SR 87 CORRIDOR DEVELOPMENT STUDY

MP 191 TO MP 250

ADOT WORK TASK NO. MPD0045-18

ADOT CONTRACT NO. 17-017963

FEASIBILITY REPORT

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ACRONYMS & ABBREVIATIONS

ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
ADT	Average Daily Traffic
AGFD	Arizona Game and Fish Department
AJD	Approved Jurisdictional Determination
APE	Area of Potential Effects
ASM	Arizona State Museum
AWLW	Arizona Wildlife Linkages Workgroup
AZPDES	Arizona Pollutant Discharge Elimination System
BG	Block Group
CAA	Clean Air Act
CDS	Corridor Development Study
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
Corps	United States Corps of Army Engineers
CPS	Corridor Profile Study
CT	Census Tract
DMS	Dynamic Message Sign
DOT	Department of Transportation
DPS	Department of Public Safety
EO	Environmental Overview
EPA	Environmental Protection Agency
FDS	Field Data Services of Arizona
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FMYN	Fort McDowell-Yavapai Nation
GLO	General Land Office
HCM	Highway Capacity Manual
HSIP	Highway Safety Improvement Program
IP	Individual Permit
IPaC	Information for Planning and Consultation
KABCO	Police rating scale of crash injury severity
LCCA	Life Cycle Cost Analysis
LOS	Level of Service
LWCF	Land and Water Conservation Fund Act
MP	Mile Post
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NB	Northbound
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWP	Nationwide Permit
OERT	On-Line Environmental Review Tool
P2P	Planning to Programming
PES	Performance Effectiveness Score
PJD	Preliminary Jurisdictional Determination
PLZ	Potential Linkage Zone
PTI	Planning Time Index
ROW	Right-of-Way
RSA	Road Safety Assessment
SARA	Superfund Amendments and Reauthorization Act
SB	Southbound
SHPO	State Historic Preservation Office
SOV	Single Occupancy Vehicle
SR	State Route
SWPPP	Stormwater Pollution Prevention Plan
TAC	Technical Advisory Committee
TCDS	Traffic Count Database System
TNF	Tonto National Forest
TRB	Transportation Research Board
TTTI	Truck Travel Time Index
USGS	United States Geological Survey
WOUS	Waters of the United States
WQC	Water Quality Certification

1 BACKGROUND INFORMATION

The Arizona Department of Transportation (ADOT) initiated this Corridor Development Study (CDS) of State Route 87 (SR 87) between mile post (MP) 191 and MP 250, to define and evaluate proposed improvements to this 59-mile segment of SR 87 between Fountain Hills, Arizona, and Payson, Arizona. The SR 87 corridor location is depicted in **Figure 1.** The corridor study area is shown in detail in **Figure 2**.

ADOT undertook a performance-based evaluation of the study area in the SR 87/SR 260/SR 377 Corridor Profile Study (SR 87 CPS), completed in March 2017. The CPS identified a range of planning-level strategic solutions addressing safety, mobility, and freight needs on SR 87 between MP 191 and MP 250. These high-level solution sets included several potential improvements that required more detailed evaluation and refinement before specific projects can be scoped and programmed. The SR 87 CDS advances the SR 87 CPS recommendations through a more detailed analysis to confirm the need, evaluate feasibility of, and provide more detailed information on the needs identified. Near-term and long-term plans are needed to help guide decisions in the future regarding prioritizing SR 87 corridor improvements.

This Feasibility Report recommends and prioritizes specific projects and implementation strategies, along with their associated costs, that address identified needs. This process was informed by a collaborative process involving a Technical Advisory Committee, stakeholders, and the public.

1.1 Previous Studies and Recommendations

Previous studies and reports applicable to the study are shown in **Appendix A.** These studies served as input to alternatives development and evaluation.

1.2 Upcoming Programmed Projects

The ADOT Five-Year Transportation Facilities Construction Program (2020 to 2024) lists one project within the corridor limits; SR 87 MP 247 Pine Creek Canyon Rd; Tree Removal. The funding for this project is through the Highway Safety Improvement Program ($240,000 in FY 2021 and $1,549,000 in FY 2022).

1.2.1 Land Ownership

SR 87 study limits traverse multiple jurisdictions and land owned or managed by various entities in Maricopa and Gila counties. The southern section of the corridor, MP 191 to MP 193, traverses the Fort McDowell – Yavapai Indian Reservation. From MP 193 to MP 250, SR 87 travels through the Tonto National Forest, though there is a mix of private lands at various locations along the corridor; most notably near Sunflower, Deer Creek, and Rye. An overview of land uses along the corridor is provided below in **Table 1**. A map showing the distribution of land ownership along the corridor is provided in **Figure 7**.

Table 1: Land Use

Land Use	Location	MP
Large-lot residential	Goldfield Ranch	195-198
Commercial	Sunflower	218
Residential and ranch	Deer Creek	237-238
Commercial	Rye	239-241
Residential	Oxbow Estates	248-249
Residential	Round Valley	249-250

Figure 1: Corridor Study Area

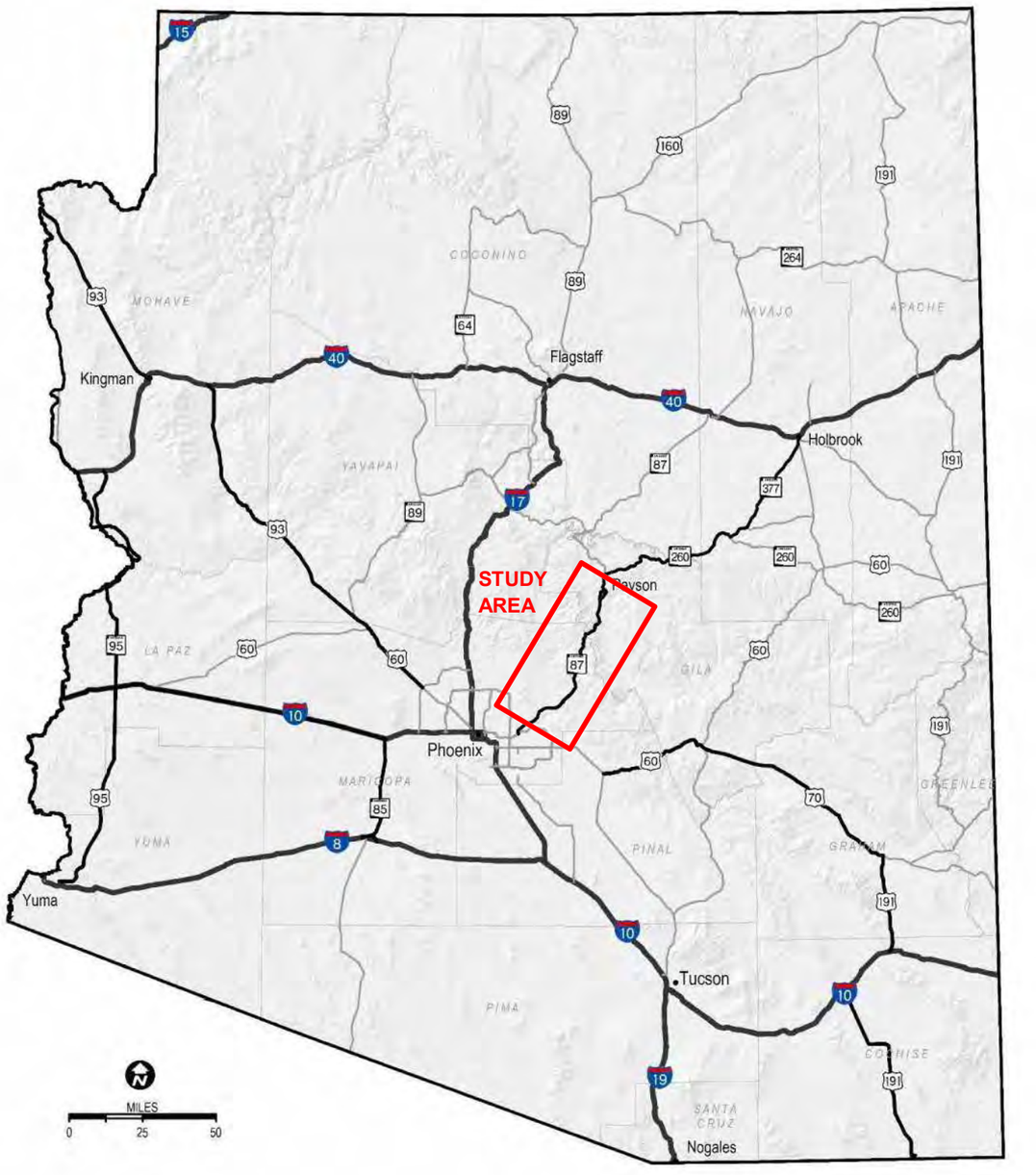
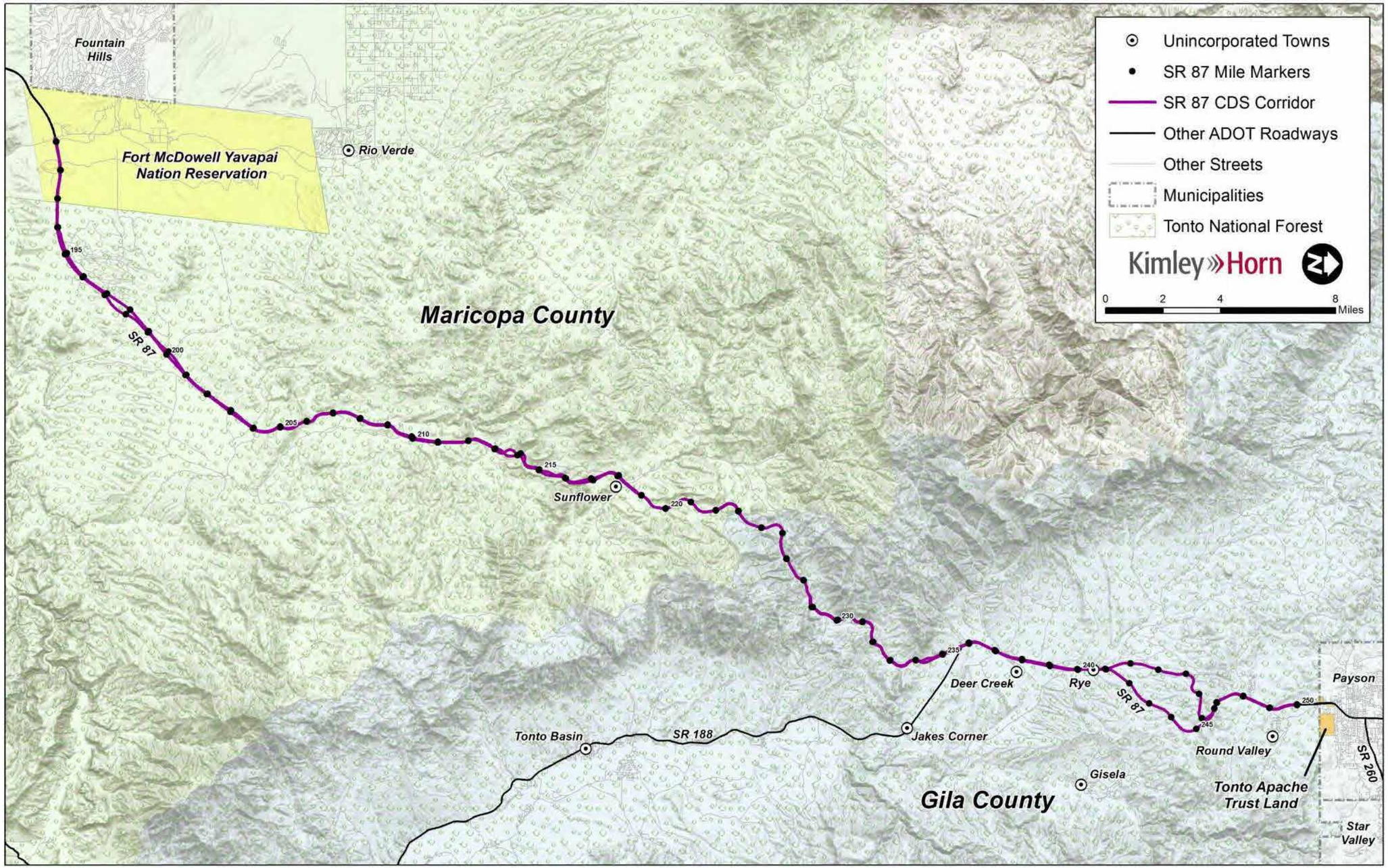


