150	
	NB	50	
	SB	100	

C.3 Access and Circulation

SR 86 is located to the southwest of downtown Tucson and serves as the regional connector to unincorporated and incorporated communities located in southwestern Pima County (such as Sells and Ajo), the Tohono O’odham Nation, and Kitt Peak. In the urban fringe area, SR 86 from east of Kinney Road to west of La Cholla Boulevard is divided by a depressed median while in the urban area, SR 86 is undivided with a continuous two-way left-turn lane from La Cholla Boulevard to Holiday Isle Boulevard.

The western section of the project limits near Kinney Road is zoned for commercial and dense residential use. Between Century Road alignment and La Cholla Boulevard, the terrain is mostly mountainous and is designated as park land. In the urban portion of the project limits, most of the private property adjacent to the project is fully developed.

SR 86 between Kinney Road and La Cholla Boulevard

This section of SR 86 has sparsely populated residential properties on either side of the highway through the San Robles Pass area. Towards the west end of project limits, there are several commercial and densely populated residential properties on either side of the highway. Many of the larger lots located along this part of the project limits have access to parallel side streets, but there are still several properties that only have access to the highway.

This portion of the highway has seven locations providing opportunities for left-turn and U-turn movements along the corridor. This is important to maintain as several residential properties and emergency responders utilize these locations on a regular basis.

The following modifications are proposed to improve access along SR 86 from east of Kinney Road to La Cholla Boulevard:

- Add a raised median from east of Kinney Road to Camino de Oeste; modify access from adjacent properties to right-in/right-out.
- Modify the intersection of SR 86 and Bilbray Avenue to include directional left-turn lanes on SR 86 and modify the northbound and southbound approaches to right-in/right-out.
- Add a median barrier east of the Bilbray Avenue to west of the Old Ajo Way (east access point). Modify the intersections of SR 86 and Bopp Road and SR 86 and Old Ajo Way (west access point) to right-in/right-out.
- Add a raised median from west of Old Ajo Way (east access point) to La Cholla Boulevard. Modify the intersection of SR 86 and Old Ajo Way (east) and the SR 86 entrance (west of La Cholla Boulevard) to John F. Kennedy Park to include directional left-turn lanes on SR 86, and modify the northbound and southbound approaches to right-in/right-out.

SR 86 between La Cholla Boulevard and Mission Road

This section of SR 86 is mostly developed with private properties or park lands in the vicinity of the project. The key traffic generators include Mission Library, a U.S. Customs and Border Protection facility and Tucson’s John F. Kennedy Park on the north side of SR 86. The south side of the highway has several residential properties with direct access to SR 86.

The John F. Kennedy Park includes an amphitheater located on the northwest corner of SR 86 and La Cholla Boulevard that hosts several civic events throughout the year and SR 86 serves as the primary route to/from these events.

Currently there are about 35 full access driveways and five right-in/right-out driveways in this portion of the project (most of the full access driveways are located on the south side of the highway).

The following modifications are proposed to improve access along SR 86 from La Cholla Boulevard to Mission Road:

- Add a raised median from La Cholla Boulevard to Mission Road, and modify directional left-turn lanes on SR 86 and access from adjacent properties to right-in/right-out.
- Block the left-turn access from SR 86 into the Mission Library (located just west of Mission Road) by a raised median, and establish a U-turn at the Mission Road intersection.
- Change the access to a frontage road for 19 residential units located on the south side of SR 86 between La Cholla Blvd and Mission Road that currently have direct access to SR 86. The frontage road would provide access to SR 86 or to Cook Street.

SR 86 between Mission Road and Holiday Isle Boulevard

This section of SR 86 is fully developed except for a parcel located on the south side at Holiday Isle Boulevard. The key traffic generators along this portion of the corridor are commercial establishments at the intersections of Holiday Isle Boulevard and Mission Road, and an elementary school located on the southeast corner of SR 86 at Freedom Drive intersection.

Currently, there are 17 full access driveways/minor streets and four right-in/right-out driveways in this portion of the corridor and there is no access management implemented in this portion of the corridor. There is a pedestrian-activated HAWK signal at this intersection serving as the mid-block pedestrian/school crosswalk.

The following modifications are proposed to improve access along SR 86 from Mission Road to Holiday Isle Boulevard:

- Add a raised median from Mission Road to Holiday Isle Boulevard. Modify directional left-turn lanes on SR 86 and access from adjacent properties to right-in/right-out including the intersection with Freedom Drive and Via Canto (Plaza Del Sol).

C.4 Crash Analysis

Data for crashes occurring between January 2012 and December 2014 were obtained from ADOT’s Accident Location Identification Surveillance System (ALISS) database. **Table C-7: Crash Summary** summarizes the 161 crashes that occurred on the SR 86 from east of Kinney Road at MP 166.35 to Holiday Isle Boulevard at MP 170.85 during the three-year period. Key observations and findings include:

- An estimated 39 percent (63 crashes) of the total crashes occurred in 2012, 28 percent (45 crashes) in 2013, and 33 percent (53 crashes) in 2014.
- An estimated 50 percent (81 crashes) of the total crashes occurred between MP 169.84 and MP 170.9 in the Tucson City limits.
- Approximately 2 percent (3 crashes) of the total crashes were fatal and another 6 percent (9 crashes) had incapacitating injuries. Roughly 50 percent (81 crashes) of the crashes reported no injuries.
- Approximately 44 percent (71 crashes) of the total crashes were rear end collisions while 14 percent (23 crashes) were left-turn collisions.
- An estimated 2 percent (3 crashes) of the total crashes were collisions with pedestrian or bicyclist. Of the 3 crashes, 1 was fatal.
- Approximately 61 percent (99 crashes) of the total crashes occurred during the day while 19 percent (30 crashes) occurred at night under lighted conditions.
- Roughly 42 percent (67 crashes) of the total crashes were driveway or intersection related. Of the 67 crashes, 53 occurred between MP 169.84 and MP 170.9 in the Tucson City limits
- Intersections with the highest occurrences of crashes:
 - SR 86 and La Cholla Boulevard (13 crashes).
 - SR 86 and Mission Road (13 crashes).
- The roadway sections with 20 or more crashes:
 - West of Kinney Road at MP 166.3 to Camino de Oeste at MP 166.8.
 - Camino de Oeste at MP 166.8 to Bilbray Avenue at MP 167.32.
 - Soledad Avenue at MP 167.59 to western terminus of Old Ajo Way at MP 168.84
 - La Cholla Boulevard at MP 169.85 to Mission Road at MP 170.35.
 - Mission Road at MP 170.35 to Holiday Isle Boulevard at MP 170.9.

TABLE C-7: CRASH SUMMARY

	2012	2013	2014	Total
Injury Severity				
Fatal	2	1	0	3
Incapacitating Injury	4	2	3	9
No Injury	29	25	27	81
Non-Incapacitating Injury	12	9	8	29
Possible Injury	16	8	15	39
Collision Manner				
Angle (front to side)(other than left-turn)	4	6	4	14
Head On	0	0	2	2
Left-Turn	11	7	5	23
Rear End	28	13	30	71
Sideswipe (Opposite direction)	0	0	1	1
Sideswipe (Same direction)	7	5	2	14
Single Vehicle	8	9	7	24
Unknown/Other	5	5	2	12
First Harmful				
Animal (Wild Game)	2	1	1	4
Cargo Equipment/Loss Shift	1	1	0	2
Curb	1	0	0	1
Embankment/Ditch	2	2	1	5
Fence	0	0	2	2
Fire Explosion	0	0	1	1
Guardrail End	0	1	0	1
Motor Vehicle in Transport	43	22	36	101
Not Reported/Other	10	12	10	32
Overturn/Rollover	3	4	1	8
Parked Motor Vehicle	0	1	0	1
Pedestrian/Bicyclist	1	1	1	3
Light Condition				
Dark (Lighted)	12	9	9	30
Dark (Not Lighted)	13	5	6	24
Dawn	2	1	0	3
Daylight	33	28	38	99
Dusk	3	2	0	5
Junction Relation				
Driveway	3	2	2	7
Intersection Related (Interchange)	1	0	8	9
Intersection Related (Non-interchange)	26	14	11	51
Not Junction Related	33	29	31	93
Unknown	0	0	1	1
Total	63	45	53	161

D. PROJECT SCOPE

The project scope of work for the improvement of SR 86 from 700-feet east of Kinney Road to Holiday Isle Boulevard is described below and shown on the attached exhibits. The project length is 4.50 miles. Proposed concept improvements are shown in Appendix A and are described below.

- The project will be designed to ADOT Standards.
- The design vehicle for intersections is a WB-50 per the ADOT Roadway Design Guidelines for Urban Major Streets.
- The west end of the project matches improvements to project H6808 located approximately 700-feet east of Kinney Road (MP 166.35).
- The east terminus of the project ends at the intersection of Holiday Isle Boulevard matching improvements to the east side of the intersection for project H8467 (MP 170.85).
- Widen SR 86 to a six-lane roadway with intersection channelization and continuous median for the length of the project.
- Modify intersections with additional through and turning lanes for SR 86 and side streets. See Table C-6 for Storage Bay lengths.
- The median type will vary in the urban fringe section.
- Use curb, gutter and sidewalk, raised median and street lighting in the urban section. Provide ramps that comply with the American Disabilities Act (ADA) in the curb and sidewalk at all crosswalk locations.
- Use 8 ½-inches of Asphaltic Concrete (AC) – End Product (¾”)(Special Mix) over 10-inches of Aggregate Base (AB) plus ½” AR-ACFC as the preliminary structural section for new pavement through the urban fringe section (pavm’t section from SR 86, Valencia to Kinney, H6806).
- Use 8-inches of AC – End Product (¾”)(Special Mix) over 7-inches of AB plus Fog Coat as the preliminary structural section for new pavement through the urban section (pavm’t section from Ajo Way (SR 86) TI, H8467).
- Apply a 3 ½-inch mill with a 3-inch AC (¾”) overlay and ½-inch AR-ACFC to the existing roadway surface.

Begin Project to Camino de Oeste/Bopp Road

Beginning 700-feet east of Kinney Road, this project would match the raised concrete median to the west and continue it through the Camino de Oeste intersection. The existing roadway is proposed to be retained and a third lane is proposed to be added to the outside in the eastbound and westbound directions. Eight-foot wide outside shoulders would be maintained through this section. The existing signalization of the SR 86 and Camino de Oeste intersection would be modified to accommodate the revised configuration.



The intersection would be modified to include dual left-turn lanes for the westbound to southbound direction, dual left-turn lanes for the southbound to eastbound direction and a dedicated right-turn lane for the northbound to eastbound direction. The dedicated right-turn lane would require a 1,200-foot long eastbound acceleration lane plus taper.

Camino de Oeste/Bopp Road to Bilbray Avenue

The raised median would be continued east of Camino de Oeste to the end of the westbound left-turn pocket. The existing roadway would be retained with a third lane added to the outside in the eastbound and westbound directions. The raised median would transition to the existing depressed median which continues through the Bilbray Avenue intersection. The intersection of SR 86 and Bilbray Avenue would provide left-turn storage for access to Bilbray as well as for U-turn needs. Left-turns out of Bilbray would be restricted. The median crossover between Camino de Oeste and Bilbray Avenue would be removed.

Bilbray Avenue to Old Ajo Way (east access point)

The depressed median would continue past the Bilbray Avenue intersection where the lane widening transitions from widening to the outside to widening to the inside to add the third lane in the eastbound and westbound directions. Widening to the inside allows the existing outside edge of pavement to be maintained and a median barrier would be used to separate opposing lanes. Approaching the intersection with Old Ajo Way (east access point) the lane widening transitions back to the outside. The median barrier transitions to a raised median to separate opposing lanes. The existing roadway would be retained through this section. The intersection of SR 86 and Old Ajo Way would provide left-turn storage for access to Old Ajo Way as well as for U-turn needs. Left-turns out of Old Ajo Way would be restricted. Median crossovers between Bilbray Avenue and Old Ajo Way (east access point) would be removed.

Old Ajo Way (east access point) to La Cholla Boulevard

The raised median would be continued east of Old Ajo Way (east) to La Cholla Boulevard. The existing roadway would be retained with the roadway widening shifting to the north. The south edge of the existing roadway would be held in its current location. The existing signalization of the SR 86 and La Cholla Boulevard would be modified to accommodate the revised configuration of SR 86 and La Cholla Boulevard. The SR 86 and La Cholla Boulevard intersection would be modified to include dual left-turn lanes for the eastbound to northbound direction, two southbound to westbound right-turn lanes and a single right-turn lane westbound to northbound. A left-turn lane is provided for access into the amphitheater at J. F. Kennedy Park and for U-turn opportunities. Curb, gutter and sidewalk would also be provided on the north side of SR 86 between the amphitheater driveway and La Cholla Boulevard. The sidewalk would provide pedestrian access to the amphitheater. The amphitheater is

considered 4(f) and a sensitive receptor site. Noise walls may be needed at this location.

La Cholla Boulevard to Mission Road

This section of SR 86 has an urban section and would feature curb, gutter, sidewalks, street lights, and an eight-foot wide shoulder on each side of the roadway. The raised median would be continued east of La Cholla Boulevard to Mission Road. The existing roadway would be retained with all of the widening on the north side through the La Cholla Blvd. intersection and transitioning to widening on both sides of the roadway through the Mission Road intersection. The existing signalization at the intersection of SR 86 and Mission Road would be modified to accommodate the revised intersection configuration. The intersection would be modified to include dual left-turn lanes for the eastbound to northbound direction, dual left-turn lanes for the westbound to southbound direction, single left-turn lanes for the southbound to eastbound direction and northbound to westbound directions and single right-turn lanes for each leg. A third through lane would be added to Mission Road at the intersection in the northbound and southbound directions. Between La Cholla Boulevard and Mission Road eastbound to northbound left-turn pockets were added to facilitate access to the Border Patrol facilities on the north side of SR 86 and for u-turns opportunities for access to parcels on both sides of the highway. In addition, a frontage road was developed on the south side of SR 86 from Cook Street east for 650 feet to consolidate eleven driveways and from Cook Street west for 600 feet to consolidate ten driveways. The frontage road would have access to Cook Street and to SR 86 at east and west ends. Storm drain catch basin inlets would be relocated and new ones added to capture local runoff.

Mission Road to Holiday Isle Boulevard

This section would feature curb, gutter, sidewalks, street lights, and an eight-foot wide shoulder on each side of the roadway. The raised median would be continued east of Mission Road to Holiday Isle Boulevard. The existing roadway would be retained with the third lane added to the outside in the eastbound and westbound directions. The existing HAWK signal at the intersection of SR 86 and Freedom Drive would be modified to accommodate the revised intersection configuration. The entrance to the Plaza Del Sol subdivision (Via Canto) would be restricted to right-in and right-out traffic movements. The median island at this location would be depressed to allow access by emergency vehicles. Note: The City of Tucson is reviewing options to improve access to Plaza Del Sol on S. Valley Road. The frontage road located on the north side of SR 86 between the West Branch of the Santa Cruz River and Freedom Drive would be retained but the frontage road will be modified reducing the roadway width to 20-feet and the off road dirt parking area would be eliminated. Access to the frontage road would remain the same (near the West Branch of the Santa

Cruz River and at Freedom Drive). The existing signalization for the SR 86 and Holiday Isle Boulevard intersection would be modified to accommodate the revised configuration. Storm drain catch basin inlets would be relocated and new ones added to capture local runoff.

La Cholla Boulevard to Kennedy Park access

The La Cholla Blvd improvement includes an urban section with curb, gutter, sidewalks, street lights, and a six-foot wide shoulder on the east side of the roadway. On the west side of the roadway a 10-foot wide multi-use concrete path would be developed for use by pedestrians and bicyclists. Two northbound lanes would be developed at the intersection to accommodate the dual left turns eastbound to northbound. The outside northbound lane would be a drop lane, right turn only lane into Kennedy Park. Three southbound lanes would be provided. The inside lane would be a southbound to eastbound left turn lane. The center lane would accommodate the through movement or right turns. The outside lane would be for right turns only. Sidewalk would be provided at all four returns at the Kennedy Park entrances on both sides of La Cholla Blvd.