Figure 2: Corridor Development Study Corridor



1.3 Need for the Project

SR 87 is a key link between the Phoenix metropolitan area and the northeast region of the state and serves intrastate, interstate, and international commerce. SR 87, MP 191 to 250 connects cities and towns of Mesa, Fountain Hills, and Payson, along with the Salt River Pima-Maricopa Indian Community, Fort McDowell-Yavapai, and Tonto-Apache Tribes, as well as recreational areas and National Forests.

The SR 87/SR 260/SR 377 Corridor Profile Study (CPS), completed in March 2017, identified corridor needs in the areas of safety and freight mobility. Safety needs were identified as "high" for MP 191-MP 213, MP 213-MP 235, and MP 241-MP 250. Contributing factors identified in the CPS include:

- Speed too fast for conditions
- Improper lane changes
- Clear zone slopes and obstructions
- Slippery/wet pavement surface
- Roadway departure
- Driver inattention and driving under the influence
- Insufficient shoulder/rumble strip condition
- Lack of crossing opportunities

Freight needs were identified as "high" for the entire study limits (MP 191-250), due to the number of highway closures attributed to incidents/crashes, obstructions/hazards, or weather.

1.4 Characteristics of the Corridor

1.4.1 Existing Roadway System

SR 87 within the study limits is generally a four-lane bifurcated and divided rural facility. There is a climbing lane on SR 87 SB between approximately MP 207 and MP 205. The corridor includes one grade-separated traffic interchange (TI) on SR 87 at Bush Highway at approximately MP 199. Intersections are listed below in **Table 2**.

Table 2: SR 87 Intersections

MP	Intersection	Grade Separated	Access	Turn Lanes on SR 87
191.8	Hiawatha Hood Road	-	4-way	Left Only
192.1	Rodeo Drive	-	4-way	Left Only
194.5	Burnt Water Tail	-	3-way	Right and Left
195.2	Vista del Oro	-	3-way	Right and Left
196.0	Goldfield Road	-	3-way	Right and Left
196.3	Pleasant View Road	-	Right-in-right-out	Right Only
196.6	Median Crossover	-	3-way	Left Only
197.3	Meridian Road	-	Right-in-right-out	Right Only
199.1	Bush Highway	Yes	Diamond Interchange	N/A
203.9	Cline Cabin Road	-	4-way	Right and Left
207.8	FR 68 Access Road	-	4-way	Right and Left
209.5	FR 68	-	4-way	Right and Left
210.5	Ballantine Trailhead	-	4-way	Right and Left
212.7	Sycamore Creek	-	4-way	None
217.4	FR 1704	-	3-way	None
218.0	Sunflower	-	4-way	Right and Left
218.5	FR 22	-	3-way	Right and Left
222.7	FR 626	-	4-way	Right and Left
229.6	FR 26	Box culvert under-crossing	Right-in-right-out	Right Only
235.7	SR 188	-	4-way	Right and Left
236.7	Unnamed Road	-	3-way	Right and Left
237.6	Deer Creek Drive	-	4-way	Right (NB) and Left (SB) Only
238.5	FR 1438	-	3-way	Right and Left
239.2	Barnhardt Road	-	4-way	Left (NB) and Right (SB) Only
239.5	Gisela Road	-	3-way	Right and Left
240.0	Matlock Gas	-	3-way	None
240.5	South Rye Crossover	-	4-way	None
240.8	North Rye Crossover	-	4-way	No SB Right
247.8	FR 535	-	3-way	Left Only
248.4	Ox Bow Estates	-	3-way	Left and Right
248.7	FR 375B	-	3-way	Left Only
249.0	Gibson Ranch Road	-	3-way	Left Only

The existing highway was incrementally constructed over several decades. The original SR 87 highway is currently the southbound lanes, while the northbound lanes, constructed in the 1990's, are on new alignment. Through extended corridor segments, the northbound and southbound lanes are bifurcated and follow substantially different paths through mountainous terrain. Between MP 241 and MP 246, the northbound and southbound lanes are over a mile apart. Between MP 213 and MP 216, the southbound lanes cross over the northbound lanes and the carriageways are on opposite sides than that of a typical divided highway.

The existing cross section generally includes two 12-foot wide lanes in each direction, a 4-foot wide inside shoulder, and a 10-foot wide outside shoulder. However, there are several locations where the shoulders are narrower or do not exist; specifically, areas with a concrete center median such as MP 250 to MP 245, and MP 219 to MP 229 where the inside shoulder is often less than four feet.

The posted speed limit is 65 mph for most of the corridor. The southbound lanes have a speed limit of 55 mph between MP 247.4 and MP 243.5 due to tight curves and steep grades.

Assets within the corridor include the rest area (Mazatzal Rest Area at the southeast corner of SR 87 and SR 188, currently closed), dynamic message signs (DMS) located SR 87 NB, MP 191.2; and permanent traffic counters located at, SR 87 MP 235. There is a truck escape ramp on SR 87 NB near MP 227.

1.4.2 Existing Right-of-Way and Land Ownership

ADOT right-of-way width varies within the study corridor. Older sections of the right-of-way (the southbound alignment just north of Rye, for example) are approximately 200 feet in width, with newer alignments generally 400 feet. Due to the rugged terrain, the median width varies and therefore affects the overall right-of-way width.

1.4.3 Existing Structures

There are 20 bridge structures located within the study corridor, as shown below in **Table 3**. According to the CPS, there are no deficient bridges along the corridor.

Table 3: Bridge Structures

MP	Direction	Name	Length (ft)	Width (ft)
191.3	NB	Verde River	1,610	44
191.3	SB	Verde River	1,600	44
207.6	NB	Mesquite Wash	275	44
210.9	NB	Pine Creek	245	44
212.6	NB	Sycamore Creek	260	42
212.6	SB	Sycamore Creek	365	44
213.3	SB	South Crossover	130	41
214.0	SB	Unnamed	1,070	44
215.7	SB	Unnamed	690	42
216.0	SB	North Crossover	160	42
218.5	NB	Sycamore Creek	725	42
218.5	SB	Sycamore Creek	720	42
219.5	NB/SB	Kitty Joe Creek	865	84
220.4	NB/SB	Whiskey Springs	495	88
221.5	NB/SB	Kitty Joe Creek	615	85
223.2	NB/SB	Unnamed	265	85
237.3	NB	Deer Creek	140	44
237.3	SB	Deer Creek	175	44
239.3	NB	Rye Creek	325	44
239.3	SB	Rye Creek	340	44

1.4.4 Topography

The SR 87 corridor climbs from the approximately 1,500 feet elevation in Fountain Hills, AZ, to the mountains of Payson, AZ at 4,890 feet. Corridor topography is characterized by mild rolling terrain, with sections of steep elevation gains and climbs, as it heads through Tonto National Forest towards Payson, AZ. Corridor topography is characterized below in **Table 4**.

Table 4: Corridor Topography

Begin	End	Approx. Begin Milepost	Approx. End Milepost	Approx. Length (miles)	Character Description
Fort McDowell Rd	Sycamore Creek	191	213	22	This rural four-lane divided segment with uninterrupted flow has relatively mild rolling topography.
Sycamore Creek	SR 188	213	235	22	This rural four-lane divided segment with uninterrupted flow has steep terrain and a curvy alignment.
SR 188	Rye	235	241	6	This rural four-lane divided segment with uninterrupted flow has mild rolling topography.
Rye	Green Valley Pkwy/BIA 101	241	250	9	This rural segment with uninterrupted flow is a climbing four-lane divided section.

1.4.5 Existing Drainage

Existing drainage consists of median ditches and sheet flow to the outside of the roadway prism. Off-site drainage within the corridor is captured in either bridge structures, box culvert structures, or pipe crossings and carried underneath the existing SR 87 roadway. Bridges and culverts are located at natural drainage crossing areas except for an engineered drainage channel on the east side of the roadway between MP 226 and MP 229, and a drainage structure on the east side of the roadway and within the median between MP 240 and Rye Creek.

The SR 87 corridor traverses several watersheds throughout the approximately 60-mile study limits. The watersheds and approximate locations along the corridor are provided in **Table 5**.

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) indicate 100-year floodplain delineation within the study corridor. **Figure 3** shows floodplains and existing drainage.

Table 5: Watersheds

Watershed	Mileposts	Approx. Drainage Direction
Camp Creek-Lower Verde River	191-194	Northeast to Southwest
Lower Salt River below Saguaro Lake	194-201	Northeast to Southwest
Lower Salt River-Apache, Canyon, and Saguaro Lake	201-204	Northwest to Southeast
Mesquite Wash-Sycamore Creek	204-223	Northeast to Southwest
Gun Creek-Tonto Creek	223-229	West to East
Rye Creek-Tonto Creek	229-250	North to South

1.4.6 Barriers and Guardrails

The existing barriers and guardrails along the SR 87 corridor are shown in **Figure 4**. For clarity, the guardrail and barriers are shown separately for the northbound and southbound directions. The barriers and guardrails were documented from the 2016 ADOT photo log, which is currently the latest data available. There is a total of 49.06 linear miles of guardrail and 13.36 linear miles of concrete barrier throughout the corridor.

Guardrail is most prevalent in the mountainous sections of the roadway between MP 205 and MP 234, and between MP 241 and MP 245, though isolated sections of guardrail exist in other portions of the corridor. There are two significant sections of the corridor that have a central concrete barrier, between MP 218 and MP 222 and between MP 223 and MP 227.5. Most of the concrete barrier on the remainder of the corridor is on bridge structures.

1.4.7 Shoulder Widths

Shoulder widths were documented from the 2016 ADOT photo log. Locations where the shoulder width is less than standard for a divided highway are highlighted in **Figure 5**. Shoulder widths of less than 10 feet on the right side of the road and less than 4 feet on the left side of the road are labeled as “deficient”.

Areas with center concrete barrier are largely deficient on the left side of the roadway in both directions. Additionally, the southbound lanes of SR 87 between MP 250 and MP 246 have no shoulders on either side of the roadway, and the right shoulder on northbound SR 87 between MP 241 and MP 248 is deficient. Other isolated sections of deficient shoulders occur along the corridor sporadically.

Figure 3: FEMA 100-Year Floodplain and Existing Drainage

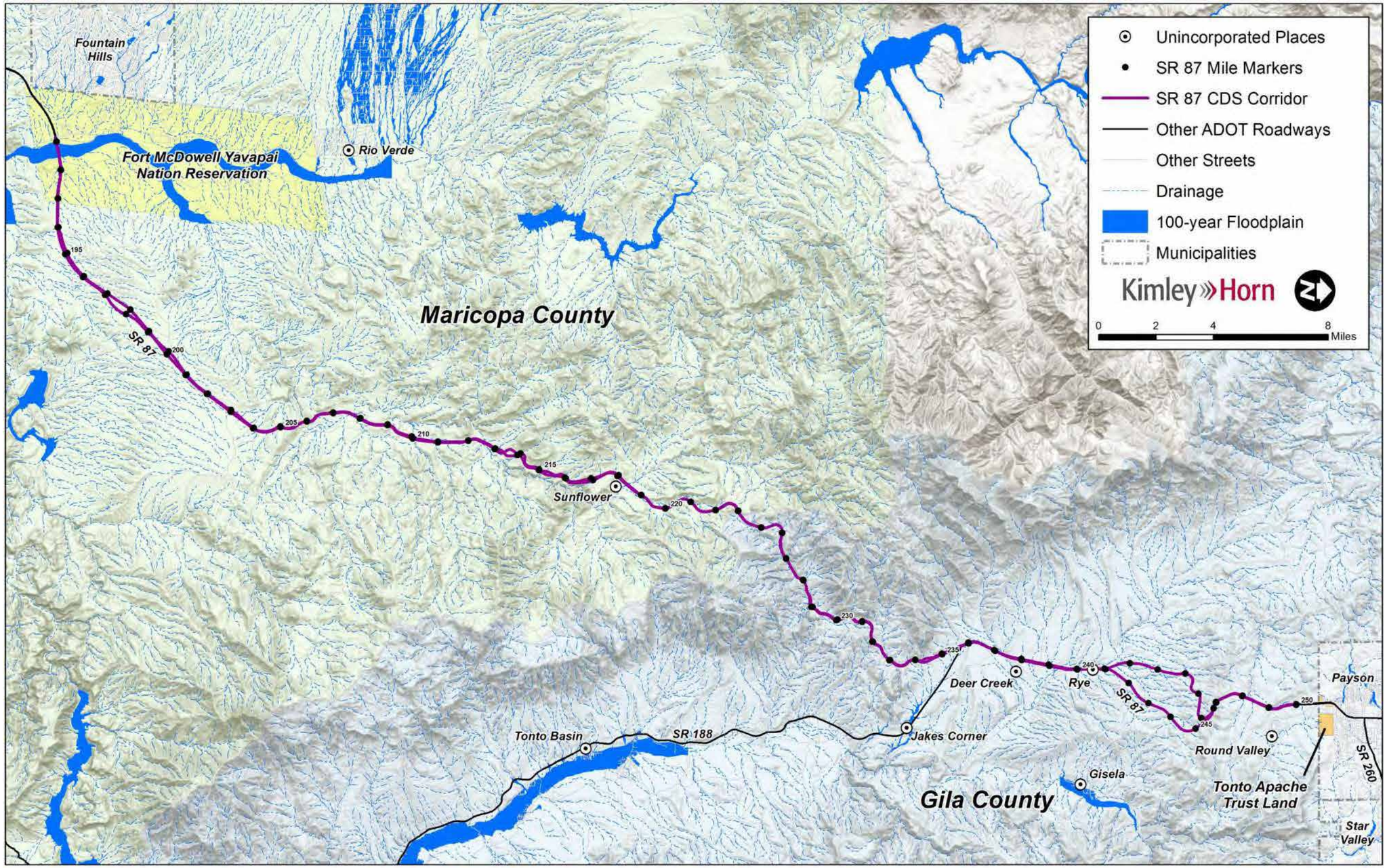
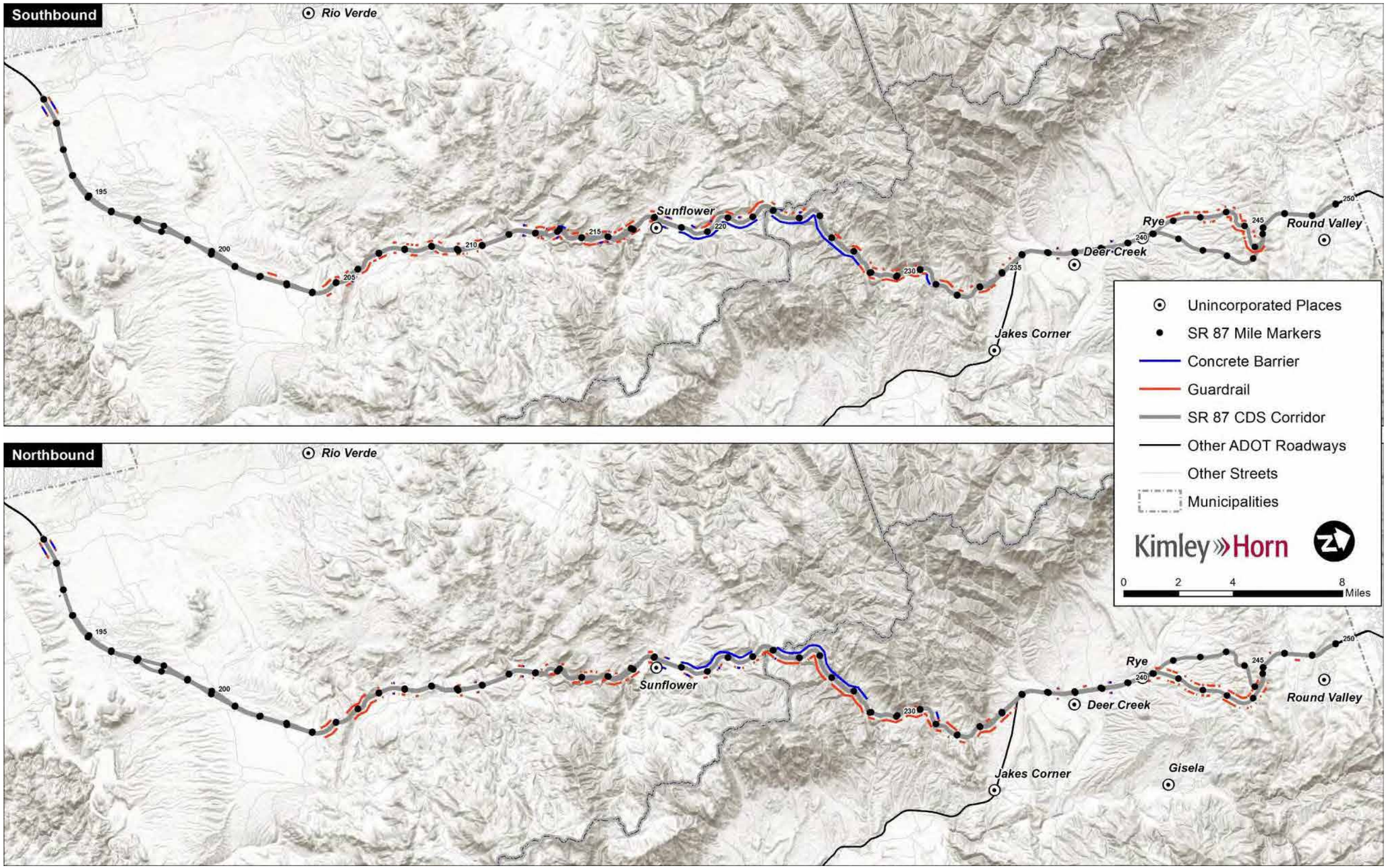