Urban Fringe Typical Section Alternatives

The typical section in the urban fringe section was evaluated for adding a lane in each direction by widening the pavement to the inside (closing the median and separating traffic with a median barrier) and widening the pavement to the outside (keeping the depressed median).

Widening Pavement to the Inside - Adding lanes in the median area requires no excavation work but fill material would be required. Widening to the inside allows the existing outside edge of pavement to be maintained thus driveways located along this section would not be affected. A median barrier would be required to separate traffic. A concrete median barrier through this area would hinder wildlife movement across the surface of the highway. Use of a Modified Thrie-Beam Median Barrier would provide opening area under the guard rail to allow wildlife to cross the highway. The Modified Thrie-Beam Median Barrier is not a state standard but is not precluded from use. Widening to the inside however, would preclude the use of median crossovers for access to side streets and U-turn lanes.

Widening Pavement to the Outside – Through much of the urban fringe section, adding lanes to the outside would require excavation work (mostly rock) through the mountain pass on the north side of the highway and fill material would be required on the south side of the highway in the same area. Adding fill material on the south side of the highway would encroach on portions of the Ajo Wash which is a riparian habitat. Retaining walls would be needed to preclude filling the wash area. Several residential driveways located in this area are currently steep and would be made inaccessible by additional excavation and fill work to the outside. In areas where the terrain is relatively flat and right of way is available

widening to the outside allows median crossovers and U-turn lanes to be constructed.

Recommendation for Typical Section in the Urban Fringe Section – Widening to the outside allows construction of median crossovers and U-turn lanes for access to side streets and properties where cut and fill slopes are minimal. Where cut and fill slopes are steep widening to the inside maintains access to residential properties and minimizes impacts to riparian areas and scarring of rock cut slopes. Closing in the median area would require a median barrier. Utilizing a Modified Thrie-Beam Median Barrier would provide a barrier for oncoming traffic and allow wildlife crossing of the highway surface. The recommended limits for where to apply the typical sections are as follows:

Kinney Road to Bilbray Avenue – widen to the outside, this would maintain access to adjacent side streets and parcels with access to the highway. Left-turns out of Bilbray Avenue would be restricted. Residents have access to Camino de Oeste to make left-turns onto SR 86.

Bilbray Avenue to Old Ajo Way (eastern most connection) – widen to the inside, this would minimize impacts to the Tucson Mountain Park maintaining the visual quality through the pass. Access to the western end of Old Ajo Way however would be limited to right-in/right-out. There are three median crossovers used for U-turns that would be eliminated.

Old Ajo Way (eastern most connection) to La Cholla Boulevard – widen to the outside, this would maintain access to adjacent side streets and parcels with access to the highway. Left-turns out of Old Ajo Way (east) would be restricted. Residents would need to travel east to La Cholla Boulevard to make a U-turn to travel west on SR 86.

Urban Typical Section Alternatives

SR 86 is a designated bicycle route. The City of Tucson desired an outside shoulder width that had a minimum of 6 feet of paved surface for bicycle usage. The ADOT typical section normally has a 2 foot gutter pan and a 4 foot paved surface for the outside shoulder. The inside travel lane adjacent to the median is 14 feet wide. Regional Traffic and the District agreed to reduce the inside lane width to 12 feet and increase the paved shoulder width to 6 feet to accommodate the City of Tucson request. This increases the outside shoulder with to 8 feet.

The City of Tucson requested sidewalks be 6 feet wide to be consistent with its city standard. ADOT replaces sidewalks in kind. The existing sidewalks along SR 86 are 5 feet wide. ADOT will replace the existing sidewalks with 6 foot sidewalks with City of Tucson funding assistance to pay for the additional sidewalk width.

The urban typical section was adjusted to reflect the above changes in striping and sidewalk width.

Automatic Traffic Recorders

There are two existing Automatic Traffic Recorder (ATR) locations within the project limits. They are located at MP 167.95 and at MP 170.00. Bruce Larson with ADOT Multimodal Planning requested the following:

- The existing T.S. 6-2, Type SA ATR at MP 167.95 is a split system with one cabinet covering the EB lanes and another covering the WB lanes. Replace with two new T.S. 6-2, Type SA, one for EB and another for WB. Reuse the existing cabinet footing and A-pole.
- The existing T.S. 6-1, Type C has two systems at MP 170.00 that cover the EB and WB lanes. Replace with two new T.S 6-1 Type C loops, one for the EB and another for the WB lanes.

Game Fencing

The existing right-of-way fencing within the Tucson Mountain Park (MP 167.80 to MP 168.85) would be replaced with a 6 to 8-foot-high game fence to help exclude wildlife from the highway and direct the animals toward culvert crossings (box and pipe culverts). To avoid wildlife end-run effects, 100 feet of additional fencing or other features such as riprap, may be needed at each terminus (along the adjacent parcel property line). Include a wildlife escape ramp on the north and south sides near the mid-point of the fencing.

Box Culverts (wildlife/recreational passes)

It is proposed that two reinforced concrete box culverts located at MP 167.89 and MP 168.54 would be enlarged in size to single barrel 10’x10’ and 12’x12’ for wildlife and recreational purposes. Meetings with Pima County Natural Resources Parks & Recreation and the Arizona Game and Fish Department requested that both structures be constructed using a pre-cast concrete arch system with the appropriate height. What is desired is a wider structure with a natural ground bottom to promote better usage by wildlife. Other elements discussed included adding skylights located in the middle to provide additional light for these long culverts (approx. 180 feet in length); a concrete ramp (4:1 slope max) drop inlet; excavating the wash downstream to daylight the culvert storm flows so water will not pond in the structure and placing game fencing on both sides of the highway through the Tucson Mountain Park area utilized to direct wildlife wanting to cross the highway to the culverts.

A trailhead parking concept at the western most culvert was illustrated with 6 parking spaces on the concept plans. Funding for the trailhead parking is beyond the project scope of work; however, a paved turnout and cattle guard are improvements within the scope of the project. A double wide cattle guard would be placed at the entrance to the proposed trailhead parking area to help keep wildlife off the freeway.

A trailhead parking concept located at the eastern most culvert was discontinued to promote better usage by wildlife. This decision was based

on an agreement between the Pima County Natural Resources Parks & Recreation Department and the Arizona Game and Fish Department. A letter regarding this decision is included in the PEL document.

The primary funding source for the wildlife/recreational culverts would be provided by other agencies with potential assistance from ADOT. The box culvert amounts shown in the itemized cost estimate for these locations are for estimating purposes only.

Construction timing for the two box culverts is independent of the roadway construction. The game fencing needed to direct wildlife to the culverts should be installed when the culverts are constructed.

E. PROJECT DEVELOPMENT CONSIDERATIONS

Within three weeks of the Final Design kick-off meeting, the Project Manager, in consultation with the design team, shall develop a project-customized schedule that will reflect the full scope of work.

There would be temporary lane closures for reconstruction of existing SR 86. Intersecting streets within the limits of the project may be temporarily closed and traffic may be diverted to adjacent streets.

Detailed traffic control plans would be required. Traffic control requirements would comply with the 2009 Manual on Traffic Control Devices (MUTCD), including supplements and/or special provisions.

Pavement marking plans would be required. Raised pavement markers and pavement marking would be used. The pavement marking, signing and work zone traffic control plans would be included in the Final Design.

A location survey by the ADOT Consultant will be required.

ADOT will make a determination during the Design Phase as to the disposition of asphalt pavement removed from the roadway.

Environmental Considerations

A Planning and Environmental Linkages (PEL) process was undertaken for this study. The scope of the environmental investigation was limited to identification of key environmental issues and concerns that would shape the alternatives development process, which is commonly referred to as a ‘red-flag analysis.’ The PEL process is intended to summarize the planning process and provide documentation to transition from planning to the National Environmental Policy Act (NEPA) analysis. During the NEPA process, focused and detailed impact analysis and documentation, continued stakeholder participation, and development of environmental commitments would be required. The process would follow NEPA (42 U.S.C. 4321-4347), as implemented by the Council on Environmental Quality (CFR Title 40, Part 1508.8), and FHWA guidelines.

The key environmental concerns identified during the PEL process include:

Wildlife linkages – Both statewide linkage studies and stakeholder input for this project indicate the need for enhanced wildlife connectivity along the segment of SR 86 within the Tucson Mountain Park.

Riparian habitat – Ajo Wash, which flows parallel to and south of SR 86 within the Tucson Mountain Park, is classified as an Important Riparian Area, and would also be considered a potential Water of the United States.

Recreation areas – Several recreation trails within Tucson Mountain Park intersect or approach close to the SR 86 roadway.

Section 4(f) and Section 6(f) Resources – Potential resources include the Tucson Mountain Park, the City of Tucson Kennedy Park and public library. The Tucson Mountain Wildlife Area is located north of SR-86 within the mountains.

Cultural resources – Prior surveys have identified two archaeological sites, including one historic site, within the study area. In addition, the areas surrounding the West Branch of the Santa Cruz River are archaeologically sensitive and present the potential for buried prehistoric deposits.

The NEPA document would also need to address the following: native vegetation and plant communities; sensitive species and habitats; 100-year floodplains; registered wells; traffic noise; air quality; hazardous materials; land use, ownership and jurisdiction; socioeconomics; Title VI/environmental justice; and visual resources.

The PEL process for this project included robust public and stakeholder involvement and would potentially fulfill a portion of the scoping requirements for a NEPA process. Further detail regarding the agency and public involvement process, including copies of comments received and meeting summaries are available on file at ADOT and are attached to the completed PEL form for this project.

Agency scoping letters were mailed to 42 recipients on October 16, 2015, and included an invitation to an agency scoping meeting. Written agency scoping comment response letters were received from the Department of Veteran Affairs, Pima County Environmental Quality, and Pima County Natural Resources Parks and Recreation.

An agency scoping meeting was held on November 10, 2015 for the identified potentially affected agencies and stakeholders, and was attended by representatives from the U.S. Border Patrol, Arizona Department of Public Safety, Pima County, Pima County Sheriff, PAG, Carondelet (owner of St. Mary’s Hospital), City of Tucson (departments of Transportation and Parks and Recreation), Pima County (departments of Transportation; Natural Resources, Parks and Recreation; Regional Flood Control District; and the Sherriff), and St. Mary’s Hospital. Other agencies were invited by did not attend.

Two public meetings were held: a public scoping meeting on February 10, 2016 and a public information meeting on April 20, 2016. Each meeting included an open house portion with study materials available for review, and a formal presentation followed by a question and answer session. All comments received, whether asked during the Q and A session or provided through a written comment or e-mail, were documented and, if substantive, responded to by the appropriate study team member.

A Technical Advisory Committee (TAC) was established and, comprised of representatives from ADOT, FHWA, Pima County (departments of Transportation; Natural Resources, Parks and Recreation), and the City of Tucson (departments of Transportation and Parks and Recreation). Four TAC meetings were held. The first meeting held on September 2, 2015, described the issues in the corridor, identified the project tasks that would be undertaken, and identified public outreach efforts that would be included. The second meeting held January 26, 2016 reviewed the findings of Working Paper Numbers 1 and 2 and discussed the upcoming public scoping meeting. The third TAC meeting held April 15, 2016, reviewed the results of Working Paper Number 3, summarized the scoping meeting, and discussed the upcoming public information meeting. All comments received were reviewed and documented, and substantive comments were responded to by the applicable team member. The fourth TAC meeting held August 17, 2016, reviewed the Initial Project Assessment, the PEL, discussed the wildlife linkage issue, summarized the public information meeting, and discussed changes to the existing frontage road located north of SR 86 and west of Freedom Drive. All comments received were documented and listed on a Summary of Comments and Action (SOC) form. Action items were developed and listed with the appropriate comment. The SOC form was distributed to the TAC for further review and concurrence.

F. OTHER REQUIREMENTS

Implementation

Traffic would be maintained on SR 86 during construction of the improvements. It may be necessary to construct temporary detour roadways within the street right-of-way to maintain one lane of traffic both eastbound and westbound. If it is required to temporarily close intersecting streets during construction, traffic would have to be routed to adjacent streets that provide access to affected properties.

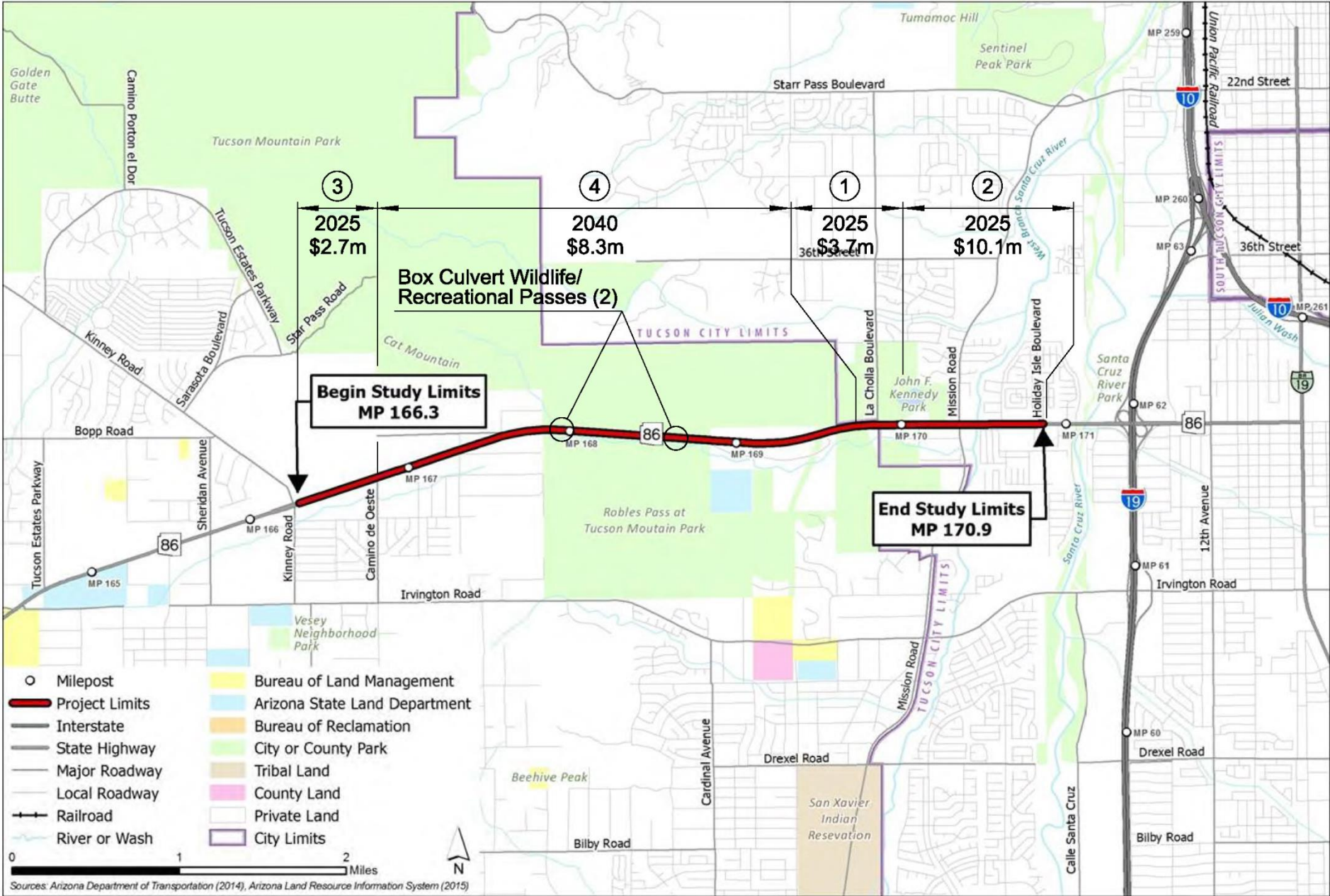
The proposed SR 86 widening and intersection improvement projects would be completed in two stages, see **Figure F-1: Implementation Plan**. The proposed first stage improvements for year 2025 would include:

- 1) Modifications to the intersection of SR 86 and La Cholla Boulevard include additional turn and through lanes on the approaches, additional storage length for turn lengths, a westbound acceleration lane, improvements to the retaining wall on the north side of the intersection and sidewalks on each side of the road. Estimated cost of improvements: \$3.7M.
- 2) Widen SR 86 to six-lanes (three-lanes in each direction) from La Cholla Boulevard to Holiday Isle Boulevard with modifications to the intersections of Mission Road, Freedom Drive, and Holiday Isle Boulevard to include additional turn and through lanes on approaches and additional storage length for turn lanes. Estimated cost of improvements: \$10.1M.
- 3) Widening of SR 86 to six-lanes (three-lanes in each direction) from 700-feet east of Kinney Road to Camino de Oeste/Bopp Road with modifications at the Camino de Oeste/Bopp Road intersection that include additional turn and through lanes on approaches. Improvements to the north leg of the intersection are contingent on the proposed commercial development in the Kinney Road intersection area which includes a loop road connection to Camino de Oeste. Estimated cost of improvements: \$2.7M.

The second stage of SR 86 widening project includes the following improvements for the year 2040 (see **Figure F-1: Implementation Plan**):

- 1) Widen SR 86 to six-lanes (three lanes in each direction) from Camino de Oeste/Bopp Road to La Cholla Boulevard with modifications to the intersections of Camino de Oeste/Bopp Road and La Cholla Boulevard that include additional turn lanes and or acceleration lanes. Install a six-foot high game fencing on both sides of SR 86 right-of-way through the Tucson Mountain Park area. Estimated cost of improvements: \$8.3M.
- Two box culverts that also serve as wildlife/recreational passes would be installed at MP 167.89 and MP 168.54 with upstream ramp drop inlet and downstream wash improvements including installation of bank protection. Culvert type and design would be reviewed and finalized prior to construction. Estimated cost of improvements: \$0.7M.

Other improvements – Eastbound SR 86 has two lanes between Holiday Isle Boulevard and S. Valley Road. To the east of S. Valley Road and to the west of Holiday Isle Boulevard eastbound SR 86 has three lanes. Traffic modeling shows the two eastbound lanes have adequate capacity through 2040, however, from a public perspective widening this portion of eastbound SR 86 to three lanes may be warranted.



Coordination with the following agencies would be necessary during the Design Phase and during Construction of the project:

- City of Tucson, Pima County, Pima County Natural Resources Parks and Recreation, Pima County Flood Control District, Arizona Game and Fish Department, Arizona State Land Department, Federal Highway Administration (FHWA), PAG, Sun Tran, Trico Electric Cooperative and Tucson Electric Power.

It is anticipated that a consultant will prepare the right-of-way plans for additional right-of-way needed for the proposed improvement of SR 86 and for additional right-of-way along intersecting streets for widening of the intersections and for the proposed frontage roads along the south side of SR 86 between La Cholla Boulevard and Mission Road.

It is also anticipated that a consultant will prepare the roadway improvement plans. The project will be managed during design by ADOT Urban Project Management.

G. ESTIMATED COST

The estimated costs are based on unit prices obtained from ADOT's Construction Cost Data Base and reflect unit prices for recent similar work in the area.

Construction costs for roadway to be constructed are based on a structural section of 8 ½-inches Asphalt Concrete (AC) over 10-inches Aggregate Base (AB) plus fog coat in the urban fringe section and 8-inches AC over 7-inches AB plus fog coat in the urban section.

- An itemized construction cost estimate has been developed for the widening and improvement of SR 86 and connecting streets. The itemized estimate is shown on page 14 of this report.
- The estimated cost of right-of-way is based on a preliminary estimate of the per-square foot cost. If some of the publicly owned property is made available through easements or other less costly methods, the estimated cost of right-of-way may be reduced.

The total estimated project cost is:

Roadway Cost:	\$22,100,000
Other Cost:	\$2,410,000
Utility Relocation Cost:	<u>\$1,000,000</u>
Total Project Cost:	\$25,510,000

H. REQUIRED ACTION

Action by ADOT is required to program the project for Right-of-Way Determination and Acquisition, for Final Design and for Construction.

Arizona Department of Transportation
Estimated Engineering Construction Cost

Itemized Estimate

Project Number:

Location: SR 86 IMPROVEMENTS FROM KINNEY RD TO SANTA CRUZ RIVER

Version:

Item No	Item Description	Unit	Quantity	Unit Price	Amount
2020001	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	L.SUM	1	\$50,000	\$50,000
2020084	REMOVE BITUMINOUS PAVEMENT (MILLING) (2 1/2")	SQ.YD.	73,920	\$0.25	\$18,480
2020021	REMOVAL OF CONCRETE CURB AND GUTTER	L.FT.	15,230	\$4.00	\$60,920
2020025	REMOVAL OF CONCRETE SIDEWALKS, DRIVEWAYS AND SLABS	SQ.FT.	53,910	\$3.00	\$161,730
2020071	REMOVE GUARD RAIL	L.FT.	1,050	\$8.00	\$8,400
2030305	ROCK EXCAVATION	CU.YD.	426	\$20.00	\$8,520
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	29,547	\$40.00	\$1,181,880
4040111	BITUMINOUS TACK COAT	TON	87	\$600.00	\$52,200
4040116	APPLY BITUMINOUS TACK COAT	HOURL	148	\$175.00	\$25,900
4040125	FOG COAT	TON	21	\$1,000.00	\$21,000
4040163	BLOTTER MATERIAL	TON	134	\$45.00	\$6,030
4040230	ASPHALT BINDER (TON	2,949	\$600.00	\$1,769,400
4060006	ASPHALTIC CONCRETE (3/4" MIX)	TON	56,698	\$55.00	\$3,118,390
4060026	MINERAL ADMIXTURE (FOR 3/4" MIX)	TON	567	\$90.00	\$51,030
4140040	ASPHALTIC CONCRETE FRICTION COURSE (ASPHALT-RUBBER)	TON	2,539	\$40.00	\$101,560
4140042	ASPHALT RUBBER MATERIAL (FOR AR-ACFC)	TON	193	\$700.00	\$135,100
4140044	MINERAL ADMIXTURE (FOR AR-ACFC)	TON	22	\$90.00	\$1,980
5010020	PIPE, CORRUGATED METAL, 30"	L.FT.	40	\$175.00	\$7,000
5010025	PIPE, CORRUGATED METAL, 36"	L.FT.	150	\$180.00	\$27,000
5010030	PIPE, CORRUGATED METAL, 42"	L.FT.	50	\$185.00	\$9,250
5014030	FLARED END SECTION, 30" (C-13.25)	EACH	1	\$800.00	\$800
5014036	FLARED END SECTION, 36" (C-13.25)	EACH	10	\$900.00	\$9,000
5014042	FLARED END SECTION, 42" (C-13.25)	EACH	4	\$1,000.00	\$4,000
5012518	STORM DRAIN PIPE, 18"	L.FT.	624	\$70.00	\$43,680
5012524	STORM DRAIN PIPE, 24"	L.FT.	1,550	\$80.00	\$124,000
5012530	STORM DRAIN PIPE, 30"	L.FT.	1,800	\$90.00	\$162,000
5030021	CONCRETE CATCH BASIN (C-15.20) ONE 3.5' WING, H=8' OR LESS	EACH	14	\$4,000.00	\$56,000
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	\$100,000.00	\$100,000
7060001	PAVEMENT MARKER, RAISED (REFLECTIVE)	EACH	1,250	\$4.00	\$5,000
7330031	TRAFFIC SIGNAL (LA CHOLLA, CAMINO DE OESTE, MISSION ROAD)	EACH	3	\$250,000.00	\$750,000
7330032	TRAFFIC SIGNAL (MODIFY SIGNAL AT HOLIDAY ISLE)	EACH	1	\$150,000.00	\$150,000
7330033	TRAFFIC SIGNAL (MODIFY HAWK SIGNAL AT FREEDOM DRIVE)	EACH	1	\$25,000.00	\$25,000
7330550	REMOVE AND SALVAGE TRAFFIC SIGNALS AND LOAD CENTER CABINETS	L.SUM	1	\$50,000.00	\$50,000
7350006	LOOP DETECTOR (COUNTER) (FULL REPLACEMENT)	EACH	2	\$2,100.00	\$4,200
7350023	LOOP DETECTOR (SPEED/CLASSIFICATION) (PARTIAL REPLACEMENT)	EACH	2	\$6,500.00	\$13,000
7360300	ROADWAY LIGHTING	L.SUM	1	\$500,000.00	\$500,000
8030103	DECOMPOSED GRANITE	SQ.YD.	9,675	\$6.00	\$58,050
9030003	WOVEN WIRE FENCE, TYPE 3	L.FT.	10,777	\$15.00	\$161,655
9050009	GUARD RAIL, SPECIAL (THREE BEAM MEDIAN BARRIER)	EACH	10,795	\$60.00	\$647,700
9060051	CATTLE GUARD (5 UNIT)	EACH	1	\$20,000.00	\$20,000
9080001	CONCRETE CURB (C-05.10) (TYPE A)	L.FT.	22,711	\$20.00	\$454,220
9080041	CONCRETE CURB (WEDGE CURB, PAG STD DET 209)	L.FT.	1,865	\$25.00	\$46,625
9080084	CONCRETE CURB AND GUTTER (C-05.10) (TYPE D)	L.FT.	14,213	\$25.00	\$355,325
9080201	CONCRETE SIDEWALK (C-05.20)	SQ.FT.	88,096	\$5.00	\$440,480
9080296	CONCRETE SIDEWALK RAMP (C-05.10, TYPE A)	EACH	19	\$2,500.00	\$47,500

9080298	CONCRETE SIDEWALK RAMP (C-05.10, TYPE C)	EACH	26	\$1,500.00	\$39,000
9140153	RETAINING WALL (J. F. KENNEDY PARK)	SQ.FT.	1,600	\$55.00	\$88,000
9140155	RETAINING WALL (LA CHOLLA BOULEVARD TO MP 170)	SQ.FT.	5,280	\$55.00	\$290,400
9240050	MISCELLANEOUS WORK (CONCRETE BOX CULVERT EXTENSION, MP 166.90)	L.SUM	1	\$125,000.00	\$125,000
9240051	MISCELLANEOUS WORK (CONCRETE BOX CULVERT EXTENSION, MP 167.38)	L.SUM	1	\$45,000.00	\$45,000
9240052	MISCELLANEOUS WORK (CONCRETE BOX CULVERT, MP 167.89)	L.SUM	1	\$200,000.00	\$200,000
9240053	MISCELLANEOUS WORK (CONCRETE BOX CULVERT, MP 168.54)	L.SUM	1	\$390,000.00	\$390,000
9240054	MISCELLANEOUS WORK (CONCRETE BOX CULVERT EXTENSION, MP 170.46)	L.SUM	1	\$250,000.00	\$250,000
9240055	MISCELLANEOUS WORK (CONCRETE BOX CULVERT EXTENSION, MISSION RD)	L.SUM	1	\$50,000.00	\$50,000
9240056	MISCELLANEOUS WORK (TRAFFIC STRIPING AND PAVEMENT MARKING)	L.SUM	1	\$110,000.00	\$110,000
9280036	GROUND-IN RUMBLE STRIP (8 INCH)	L.FT.	73,920	\$0.25	\$18,480
				ROADWAY SUBTOTAL	\$12,649,900

701XX01	MAINTENANCE AND PROTECTION OF TRAFFIC (15%)	COST	15%		\$1,897,485
810XX01	EROSION CONTROL AND POLLUTION PREVENTION (1%)	COST	1%		\$126,499
924XX02	CONTRACTOR QUALITY CONTROL (2%)	COST	2%		\$252,998
925XX01	CONSTRUCTION SURVEYING AND LAYOUT (2%)	COST	2%		\$252,998

SUBTOTAL \$15,179,900

901XX01	MOBILIZATION (10%)	COST	10%		\$1,517,990
				SUBTOTAL	\$16,698,000

406XX08	AC SMOOTHNESS INCENTIVE	LANE MILE	18.0	\$8,000.00	\$144,000
416XX02	ASPHALTIC CONCRETE MATERIALS QUALITY INCENTIVE	TON	56,698	\$3.00	\$170,094
951XX01	CONSTRUCTION ENGINEERING (15%)	COST	15%		\$2,504,700
951X003	COMMUNICATIONS	L.SUM	1	\$10,000.00	\$10,000
951XX02	CONTINGENCIES (5%)	COST	5%		\$834,900
951XX10	INDIRECT COST ALLOCATION	COST	10.39%		\$1,734,922

SUBTOTAL \$22,097,000

	RIGHT-OF-WAY (CAMINO DE OESTE INTERSECTION)	SQ.FT.	9,150	\$10.00	\$91,500
	RIGHT-OF-WAY (LA CHOLLA BOULEVARD TO MP 170)	SQ.FT.	11,650	\$10.00	\$116,500
	RIGHT-OF-WAY (FRONTAGE ROAD)	SQ.FT.	20,000	\$10.00	\$200,000
	RIGHT-OF-WAY (BRAUN/KELLOGG)	SQ.FT.	1,900	\$10.00	\$19,000
	RIGHT-OF-WAY (WONG/CHU)	SQ.FT.	7,850	\$10.00	\$78,500
	RIGHT-OF-WAY (R & G TIRE & AUTOMOTIVE INC, PARCEL #119-21-042A) (TOTAL TAKE)	SQ.FT.	19,000	\$26.50	\$503,500
	RIGHT-OF-WAY (H & R BLOCK)	SQ.FT.	2,500	\$13.00	\$32,500
	RIGHT-OF-WAY (BANK OF AMERICA)	SQ.FT.	3,800	\$13.00	\$49,400
	RIGHT-OF-WAY (QUICKTRIP CORP)	SQ.FT.	1,750	\$15.00	\$26,250
	DESIGN	COST	8%		\$1,300,000
	UTILITY RELOCATION	L.SUM	1	\$1,000,000.00	\$1,000,000

SUBTOTAL \$25,510,000

TOTAL PROJECT COST \$25,510,000

Summary	
Section	Total
Total Project Cost	\$25,510,000

SERVICE INVOLVEMENT SHEET							
Kickoff Meeting	Contacted	Service Involvement	Involvement				Comments-Identifying Issues Which Make Involvement Significant Or Minimal
			Significant	Minimal	None	Unknown	
X	X	Urban Project Management	X				Provide ADOT Project Management.
X	X	Southcentral District	X				Provide Services to City of Tucson and Pima County.
	X	Right-of-Way	X				Right-of-way plans and acquisition by ADOT right-of-way.
	X	Drainage Design		X			Review drainage reports and facility design prepared by a Consultant.
X	X	Traffic Engineering		X			Traffic engineering will be provided by a Consultant. Overview will be provided by ADOT.
	X	Pavement Design & Geotechnical Services		X			Pavement design and geotechnical services will be provided by Consultant. Overview will be provided by ADOT.
	X	Bridge Design		X			Review bridge widening plans for the Old West Branch Santa Cruz River.
X	X	Environmental Planning		X			Review of Environmental Documentation prepared by Consultant.
	X	Roadway Design Section		X			Review Roadway Plans prepared by Consultant.
	X	Utility & Railroad	X				Utility Clearance Memo.
	X	Engineering Survey Section			X		Conduct photogrammetry.
	X	Roadside Development		X			Provide seeding and revegetation.
	X	Contracts & Specs.	X				PS&E / Advertise Project.
X	X	City of Tucson		X			Coordination.
X	X	Pima County		X			Coordination.
X	X	Pima County Natural Resources, Park and Recreation		X			Coordination.
	X	Sun Tran		X			Bus Stop Coordination.
	X	Pima Association of Governments (PAG)		X			Coordination.
	X	Arizona State Land Department		X			Coordination.
	X	Arizona Game & Fish Department		X			Coordination and Review Plans prepared by Consultant.
X	X	Tohono O'odham Nation			X		
X	X	US Customs and Border Protection		X			Coordination.
X	X	FHWA	X				Federal funds. Operating Partnership Agreement (OPA).