Figure 4: Existing Guardrail and Barriers



1.4.8 Existing Utilities

The utility companies and agencies which have facilities within or nearby the study corridor are provided in **Table 6**. Additional investigation is required during project development to identify the locations and limits of these utilities.

Table 6: Existing Utilities

Owner	Facility Type
Arizona Public Service	Electric
City of Phoenix Water Services Dept.	Reclaimed Water, Sewer, Water
Cox Communications	CATV, Fiber
CenturyLink	Coaxial Cable, Fiber
Fountain Hills Sanitary District	Fiber, Reclaimed Water, Sewer
Salt River Project	Communication, Electric, Fiber, Irrigation
TDS Telecom/AZ Telephone	Fiber Optic, Telecom
Town of Fountain Hills	Conduit, Storm Drain

1.4.9 Geotechnical Considerations

Several geotechnical and rock-fall issues were identified in the CPS, which have been re-evaluated and supplemented with additional locations upon further analysis. Each location is described in detail below and a map of identified geotechnical issues is provided in **Figure 6**.

1.4.9.1 Northbound MP 213.9-214.0

On the west side of the roadway is a rock cut in weathered and heavily fractured and faulted granite. Erosion and raveling have caused fractured rock and decomposed granite to come right to the edge of pavement. The ditch width is questionably sufficient to keep this material out of the travel lanes.

1.4.9.2 Northbound MP 214.2-214.6

This is a through cut on the original alignment of SR 87 and was not involved in the mid-1990's reconstruction. Most of the rock-fall concern relates to the cut slopes on the north side, which is on the inside of a super-elevated curve. The cut slopes that are on the south side of the highway at this location are not as tall and have slightly more favorable rock structure and ditch width.

There are two rock cuts within this stretch, a western reach (MP 214.2-214.3), and an eastern reach (MP 214.4-214.54), which are different in rock-fall character. The westernmost is comprised chiefly of heavily jointed and fractured granite which adjoins a very steep cut slope exhibiting decomposed granite overlain by colluvium forming the west end of the cut. A steep faulted contact between the two lithologies is several feet wide and is raveling and eroding. There are bodies of colluvium and old terrace gravels at places on the slope crest that release cobble size to gravel size material with some small boulders. No major kinematic instabilities were noted in this stretch, although no systematic studies were conducted to identify kinematic failure mechanisms. The chief concern is raveling of cobbles, small boulders, and jointed fragments.

The eastern reach within this interval is comprised entirely of moderately to heavily fractured, blocky granite. Despite the lack of systematic studies to identify kinematic instabilities, wedge sliding and toppling behaviors are apparent. The fractured, blocky granite is interspersed with zones of saprolite (decomposed granite) that encloses fragments of hard, angular to sub-rounded granite boulders. In this reach, the crest and face are eroding, particularly along faulted zones.

Throughout this stretch, the ditch is relatively narrow in proportion to the slope height and does not grade appreciably back toward the toe of the cut slope. Consequently, material that is released from the slope face or crest is more inclined to roll out onto the roadway shoulder or travel lanes than at other locations.

1.4.9.3 Northbound MP 215.0-216.0

This stretch extends from MP 215 to the north crossover bridge and was not included in the mid-1990s reconstruction. The cut slopes in this reach are not very high but exhibit many different mechanisms of erosion and loosening. Near MP 215.8, on the west side, a small rockslide encroaches on the ditch. Because of the limited cut slope height, the rock fall run out potential is limited; the ditch is also quite narrow.

1.4.9.4 Southbound MP 216.2-216.5

This is a section of road that was built as part of the mid-1990s reconstruction. At this location, a sequence of Tertiary Period valley fill sediments overlie granite above an ancient and weathered erosional surface. The depth of granite weathering below the sediment contact varies, and the cut slope was configured to ensure that the lower, steeper section was excavated entirely within the rock, and not the sediments. In this reach, several faults and dikes were encountered making high angles to the slope face. Recently, a wedge failure of moderate size has been released and sits in the ditch. Shortly after the 1990s reconstruction, the dikes and faults were already tending to erode, and consideration was given to reinforcing them with anchored shotcrete, although ultimately this treatment did not occur. The ditch seems to contain the material released from the slope, but the irregularity of the face and the amount of cleanup that has occurred in this reach is apparent.

1.4.9.5 Northbound MP 216.4-216.8

There is a relatively short cut in granite between MP 216.45 and 216.52 with a crosscutting dike exhibits plane shear failure as well as raveling from the densely fractured dike material. The ditch at this location is narrower than elsewhere along the highway. A short distance ahead, at MP 216.77 also on the northbound side, the west side rock cut contains a deeply eroded fault zone that is undercutting over-steepened material from the adjoining granite and intrusive dike assemblage.

1.4.9.6 Southbound MP 217.3-217.6

Within this area is a feature known in the 1990s reconstruction as the "Red Cut". The east side of the northbound is comprised of unconsolidated colluvium and valley fill sediments, but the west side, on the southbound side, exhibited sediments only at the very top. Below it is a granite mass intruded by a dike and cut by a fault. During construction, this rock area failed several times, and was laid back. It has failed again along wedge forming features and has some over steepened areas. However, the ditch is quite wide, with a good cross slope, which has contained the failed material. Additional studies would be required to determine the stability of this cut area, and what, if any, action is merited.