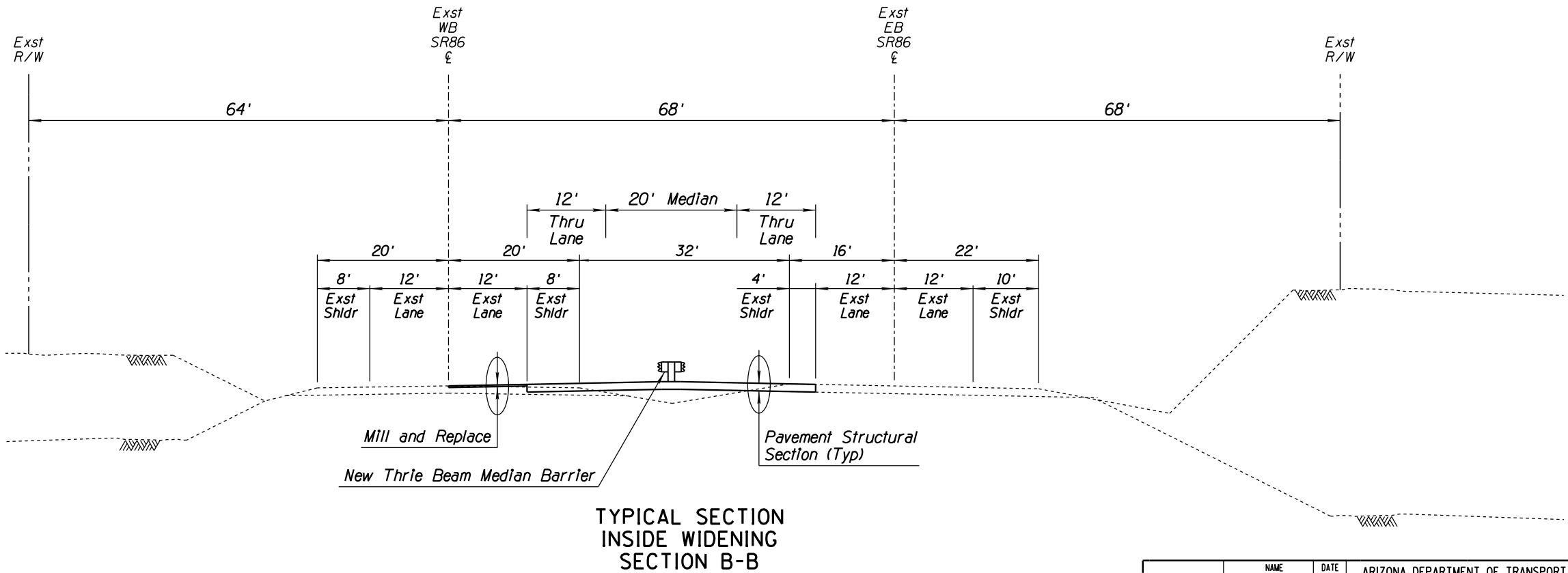
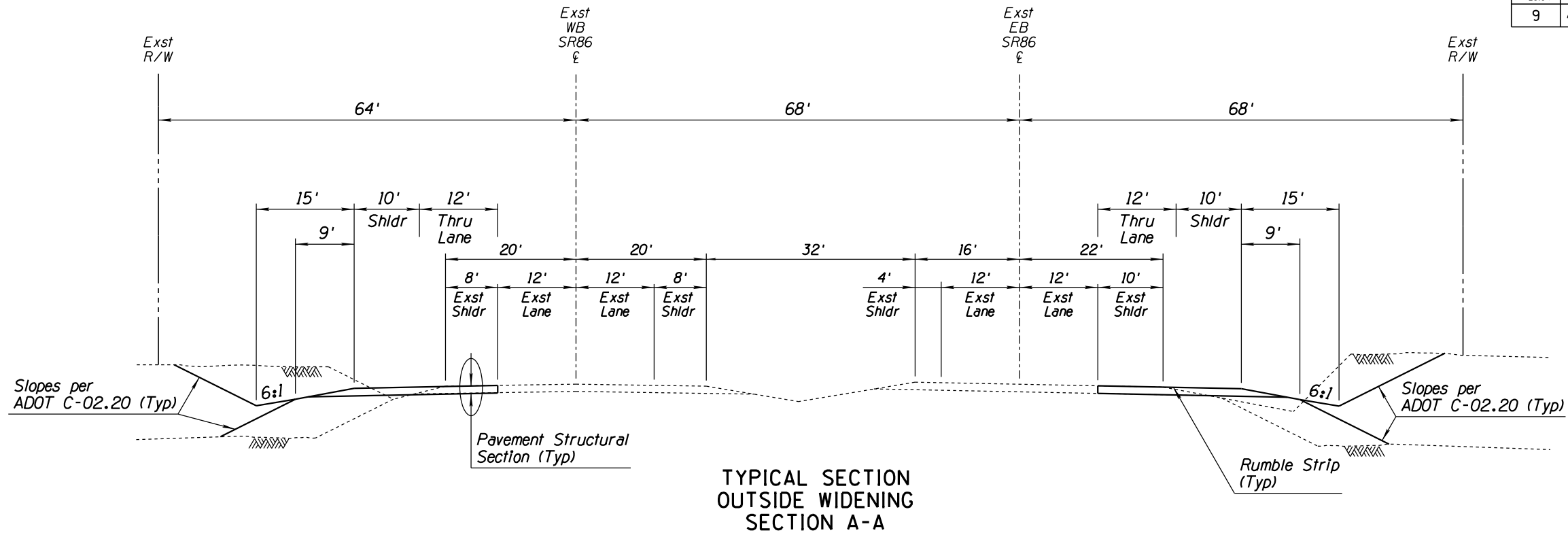
**APPENDIX A:
TYPICAL ROADWAY SECTIONS
AND
PLAN SHEETS**

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DATE: LOCATION: REVISIONS: SURVEY NO. DATE: LOCATION: REVISIONS: SURVEY NO.

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
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000-1-186

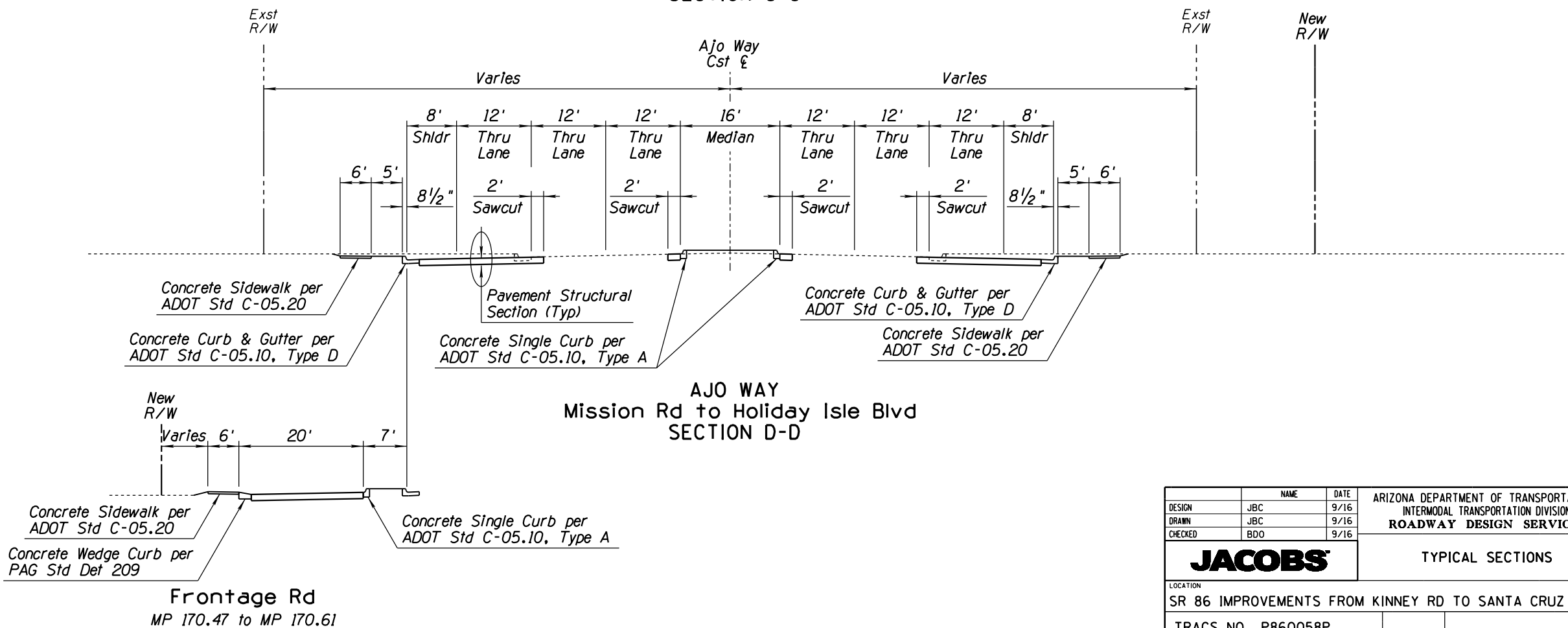
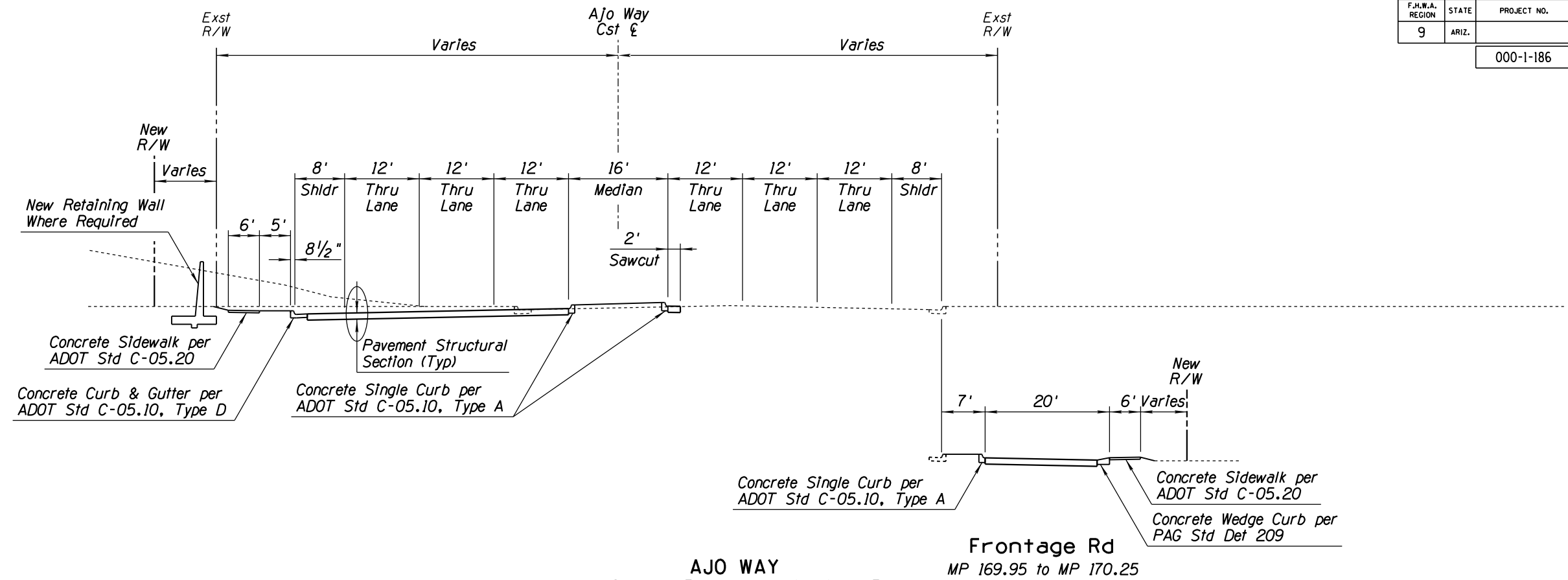


DESIGN	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING
JBC	JBC	9/16		
DRAWN	JBC	9/16		
CHECKED	BDO	9/16		
JACOBS			TYPICAL SECTIONS	
LOCATION			SR 86 IMPROVEMENTS FROM KINNEY RD TO SANTA CRUZ RIVER	DWG. NO.
TRACS NO. P860058P				OF

DATE: LOCATION: REVISIONS: FINISHED PLANS: SURVEY NO. DATE: LOCATION: REVISIONS: FINISHED PLANS: SURVEY NO.

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
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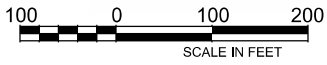
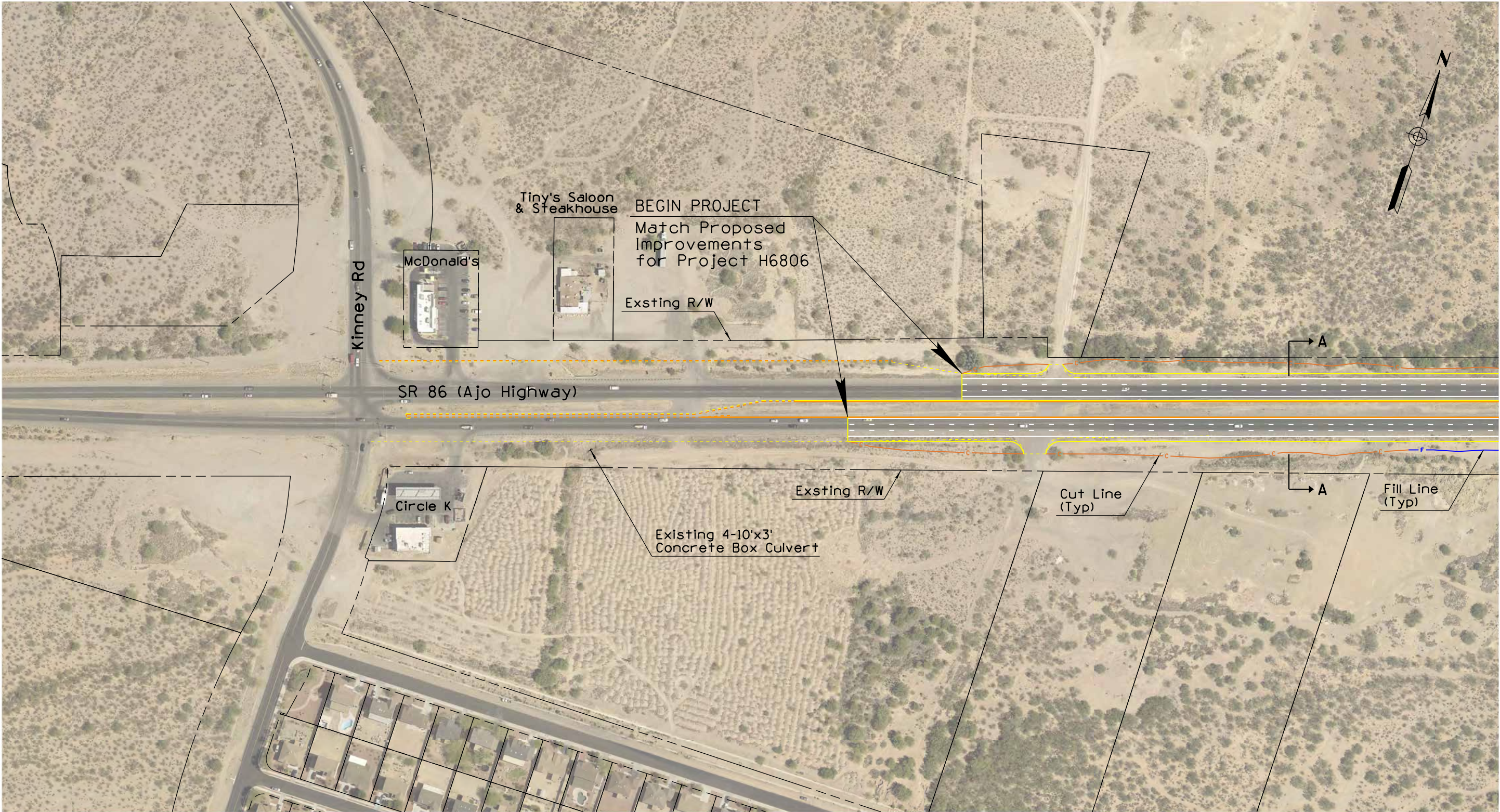
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DESIGN	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING
DRAWN	JBC	9/16		
CHECKED	BDO	9/16		
JACOBS			TYPICAL SECTIONS	
LOCATION			SR 86 IMPROVEMENTS FROM KINNEY RD TO SANTA CRUZ RIVER	DWG. NO.
TRACS NO. P860058P				OF