Figure 5: Shoulder Width Deficiencies

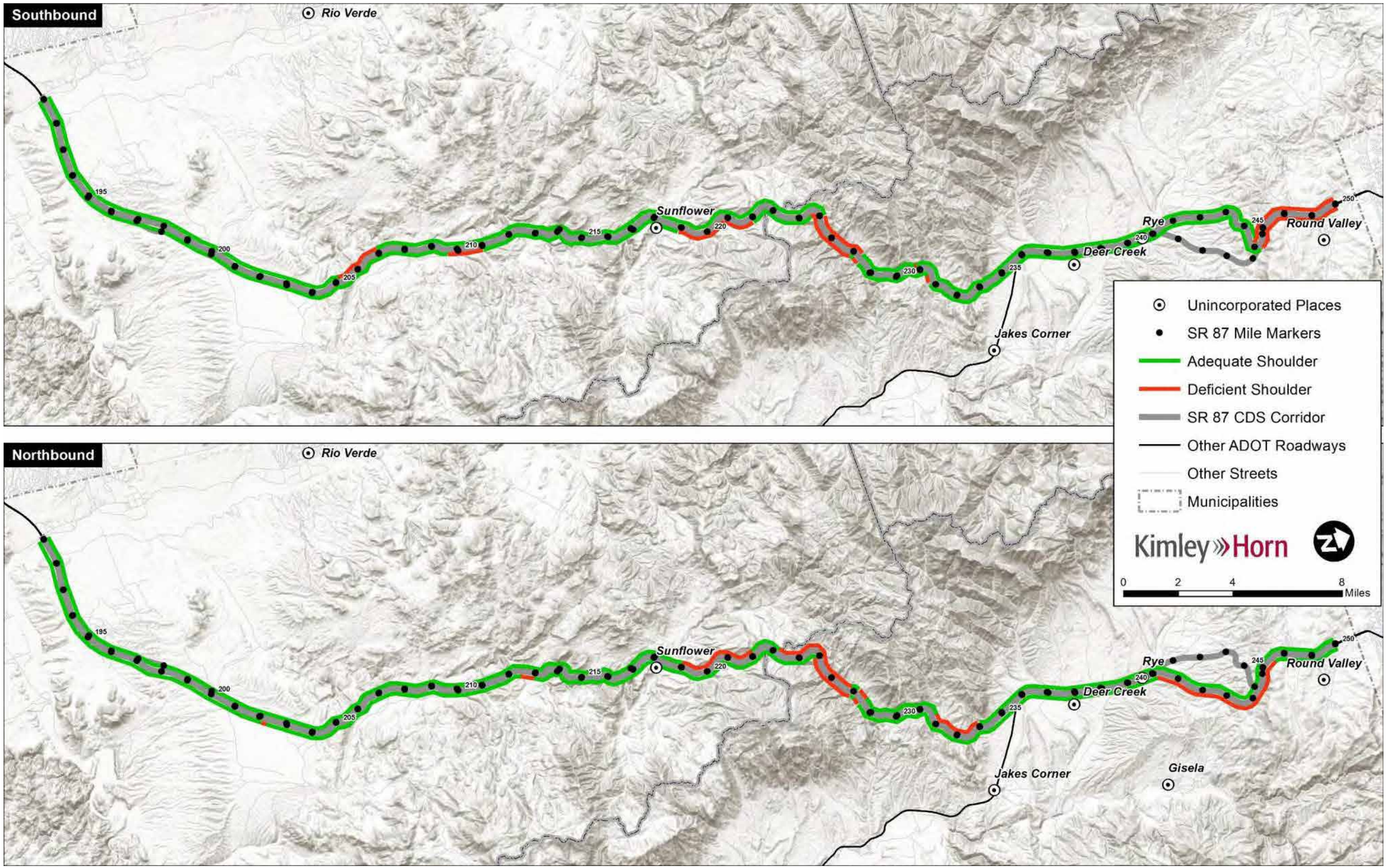
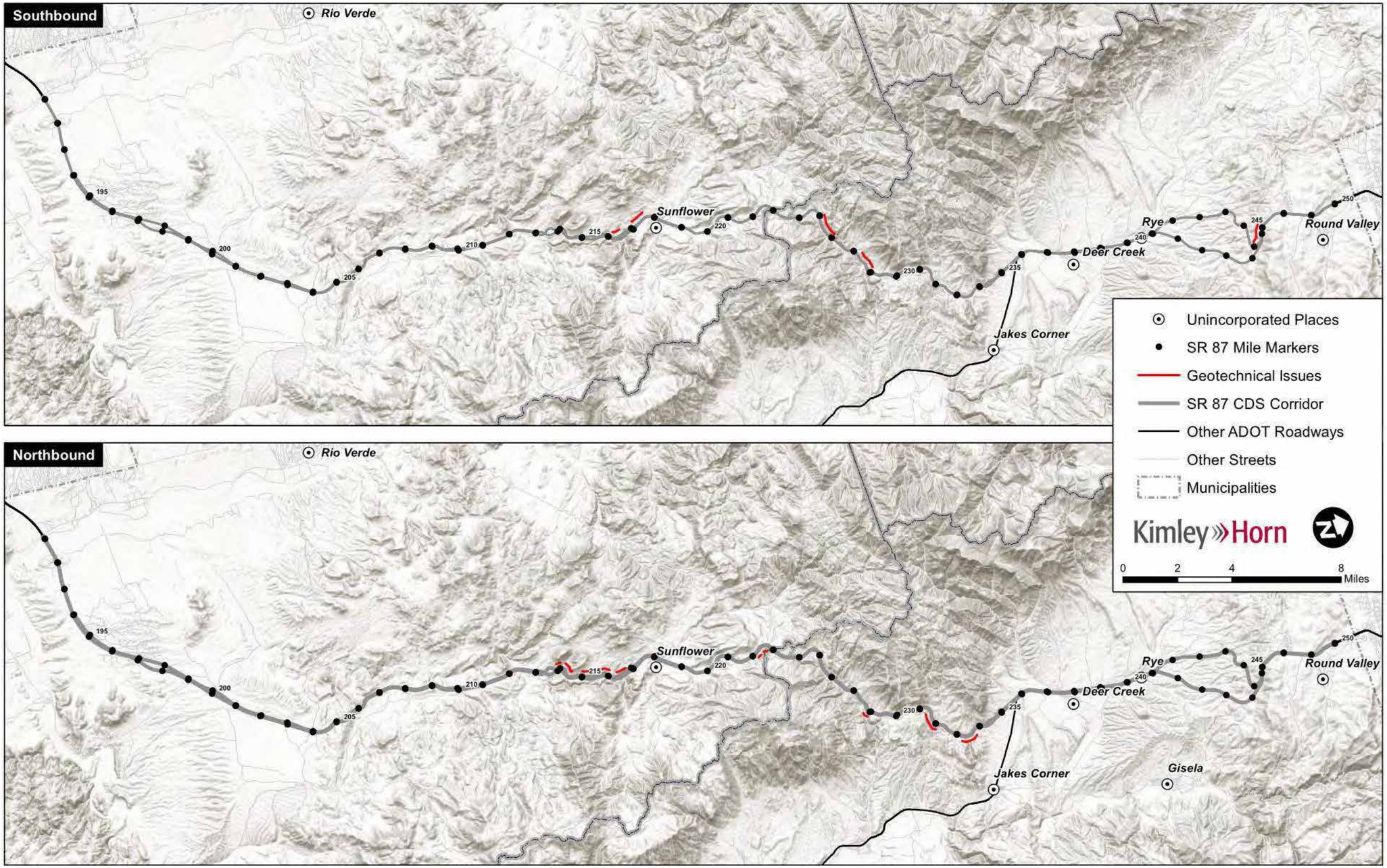


Figure 6: Identified Geotechnical Issues



1.4.9.7 Southbound MP 226.0-227.0

The cuts along Slate Creek between approximately MP 226 and 227 on the north side appear generally stable, with localized raveling along zones of geologic discontinuities as well as erosion of small bodies of unconsolidated sediments close to the slope crests. However, because of the steepness of the terrain, any rockfall originating from the outcrops above the catch point limits could present a hazard.

Of all the rock cuts within the Slate Creek segment, the short one between MP 226.0 and 226.1 one appears to have the greatest potential for consistent production of rock fall. This stretch is characterized by a sequence of poorly stratified sediments containing a large percentage of small to large boulders in a weakly cemented sand gravel cobble matrix. Despite the wide shoulder setback, the height of the slope and the shape of the fragments that reach the shoulder enhance run out of released fragments.

1.4.9.8 Southbound MP 228.2-228.5

This stretch is at the base of the "Slate Creek" segment which was constructed in the 1970s. The cut slopes are on the north side of the roadway. The lithologies represented appear to be densely fractured and faulted bodies of granite, and metamorphic rock. The ditch has little cross slope, and typically appears to be about 25 feet wide. Additional ditch width and cross slope would aid in containment of rockfall material.

The cuts are quite high and steep. A close inspection revealed numerous plane shear and wedge geometries, for example one at about MP 228.45 where a very large wedge of rock fell out leaving a defile whose headwall exposes embedded fanglomerate or colluvial material at the crest. At other locations, prominent erosion along faults and shears, especially toward the west end of the cut before the guard rail, has resulted in isolated masses, blocks, and pinnacles.

1.4.9.9 Southbound MP 228.7-229.0

This is a through cut in a sequence of moderately to weakly cemented, somewhat stratified valley fill sands, gravel, cobbles, and small boulders. Its counterpart through cut on the northbound is almost entirely in heavily cemented fanglomerate, which was excavated with narrow catch benches, most of which have now filled up with detritus, although the bench faces themselves mostly appear quite stable and intact. The northbound slope contains the less cemented valley fill material only at the top. Therefore, it appears that the contact between the fanglomerate and valley fill material dips steeply to the northwest. On the southbound side, which was the stretch recommended for action, catch benches are no longer clear/evident, if they ever existed.

On both sides of this cut, the weakly cemented valley fill sediments exhibit some erosion and delivery of cobbles and small boulders to the ditch, especially on the left side, but there appears to be sufficient ditch width to contain the resulting rock fall. The slope on the right side is taller, but there does not appear to be much rock in the ditch, which seems to be of adequate width and cross slope. There is no evidence of large-scale rotational instability. Additional studies would be necessary to quantify the adequacy of the catchment ditches.

1.4.9.10 Northbound MP 228.9-229.0

Although the near-vertical bench faces in the cemented fanglomerate generally appear stable, the catch benches are filling up, and there is a layer of less cemented material at the top. It does not appear to be eroding extensively, as there is no slope above it to contribute drainage, but the catch benches are not adequate to attenuate the fall of any material released from the slope crest area. Material that does release from the slope face could be projected away from the face due to impact on the benches.

1.4.9.11 Northbound MP 233.2-233.7

This stretch contains through cuts in valley fill colluvium. An informal discussion with an ADOT employee who was involved in the original construction in this area observed some waste rock disposal in this area. Whether or not these cuts represent disposed waste rock is unclear but should be verified. Some of the fills show clear stratification, but others appear amorphous. The crest area is well vegetated, but the slope faces exhibit only spotty development of scrub brush. Heavy rill erosion is occurring, especially on the east side. Some very large slip outs have occurred during wet events, and have required re-contouring the slope, with additional erosional development within the re-contoured sections. Because the shoulder is so wide, there is little potential for rock-fall reaching the roadway, unless additional slip outs and mudslides take place.

1.4.9.12 Southbound MP 242.0-247.0

Although this section of roadway (Corvair Curve area) does not appear in the list of reaches of concern and does not exhibit significant rock-fall tendencies at present, the site distances are very short, and any realignment of the roadway to alleviate the sharp curvature would require cutting into the mountainside, increasing its height and possibly producing a rock-fall issue. This area was not field checked in any detail because of heavy traffic and time constraints, but the existing slopes appear to be relatively flat (1:1) and well vegetated, in deeply weathered Payson granite. Elsewhere, when steeper slopes have been attempted in the more weathered sections of Payson granite, they have often resulted in localized erosion and rock fall problems.

In the area MP 242 to MP 244.5, there are six cuts and rocks roll out into travel lanes during significant rainfall or snowmelt events.

In the area within MP 246.4 to 246.6 there are boulders at crest eroding out, and maintenance activity has occurred in the milepost range.

1.4.9.13 Additional Heavy Rill Erosion

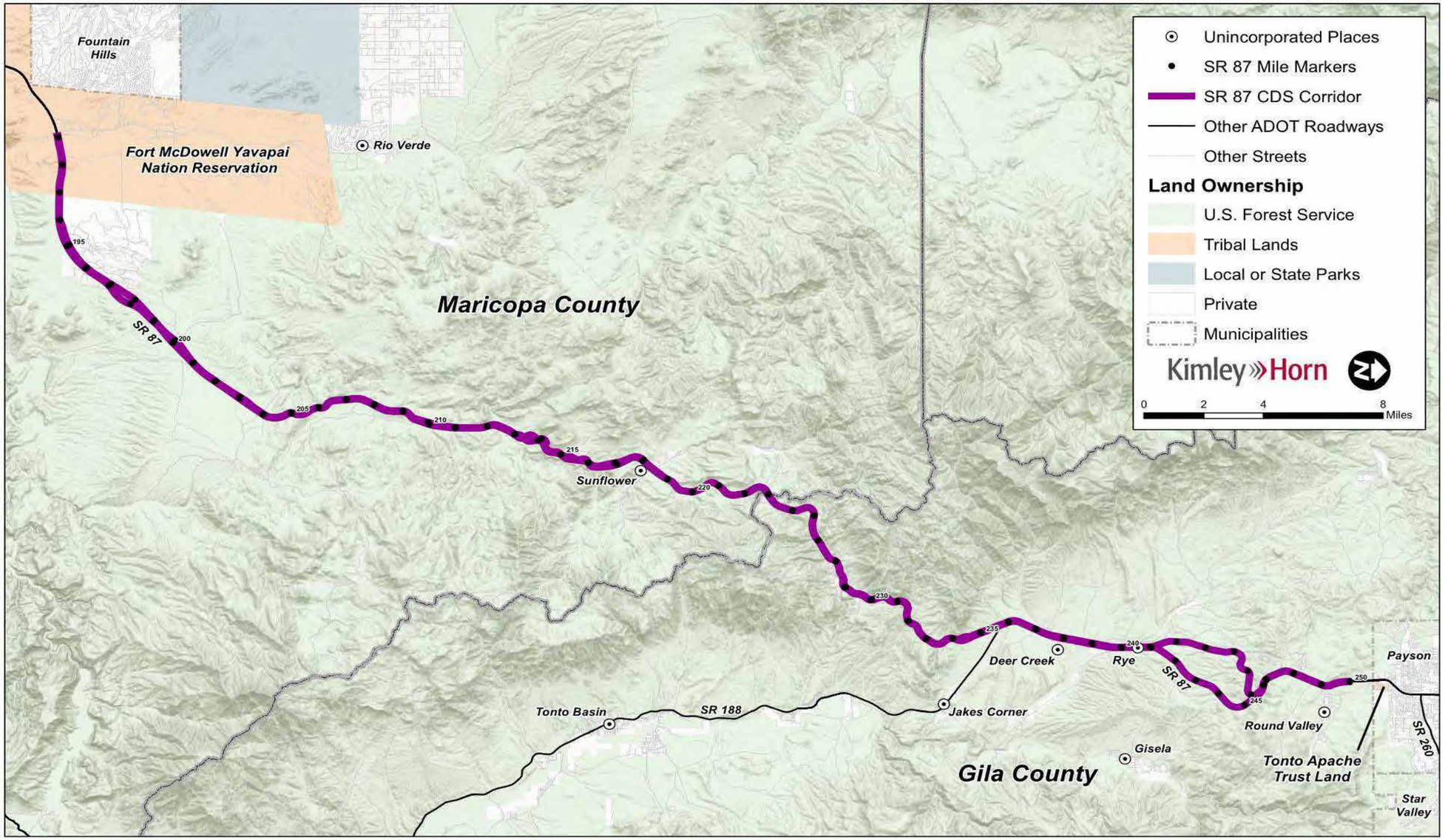
Additional heavy rill erosion is exhibited at other locations along the corridor, among them MP 231.5 to 232.1, 222.2, and 222.5 on the east side of the northbound lanes.

Various strategies have been tried within the SR 87 corridor to control erosion in the prominent slope cuts within unconsolidated material. One of the largest of these is immediately south of Sycamore Creek on the west side. It was originally constructed in the early 1990s with sinuous, lined catchment ditches, in lieu of crown ditches, extending across the slope face. Over time, heavy rill erosion developed that cut through these interceptor ditches. In the late 2000's, the reconstruction of southbound SR 87 between DOS S Ranch and Four Peaks Rd. also contained a provision to repair the eroded slope south of Sycamore Creek. A different style of catchment ditch was tried. It may be worth evaluating these different approaches in formulating an alternative strategy for control of rill erosion within the corridor.

1.4.9.14 Other Issues

stretches added subsequently, such as southbound 242-244.5 and 246.45-246.55? Or just refer the reader to the rock fall project packages for other sites?

Figure 7: Land Ownership



2 TRAFFIC AND SAFETY ANALYSIS

This chapter documents existing and projected traffic volumes, traffic patterns, and operations on SR 87 and intersecting roadways.

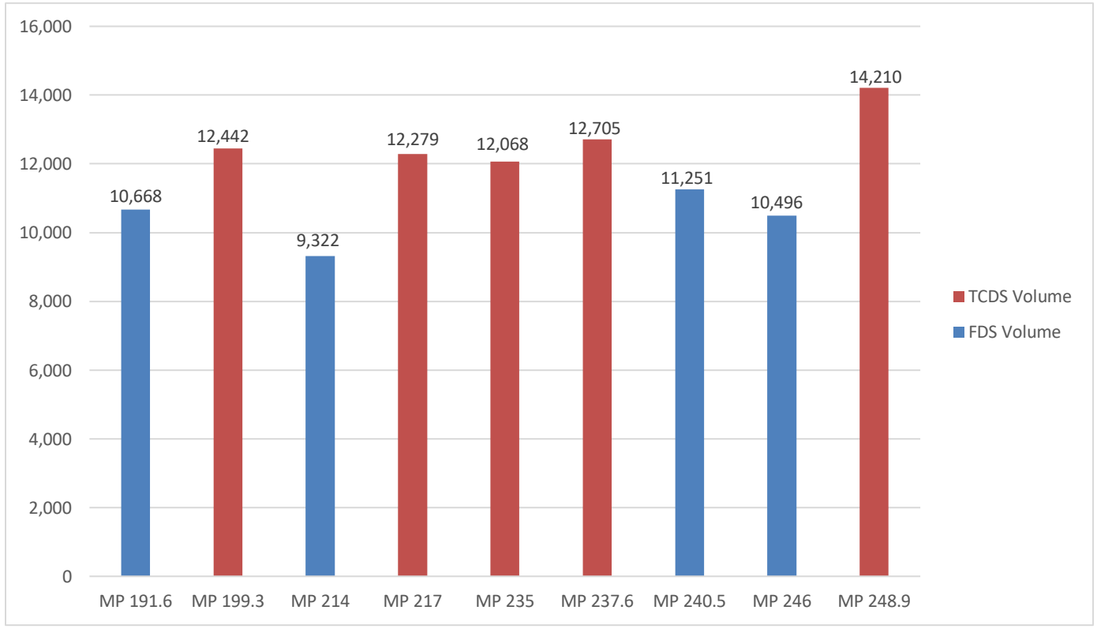
2.1 Traffic Data Sources

Traffic data were collected by Field Data Services of Arizona (FDS) on November 29, 2018. Count data collected include 24-hour average daily traffic (ADT) counts at four locations on the mainline of SR 87 as well as on several intersecting streets with SR 87. Data includes vehicle classification counts and speed data at select locations on the mainline SR 87. The collected data was supplemented by ADOT counts as reported to ADOT's Traffic Count Database System (TCDS). ADT counts were identified at five locations along the analysis corridor using the TCDS.