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
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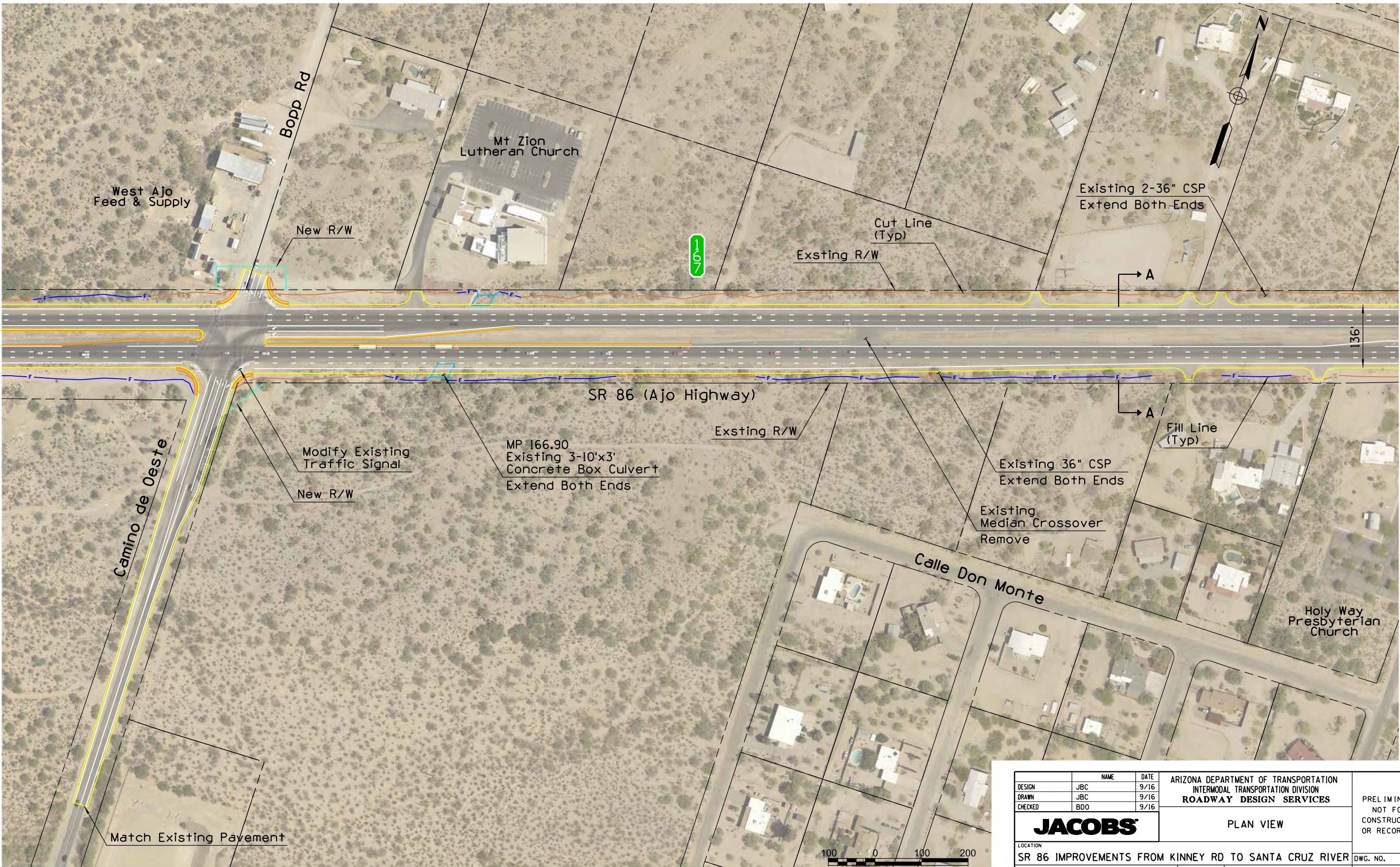
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DESIGN	JBC	9/16		
DRAWN	JBC	9/16		
CHECKED	BDO	9/16		
JACOBS			PLAN VIEW	
LOCATION				
SR 86 IMPROVEMENTS FROM KINNEY RD TO SANTA CRUZ RIVER				DWG. NO.
TRACS NO. P860058P				___ OF ___

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
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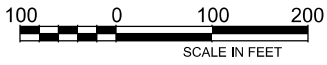
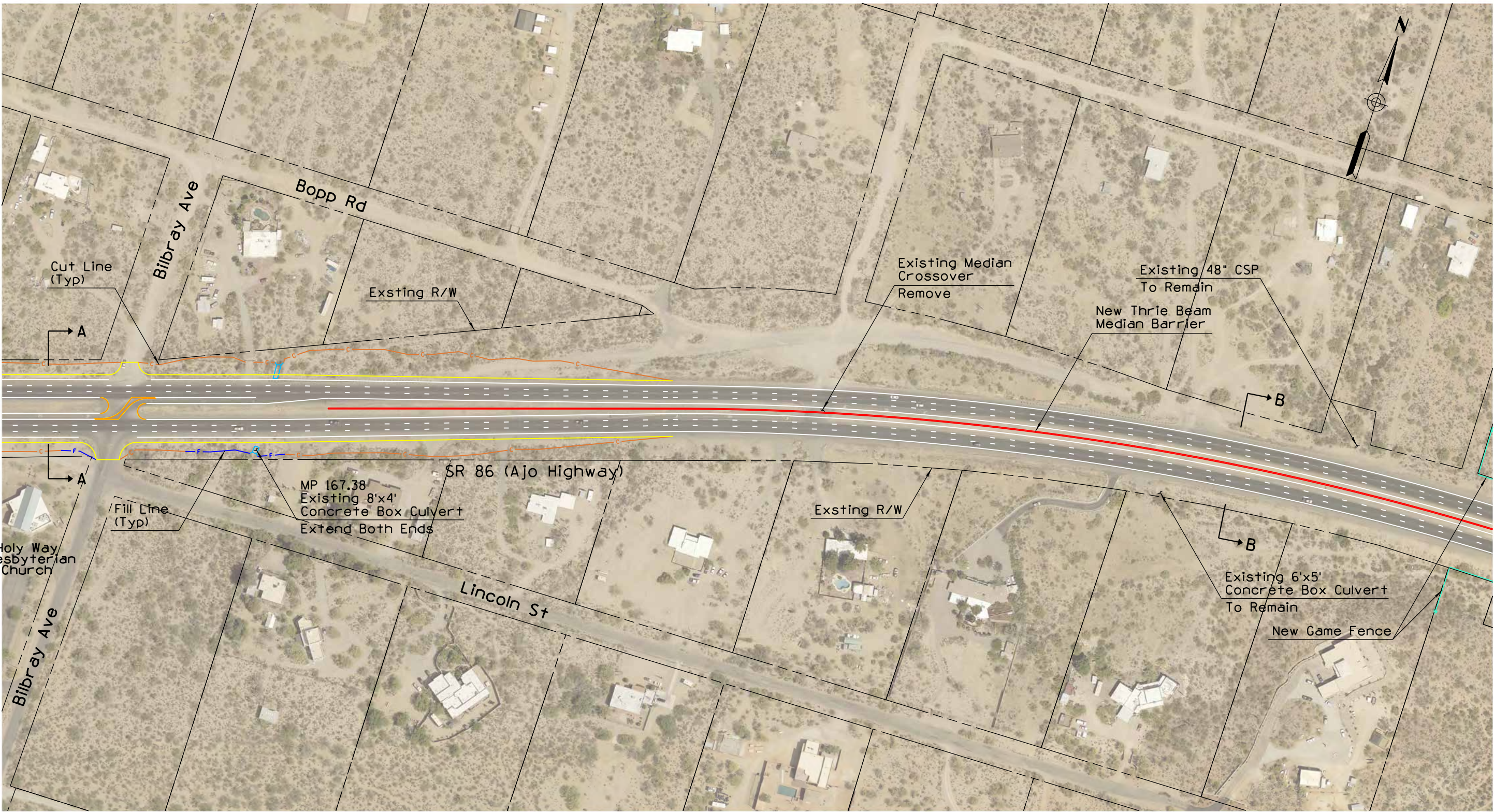
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	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES		PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING
DESIGN	JBC	9/16			
DRAWN	JBC	9/16			
CHECKED	BDO	9/16	PLAN VIEW		
JACOBS					
LOCATION					DWG. NO. ___ OF ___
SR 86 IMPROVEMENTS FROM KINNEY RD TO SANTA CRUZ RIVER					
TRACS NO. P860058P					

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
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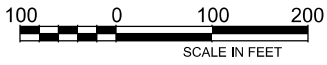
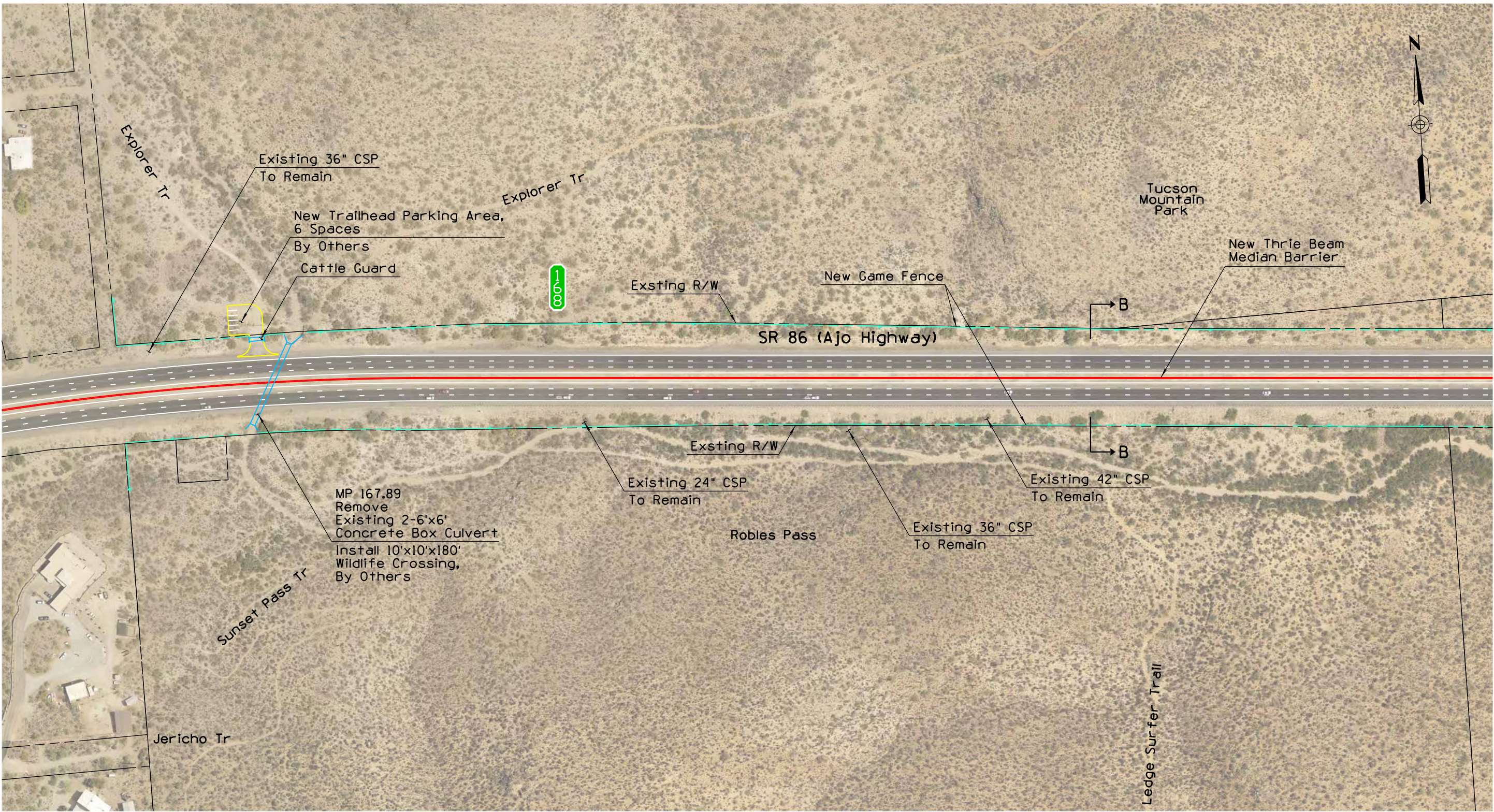
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DESIGN	JBC	DATE	9/16	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING
DRAWN	JBC	DATE	9/16		
CHECKED	BDO	DATE	9/16		
JACOBS				PLAN VIEW	DWG. NO. OF
LOCATION				SR 86 IMPROVEMENTS FROM KINNEY RD TO SANTA CRUZ RIVER	
TRACS NO. P860058P					

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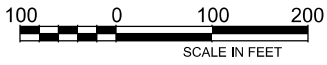
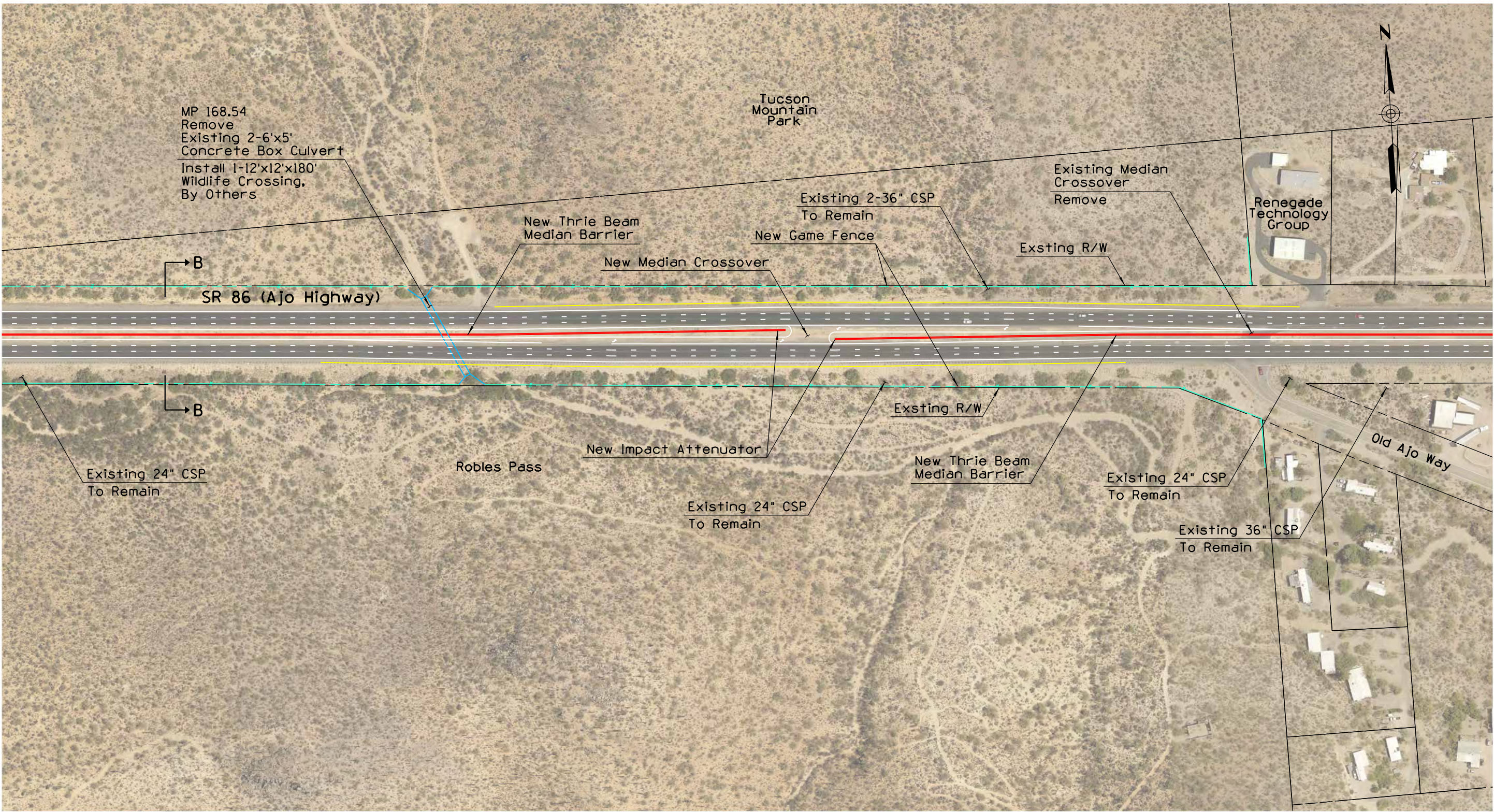
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		NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING
DESIGN	JBC		9/16		
DRAWN	JBC		9/16		
CHECKED	BDO		9/16		
JACOBS				PLAN VIEW	
LOCATION					
SR 86 IMPROVEMENTS FROM KINNEY RD TO SANTA CRUZ RIVER					DWG. NO.
TRACS NO. P860058P					___ OF ___

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
9	ARIZ.		5	11	

000-1-186

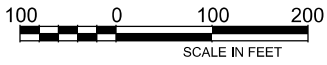


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DESIGN	JBC	9/16		
DRAWN	JBC	9/16		
CHECKED	BDO	9/16		
JACOBS			PLAN VIEW	
LOCATION				
SR 86 IMPROVEMENTS FROM KINNEY RD TO SANTA CRUZ RIVER				DWG. NO.
TRACS NO. P860058P				___ OF ___

DATE- LOCATION- REVISIONS- FINISHED PLANS- SURVEY NO. DATE- LOCATION- REVISIONS- FINISHED PLANS- SURVEY NO.