2.2 SR 87 Daily Traffic Volumes

The bi-directional ADT for each 24-hour count location is provided in **Figure 8**; five of the counts are from the TCDS and four are from FDS. The FDS counts were seasonally-adjusted (increased by 2%) based on data from the continuous count station located at MP 235 (refer to Section 2.3). Daily traffic volumes range from 9,300 to 14,200 vehicles per day throughout the corridor. The highest volumes in the corridor are present on the south side of Payson. The count locations are shown in **Figure 9**.

Figure 8: Average Daily Traffic Volumes



2.3 SR 87 Permanent Counter Station (Seasonal Traffic Fluctuations)

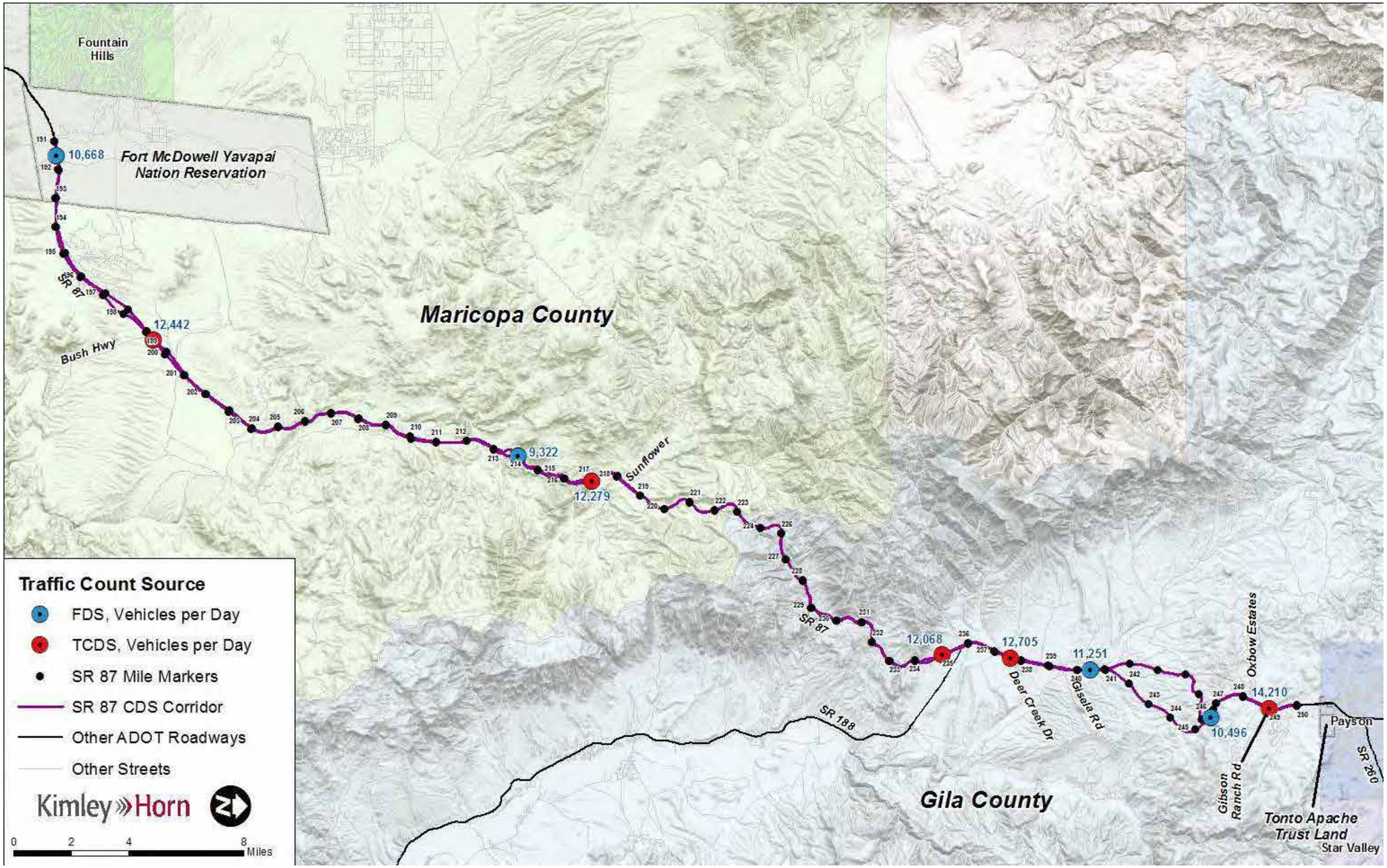
The SR 87 corridor is heavily influenced by seasonal and holiday traffic because it provides a connection between the Phoenix metro area and recreational opportunities in the mountainous northeastern part of the state. To quantify the impacts of summer and holiday travel on the corridor, the continuous count station within the corridor (located at MP 235, south of the intersection with SR 188) was analyzed for holiday and typical summer weekend travel.

Directional traffic volumes were analyzed throughout 2018 for weekdays, Fridays, Saturdays, and Sundays to assess the impact of summer travel on the corridor. Traffic volumes by day and month are provided in **Table 7** along with the total weekend travel volume (sum of Friday, Saturday, and Sunday). A comparison of the monthly average weekday and weekend volumes to the annual average weekday and weekend volumes on the SR 87 corridor at the location of the continuous count station (ID 100983, south of the SR 188 junction) shows that July is the month with the highest seasonal variation in volumes, with the July average weekday volumes being 127% of the annual average weekday volumes and the July average weekend volumes being 131% of the annual average weekend volumes.

Table 7: Traffic Volumes by Month, 2018

Month	Avg. Weekday Volume	% of Annual Avg. Weekday Volume	Avg. Friday Volume	Avg. Saturday Volume	Avg. Sunday Volume	Avg. Weekend Volume	% of Annual Avg. Weekend Volume	% of Annual Avg. Weekly Traffic
January	9,130	80%	11,610	10,608	11,523	11,065	70%	77%
February	9,063	80%	11,716	11,614	12,317	11,965	76%	79%
March	11,412	100%	15,069	14,150	14,333	14,219	90%	96%
April	10,959	96%	15,228	14,632	17,280	15,956	101%	99%
May	11,500	101%	17,329	16,120	17,819	16,970	107%	103%
June	13,134	116%	18,004	15,977	19,359	17,668	112%	114%
July	14,174	125%	20,726	18,447	22,381	20,633	131%	127%
August	11,683	103%	19,155	17,230	21,300	18,587	118%	105%
September	12,199	107%	18,265	16,405	19,582	17,993	114%	112%
October	11,651	103%	17,536	15,103	17,917	16,510	104%	103%
November	11,312	100%	13,902	14,538	15,721	15,129	96%	98%
December	10,099	89%	12,299	12,923	13,118	13,020	82%	88%
Avg. Traffic	11,360	-	15,903	14,812	16,887	15,810	-	-
AADT	*12,068 vehicles per day*							

Figure 9: SR 87 Average Daily Traffic Count Locations



Weekend traffic volumes during the summer can be nearly double those observed during the winter months. In addition, holiday weekends experience the highest traffic volumes. On Sunday, July 8, 2018, the permanent count station recorded a daily volume of 22,846 vehicles per day.

The directional distribution is also notable over the different days of the weekend. The predominant flow of traffic is northbound (NB) on Fridays with an average of 57.8% of the traffic traveling NB (minimum of 54.4% NB in February and November and a maximum of 62.7% NB in July). Saturdays have more balanced flow with an average of a 52%/48% directional split NB and southbound (SB), respectively. Sundays are largely the opposite of Fridays, with an average of 59.3% traveling SB (minimum of 56.3% in April and maximum of 64.5% in October). These directional splits further emphasize the impact of recreational travel on the corridor because of the observable imbalance of NB travel on Fridays and SB on Sundays, particularly in the summer months.

Throughout the stakeholder engagement process, the impact of summer weekends on corridor traffic, and holiday weekends in particular, were emphasized by agencies that have jurisdiction in the corridor. The issues are experienced most acutely toward the northern end of the corridor, where NB traffic backs up from the signalized intersections in Payson into the rural portions of the corridor. According to representatives from ADOT, the Town of Payson, and the Department of Public Safety (DPS), typical summer weekend traffic backs up to Gibson Ranch Road or Oxbow Estates (approximately MP 248.5) in the NB direction. Holiday weekends frequently see traffic backing up from Payson through Rye (approximately MP 241) with events such as a crash or a car fire backing traffic up to SR 188 (MP 235.7).

2.4 SR 87 Cross Road Traffic Volumes

Cross road traffic volumes were obtained from both the ADOT TCDS and count data collected by FDS. Cross road traffic volumes are provided in **Table 8** below. The roadways toward the north end of the corridor have higher overall volumes than the roadways in the southern portions of the corridor, though it should be noted that some roadways – Bush Highway in particular – have highly variable volumes due to recreational traffic.