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
9	ARIZ.		6	11	

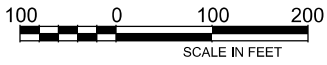
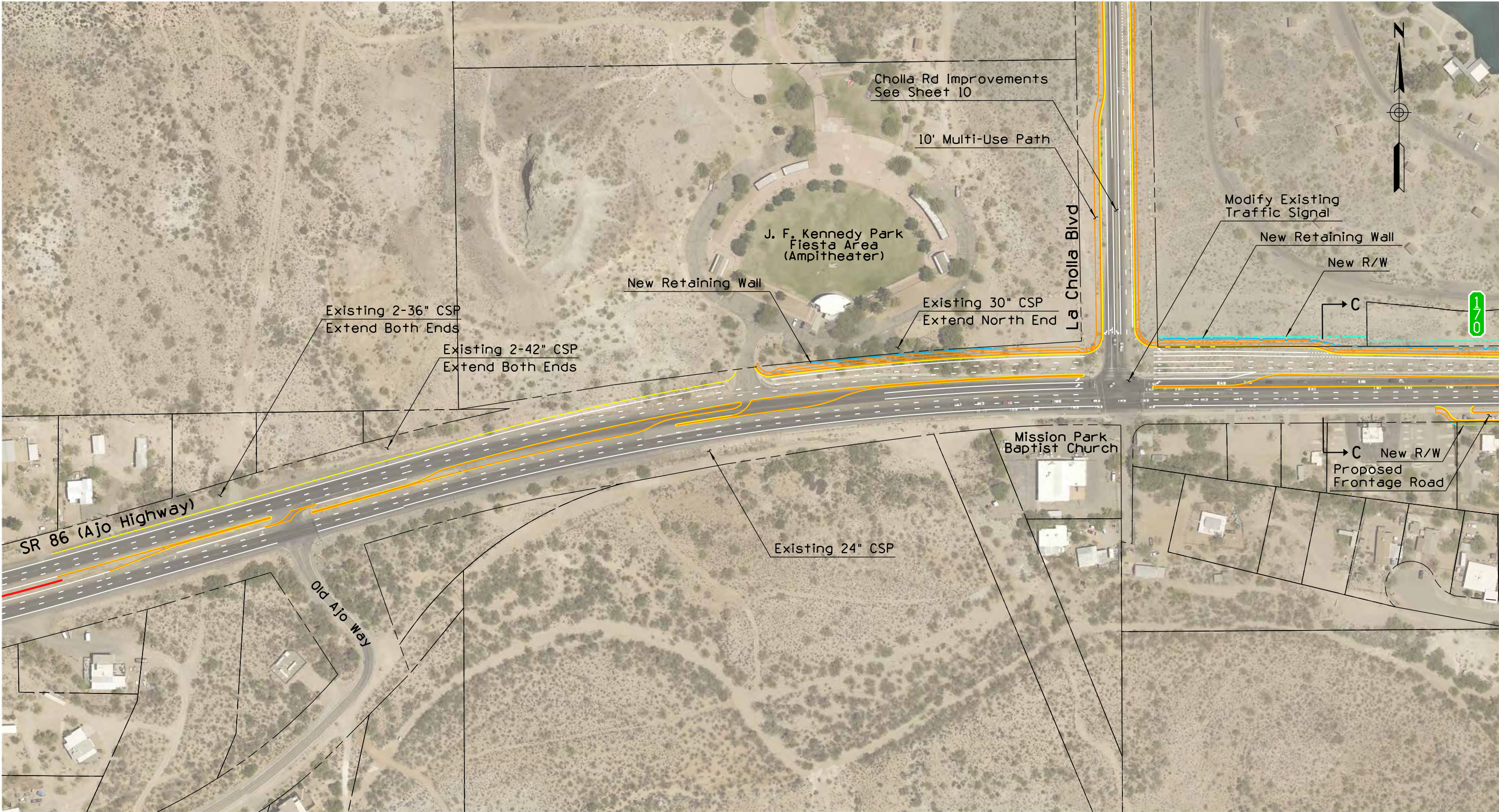
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	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING
DESIGN	JBC	9/16		
DRAWN	JBC	9/16		
CHECKED	BDO	9/16		
JACOBS			PLAN VIEW	
LOCATION				
SR 86 IMPROVEMENTS FROM KINNEY RD TO SANTA CRUZ RIVER				DWG. NO.
TRACS NO. P860058P				___ OF ___

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
9	ARIZ.		7	11	

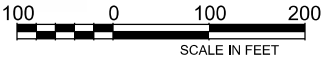
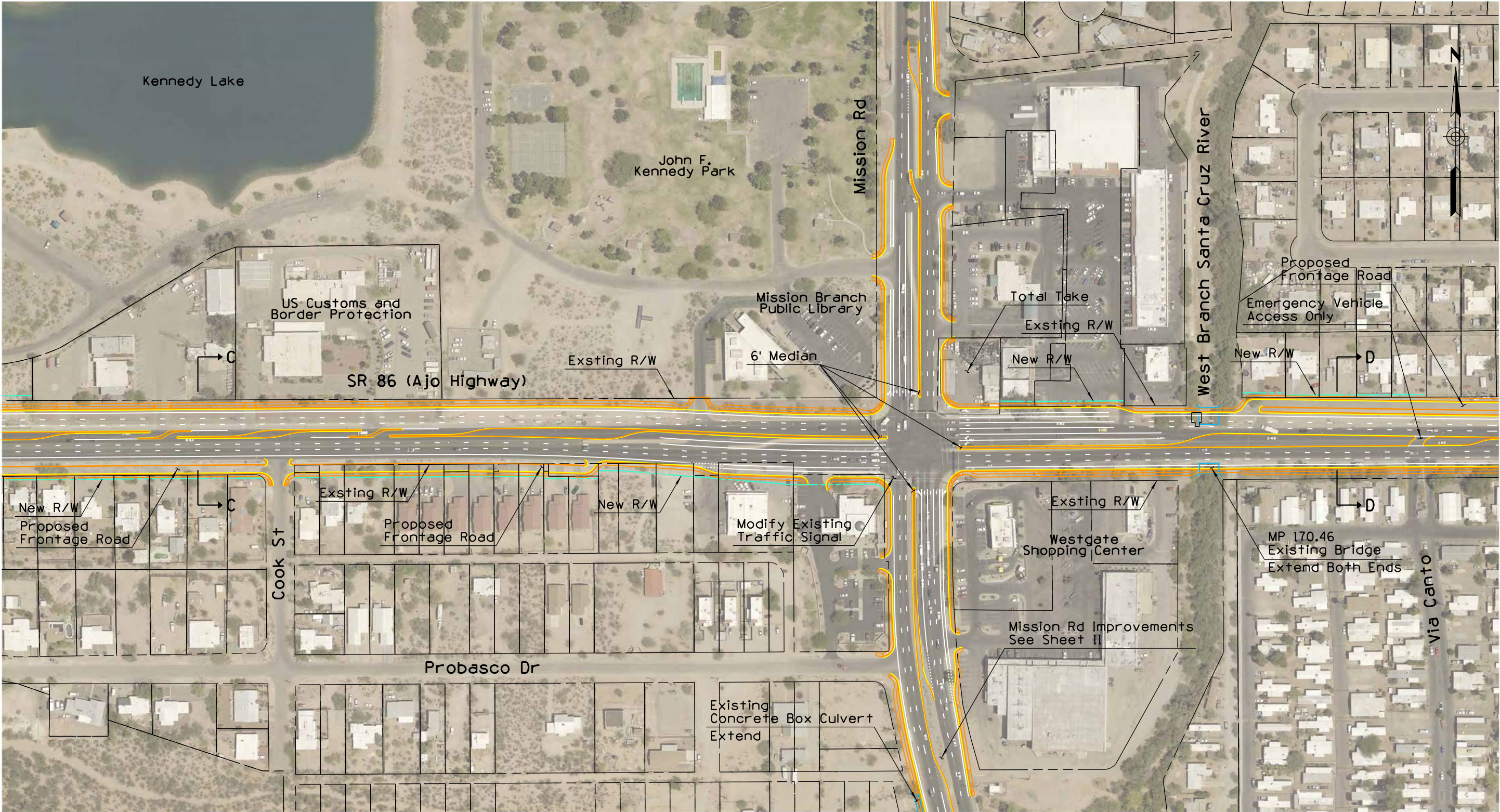
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DESIGN	JBC	9/16	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING
DRAWN	JBC	9/16		
CHECKED	BDO	9/16		
JACOBS			PLAN VIEW	
LOCATION			SR 86 IMPROVEMENTS FROM KINNEY RD TO SANTA CRUZ RIVER	DWG. NO.
TRACS NO. P860058P				OF

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
9	ARIZ.		8	11	

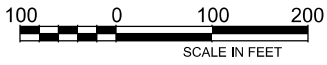
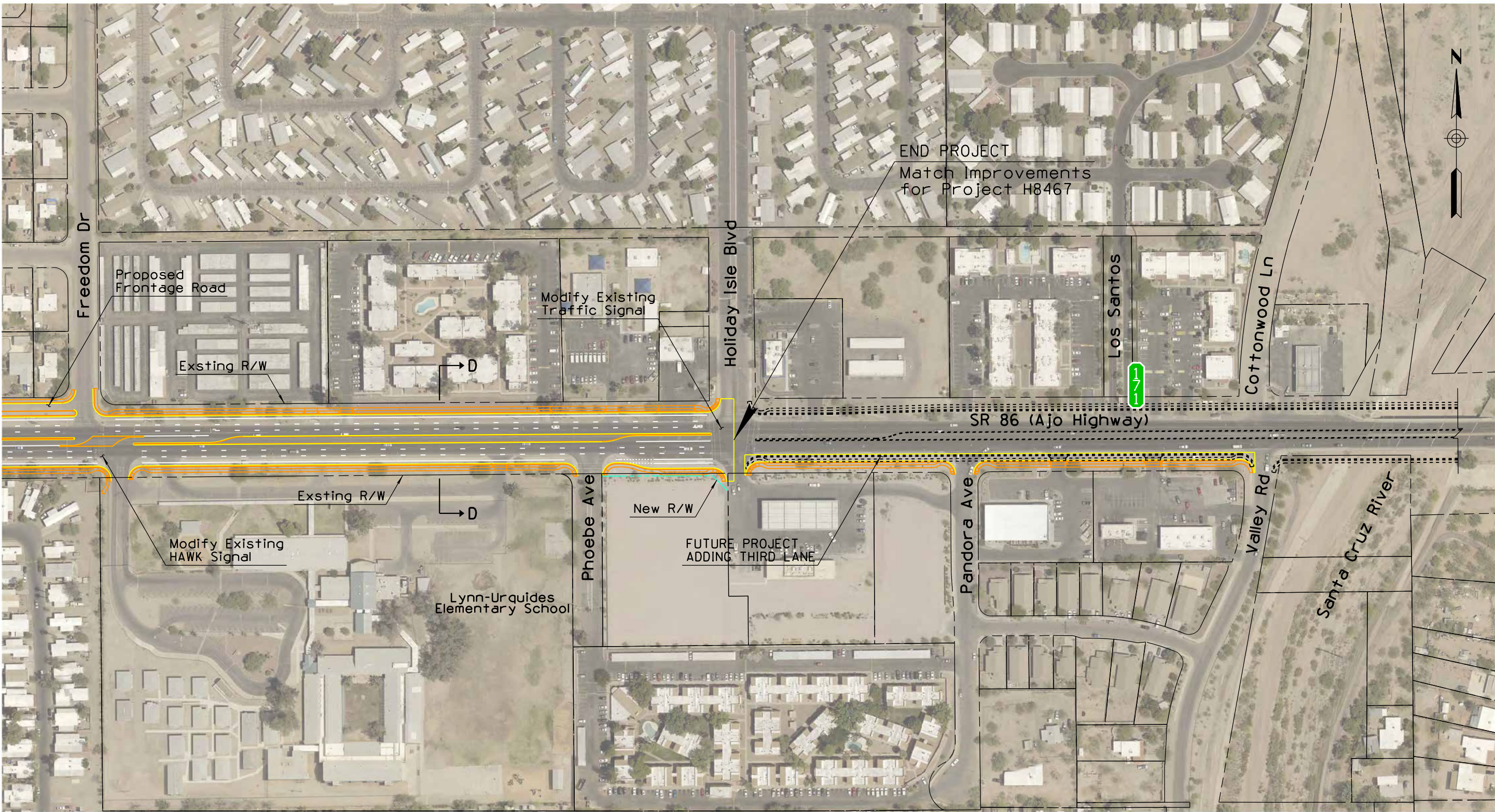
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DESIGN	JBC	9/16		
DRAWN	JBC	9/16		
CHECKED	BDO	9/16	PLAN VIEW	
JACOBS				
LOCATION				DWG. NO.
SR 86 IMPROVEMENTS FROM KINNEY RD TO SANTA CRUZ RIVER				
TRACS NO. P860058P				___ OF ___

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
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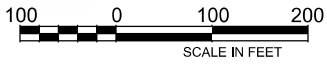
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DRAWN	JBC	9/16		
CHECKED	BDO	9/16	PLAN VIEW	
JACOBS				
LOCATION				
SR 86 IMPROVEMENTS FROM KINNEY RD TO SANTA CRUZ RIVER				DWG. NO.
TRACS NO. P860058P				___ OF ___

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
9	ARIZ.		10	11	

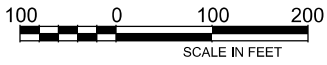
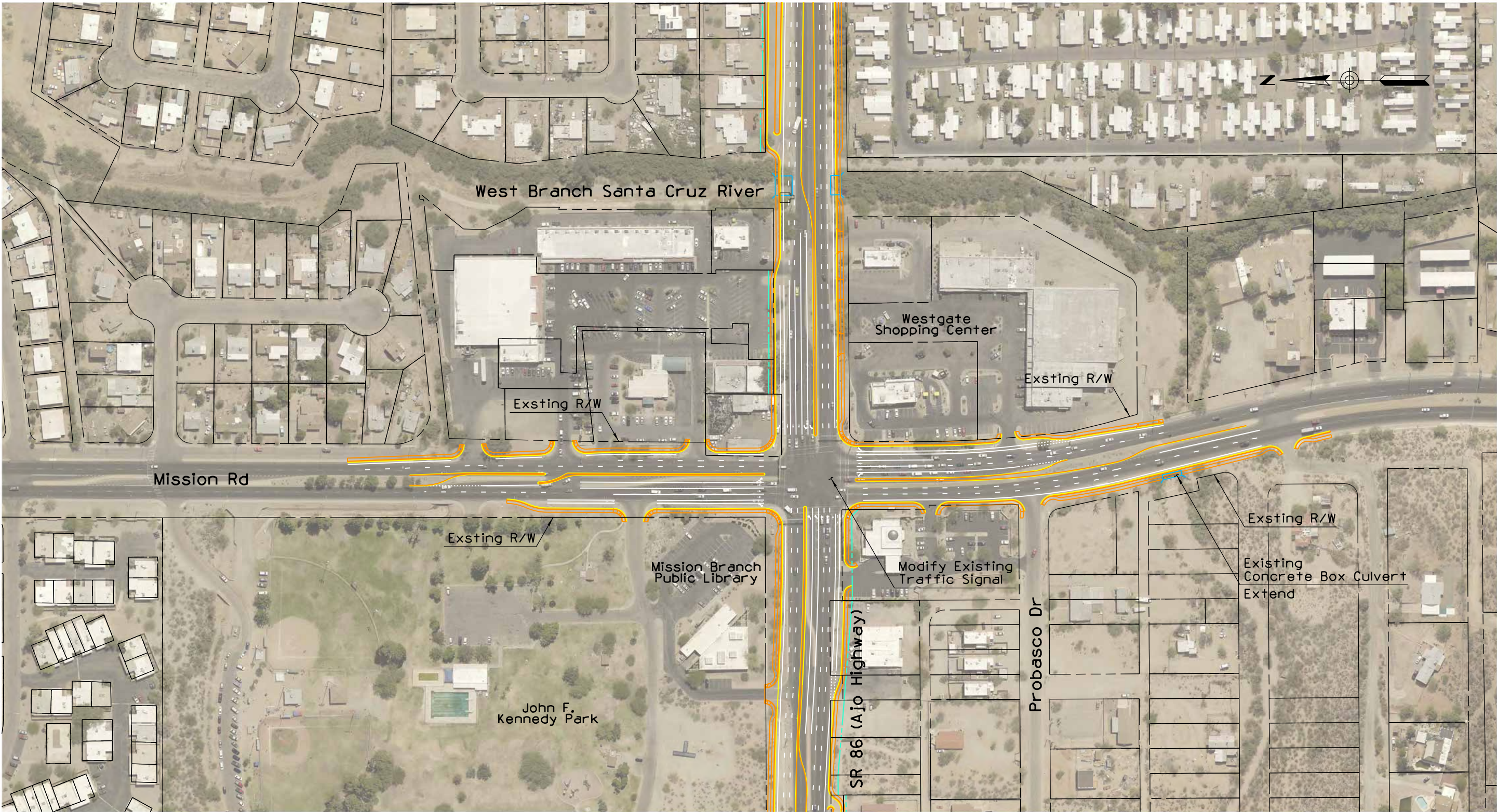
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DESIGN	JBC	DATE	9/16	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING
DRAWN	JBC	DATE	9/16		
CHECKED	BDO	DATE	9/16		
JACOBS				PLAN VIEW	
LOCATION				SR 86 IMPROVEMENTS FROM KINNEY RD TO SANTA CRUZ RIVER	DWG. NO.
TRACS NO. P860058P					OF

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
9	ARIZ.		11	11	

000-1-186

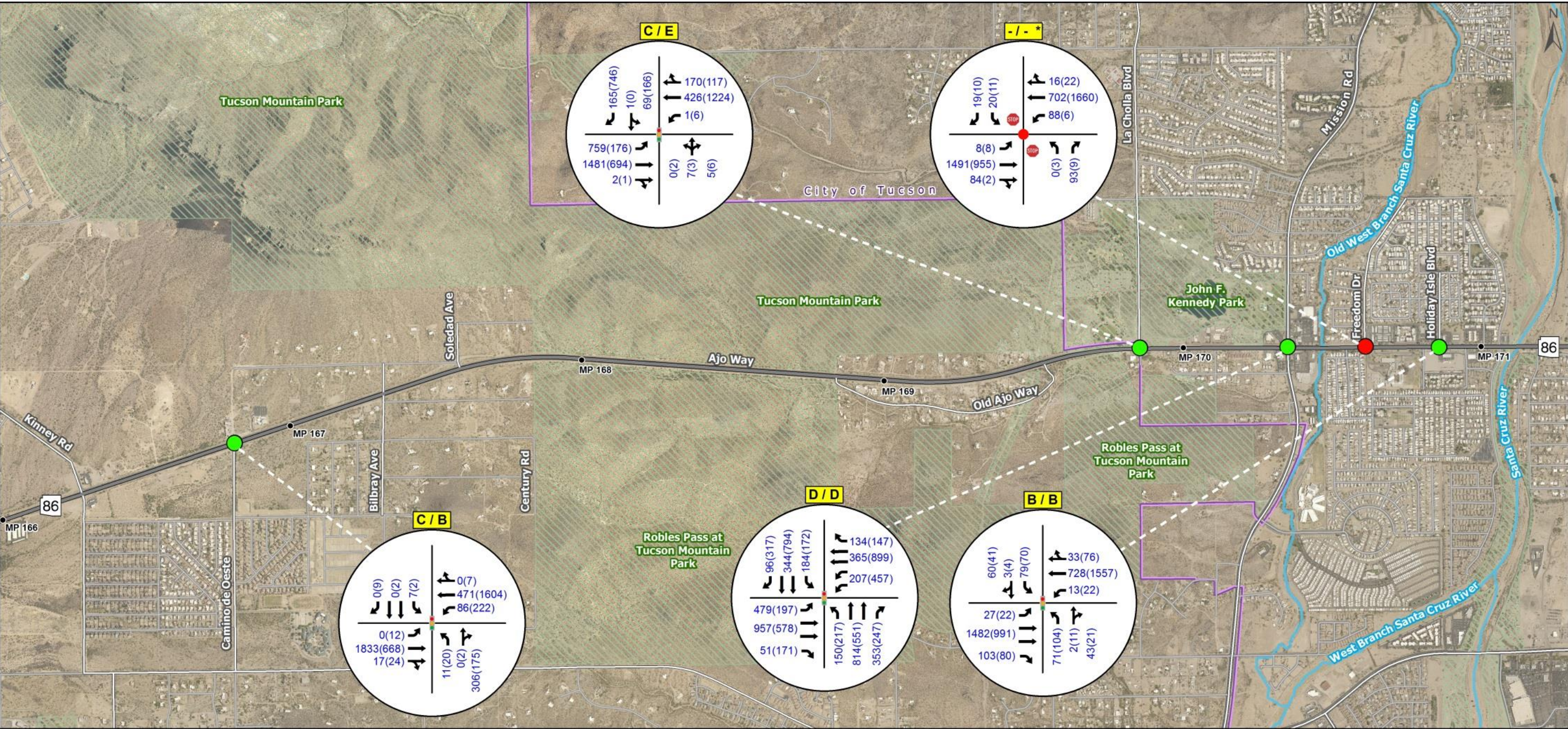


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DESIGN	JBC	9/16		
DRAWN	JBC	9/16		
CHECKED	BDO	9/16	PLAN VIEW	
JACOBS				
LOCATION				DWG. NO.
SR 86 IMPROVEMENTS FROM KINNEY RD TO SANTA CRUZ RIVER				
TRACS NO. P860058P				___ OF ___

APPENDIX B:

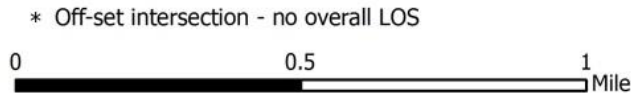
TRAFFIC CONDITIONS, LANE CONFIGURATIONS AND LOS

(Figures 4.5, 4.6 and 4.7 from Working Paper 2
Figures 4.1 and 4.2 from Working Paper 3)



Legend

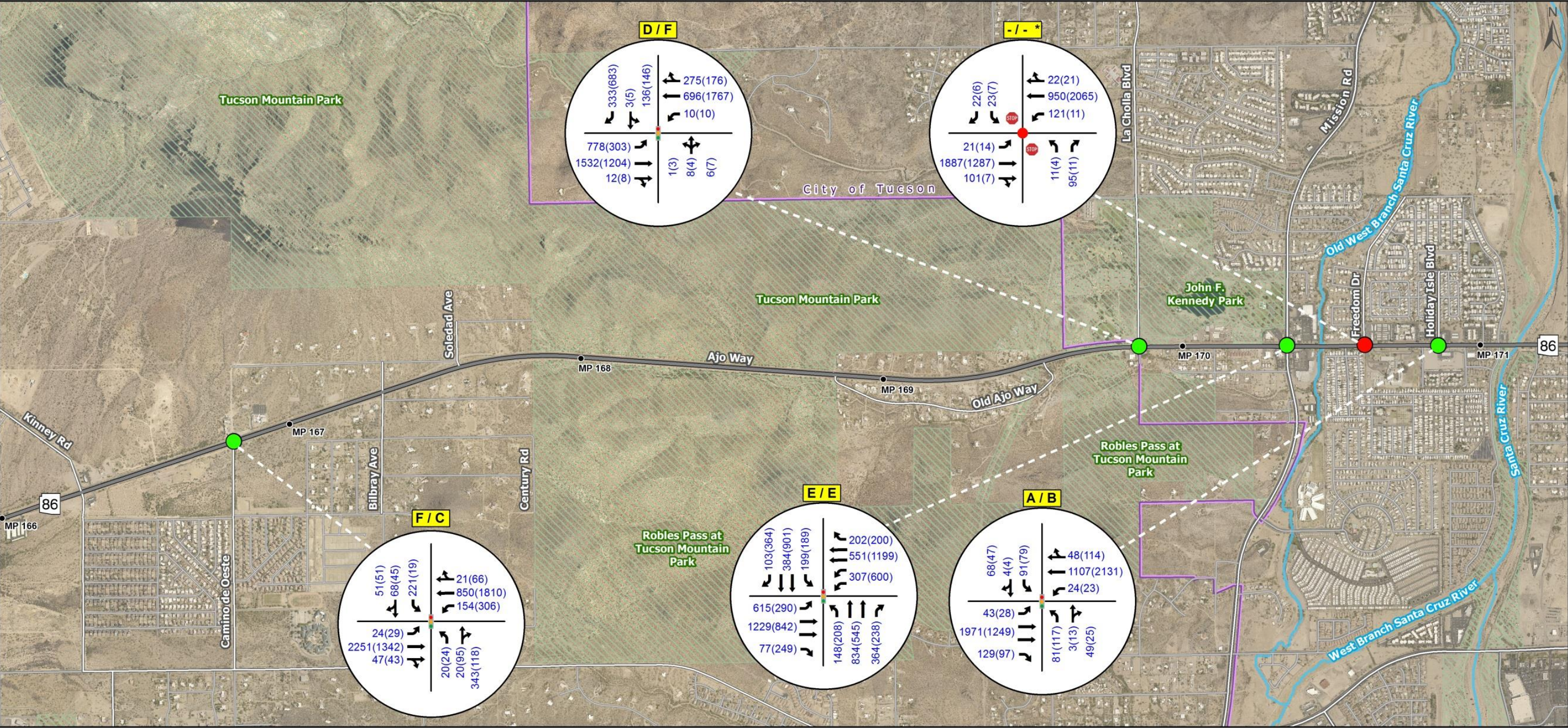
- X / X** Intersection LOS (AM/PM)
- XXX(YYY)** Peak Hour Volumes AM(PM)
- Signalized Intersection
- Off-set intersection - no overall LOS



- Mile Post
- Interstate
- State Route
- Major Road
- Minor Road
- River
- City Boundary
- County Park

FIGURE 4.5: YEAR 2015 EXISTING INTERSECTION LANE CONFIGURATIONS AND LOS

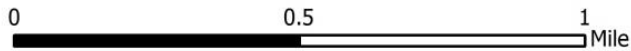
Data Source: Pima County, Arizona Department of Transportation (ADOT), Arizona State Land Resource Information System (ALRIS)



Legend

- X/X** Intersection LOS (AM/PM)
- XXX(YYY)** Peak Hour Volumes AM(PM)
- Signalized Intersection
- Un-Signalized Intersection with Pedestrian Hawk Signal

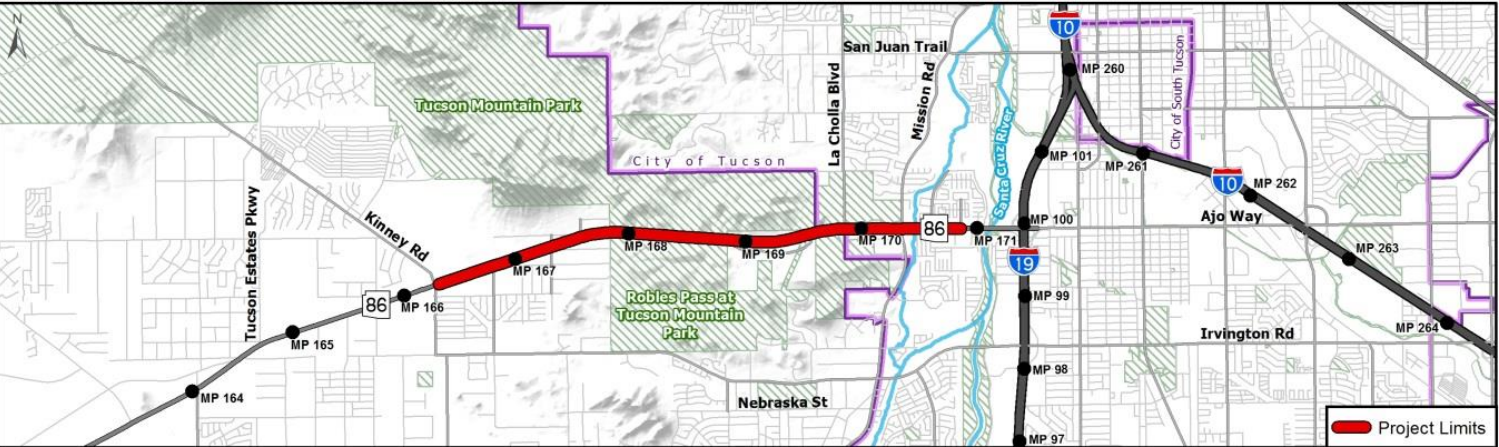
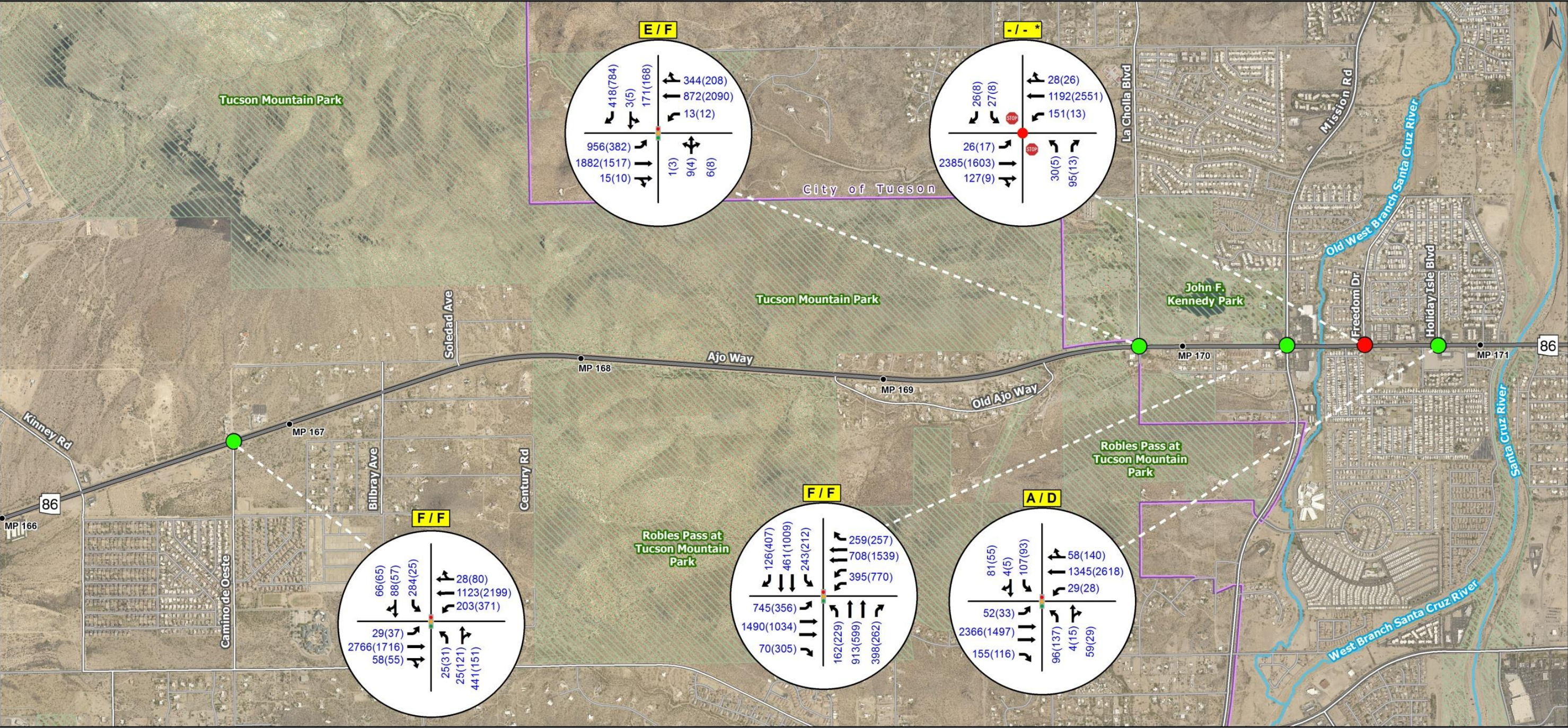
* Off-set intersection - no overall LOS



- Mile Post
- Interstate
- State Route
- Major Road
- Minor Road
- River
- City Boundary
- County Park

FIGURE 4.6: YEAR 2025 NO-BUILD INTERSECTION LANE CONFIGURATIONS AND LOS

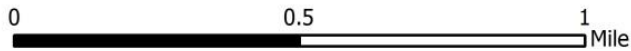
Data Source: Pima County, Arizona Department of Transportation (ADOT), Arizona State Land Resource Information System (ALRIS)



Legend

- X/X** Intersection LOS (AM/PM)
- XXX(YYY)** Peak Hour Volumes AM(PM)
- Signalized Intersection
- Un-Signalized Intersection with Pedestrian Hawk Signal

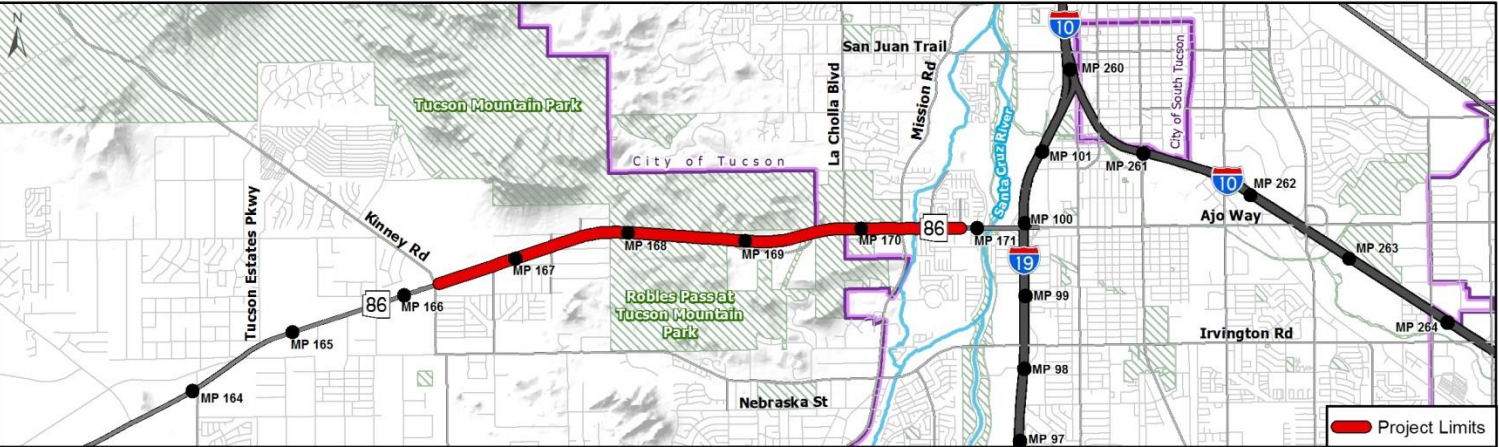
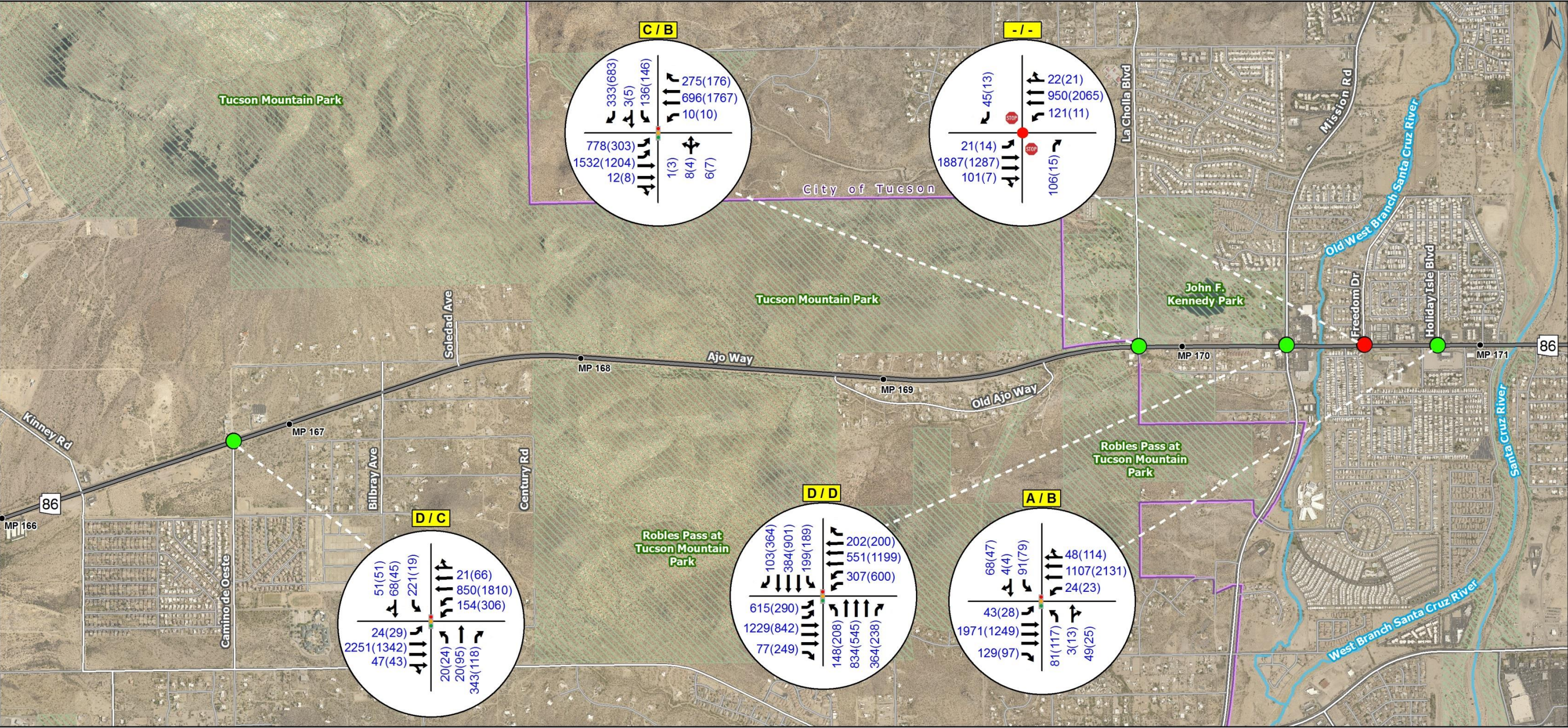
* Off-set intersection - no overall LOS



- Mile Post
- Interstate
- State Route
- Major Road
- Minor Road
- River
- City Boundary
- County Park

FIGURE 4.7: YEAR 2040 NO-BUILD INTERSECTION LANE CONFIGURATIONS AND LOS

Data Source: Pima County, Arizona Department of Transportation (ADOT), Arizona State Land Resource Information System (ALRIS)



Legend

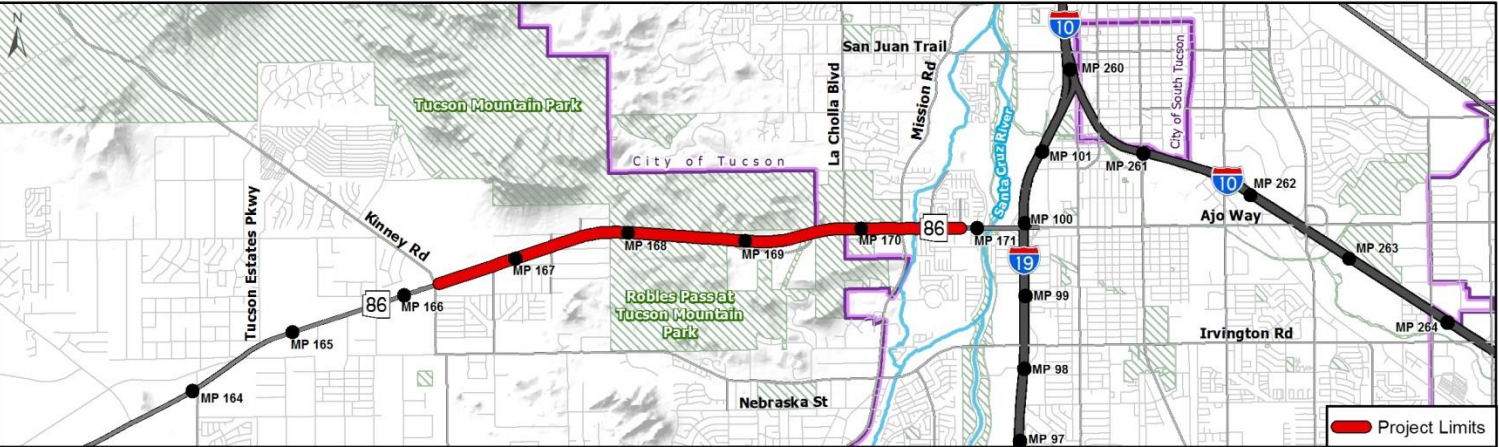
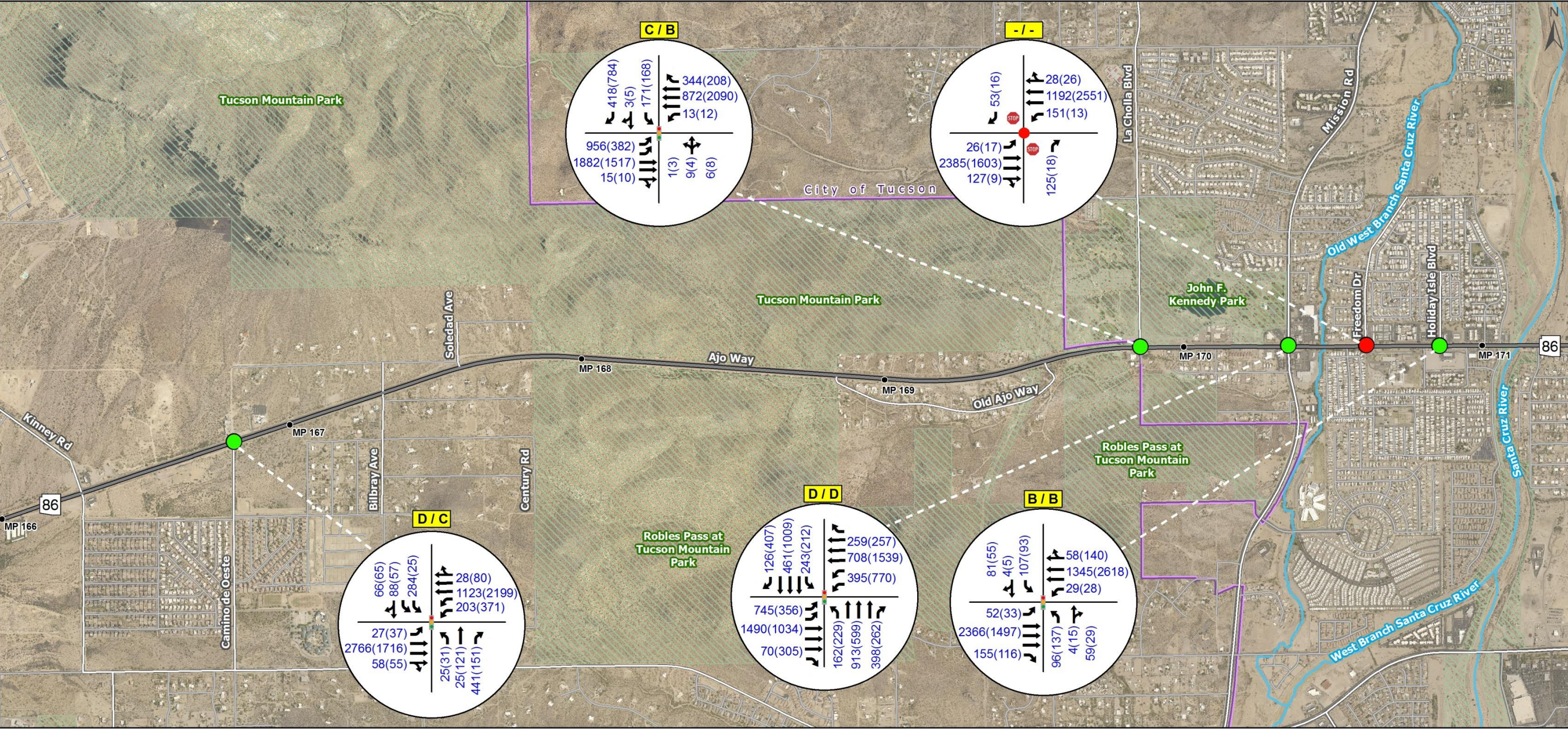
- X/X** Intersection LOS (AM/PM)
- XXX(YYY)** Peak Hour Volumes AM(PM)
- Signalized Intersection
- Un-Signalized Intersection with Pedestrian Hawk Signal

- Mile Post
- Interstate
- State Route
- Major Road
- Minor Road
- River
- City Boundary
- County Park



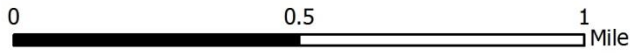
FIGURE 4.1: YEAR 2025 TRAFFIC VOLUMES, PROPOSED LANE CONFIGURATIONS, AND RESULTING LOS

Data Source: Pima County, Arizona Department of Transportation (ADOT), Arizona State Land Resource Information System (ALRIS)



Legend

- X/X** Intersection LOS (AM/PM)
- XXX(YYY)** Peak Hour Volumes AM(PM)
- Signalized Intersection
- Un-Signalized Intersection with Pedestrian Hawk Signal



- Mile Post
- Interstate
- State Route
- Major Road
- Minor Road
- River
- City Boundary
- County Park

FIGURE 4.2: YEAR 2040 TRAFFIC VOLUMES, PROPOSED LANE CONFIGURATIONS, AND RESULTING LOS

Data Source: Pima County, Arizona Department of Transportation (ADOT), Arizona State Land Resource Information System (ALRIS)