Table 8: Cross Road Traffic Volumes

Roadway	SR 87 Mile Post	ADT	Source
Vista del Oro	195.2	194	FDS
Bush Highway	199.1	2,947	MCDOT[1]
Beeline Highway	218.0	62	FDS
Sunflower Frontage Road	218.0	458	FDS
SR 188	235.7	2,243	FDS
Deer Creek Drive	237.6	1,019	TCDS
Gisela Road (in SR 87 Median)	239.5	213	TCDS
Gisela Road (E of SR 87)	239.5	561	TCDS
Oxbow Trail	248.4	1,362	TCDS
Gibson Ranch Road	249.0	1,102	TCDS

[1]https://www.maricopa.gov/883/B

2.5 Speed Analysis

Speed data was collected by FDS at several locations along the SR 87 corridor at locations where stakeholders identified speeding as a relevant factor to safety or congestion during the stakeholder engagement process. The locations of the speed studies and collected speed data are provided in **Table 9**.

Table 9: Speed Analysis Statistics

Mile Post	Dir.	Speed Limit	% of Traffic > 10mph under Speed Limit	50th Percentile Speed	85th Percentile Speed
191.6	NB	65	2.7%	72 mph	74 mph
191.6	SB	65	37.2%	56 mph	61 mph
205.0	NB	65	8.4%	70 mph	74 mph
214.0	NB	65	33.0%	57 mph	61 mph
214.0	SB	65	16.3%	65 mph	72 mph
221.0	SB	65	13.5%	69 mph	73 mph
227.0	NB	65	16.9%	63 mph	69 mph
240.5	NB	65	3.6%	69 mph	73 mph
240.5	SB	65	1.5%	72 mph	74 mph
243.5	NB	65	91.7%	51 mph	54 mph
246.0	NB	65	44.4%	56 mph	63 mph
246.5	SB	55	6.1%	72 mph	74 mph

The speed data shows that speeding is an issue at several locations with horizontal curves, including SB MP 246.5 (Corvair Curve), where the 85th percentile speed is almost 20 mph over the speed limit; SB MP 214, which is an identified crash hot spot, and NB MP 205, which is also an identified crash hot spot.

The speed data showing percentage of traffic traveling greater than 10 mph under the speed limit supports a need for climbing lanes, including at NB MP 214 (33% greater than 10 mph under the speed limit); NB MP 227 (17% greater than 10 mph under the speed limit); and NB MP 243.5 (92% greater than 10 mph under the speed limit).

2.6 Future Traffic Volumes

Historical traffic volumes from the ADOT TCDS were used to develop future traffic forecasts for the 2030 and 2040 planning horizon years. There are five count locations along the corridor with historical average annual daily traffic (AADT) volumes from which historical trendlines could be developed. These count stations are located at MP 199.3, 217.0, 235.0, 237.6, and 248.9. Historical AADT volumes at each count station and their associated growth trendlines are shown in **Figure 10**.

Growth trendlines based on annual count data for every year between 1990 and 2018 were used to forecast future traffic volumes. The resulting 2030 and 2040 traffic forecasts are provided in

Table 10. A factor was applied to AADTs to estimate weekend volumes. Based on data from the continuous count station, weekend volumes are 39% higher than weekday volumes. This factor was used to convert forecasted AADT volumes to forecasted weekend volumes as weekend volumes are considered the “design” volumes due to how frequently volumes reach that level.

Figure 10: Historic AADT Volumes and Growth Trendlines

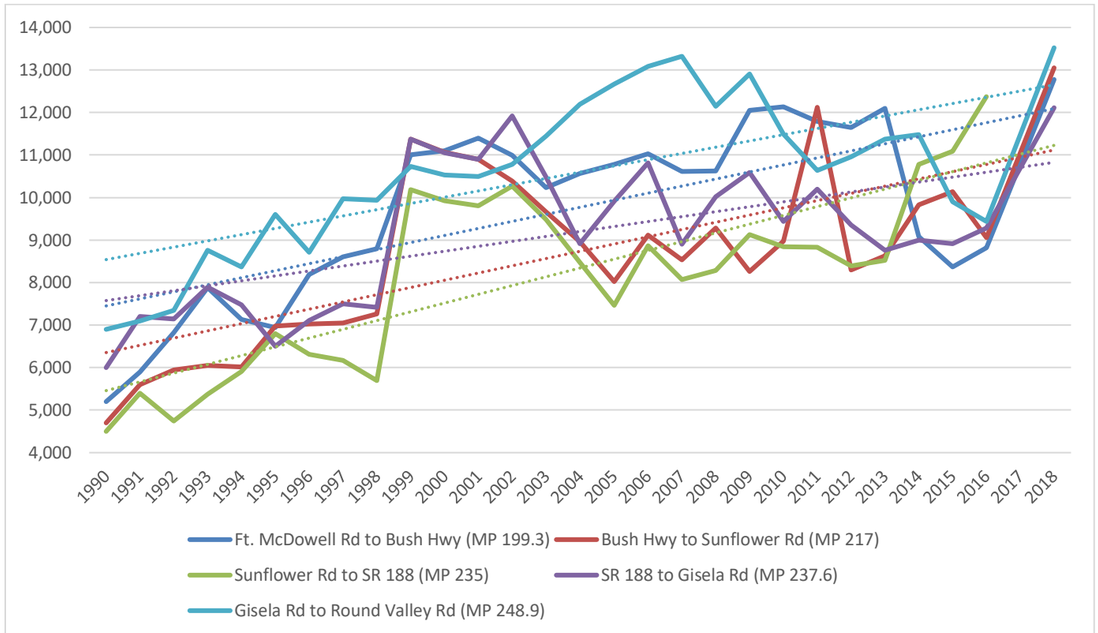


Table 10: Forecasted AADT and Weekend Traffic Volumes

Segment	Annual Growth Rate*	Forecasted 2030 AADT	Forecasted 2030 Average Weekend Volumes	Forecasted 2040 AADT	Forecasted 2040 Average Weekend Volumes
Ft. McDowell Rd to Bush Hwy (MP 199.3)	1.55%	14,089	19,584	15,746	21,887
Bush Hwy to Sunflower Rd (MP 217)	1.75%	12,990	18,056	14,691	20,420
Sunflower Rd to SR 188 (MP 235)	2.19%	13,494	18,756	15,554	21,620
SR 188 to Gisela Rd (MP 237.6)	1.16%	12,105	16,826	13,266	18,439
Gisela Rd to Round Valley Rd (MP 248.9)	1.26%	14,267	19,831	15,735	21,871

***Growth rates calculated from a trendline based on annual count volumes from 1990-2018**

2.7 Future Traffic Operations

Roadway segment levels of service (LOS) for existing travel volumes and forecasted travel volumes were developed using the Highway Capacity Software, which uses methodologies from the Highway Capacity Manual (HCM) 2010 developed by the Transportation Research Board (TRB). The criteria for roadway segment LOS are provided in **Table 11**. These LOS within the corridor is provided in **Table 12**.

Table 11: Level of Service Criteria for Roadway Segments

Level of Service	Density (pc/mi/ln)[1]
A	≤11
B	>11-18
C	>18-26
D	>26-35
E	>35-45
F	Demand exceeds capacity OR density >45

Table 12: Existing and Forecasted Segment Levels of Service

Segment	Existing AADT	Existing Weekend	2030 AADT	2030 Average Weekend	2040 AADT	2040 Average Weekend
Ft. McDowell Rd to Bush Hwy (MP 199.3)	A	B	A	B	B	B
Bush Hwy to Sunflower Rd (MP 217)	A	B	A	B	A	B
Sunflower Rd to SR 188 (MP 235)	A	B	B	B	B	C
SR 188 to Gisela Rd (MP 237.6)	B	B	B	B	B	B
Gisela Rd to Round Valley Rd (MP 248.9)	B	C	B	C	B	C

Levels of service are anticipated to remain at acceptable levels (LOS C or better) for the entire corridor through the planning horizon year of 2040.

2.8 Traffic Analysis Findings Summary

- LOS (volume/capacity) is expected to remain at acceptable levels (LOS B or better) through 2040 from an AADT perspective for all evaluated segments; however, average (and peak) weekends already experience LOS C or worse, and this condition is anticipated to further degrade over time as volumes continue to grow through 2040.
- Speed data shows high speed variability on both uphill and downhill sections, including at the following sections with historically high numbers of crashes:
    - MP 191.6 SB (5 mph difference between 50th and 85th percentile speed)
    - MP 214.0 SB (7 mph difference between 50th and 85th percentile speed)
    - MP 227.0 NB (6 mph difference between 50th and 85th percentile speed)

- MP 246.0 NB (7 mph difference between 50th and 85th percentile speed)

- Downhill sections, including Corvair curve (SB MP 245), are candidates for speed-reducing improvements to reduce the number of vehicles traveling greater than 10 mph over the speed limit.
- Uphill sections, including NB MP 213-216.5, NB MP 219-223, and NB MP 243-246.5, are candidates for capacity-enhancing improvements like climbing lanes.

2.9 Safety Analysis

2.9.1 2017 SR 87/SR 360/SR 377 Corridor Profile Study

SR 87 between MP 191 and MP 250 was evaluated as part of the SR 87/SR 260/SR 377 Corridor Profile Study (CPS) completed in 2017. The safety performance analysis for the CPS reviewed historical crash data from 2010 to 2014 which revealed the overall corridor safety performance was "below average" compared to the performance of similar roadways on the State Highway System. Areas of concern identified in the 2017 CPS include:

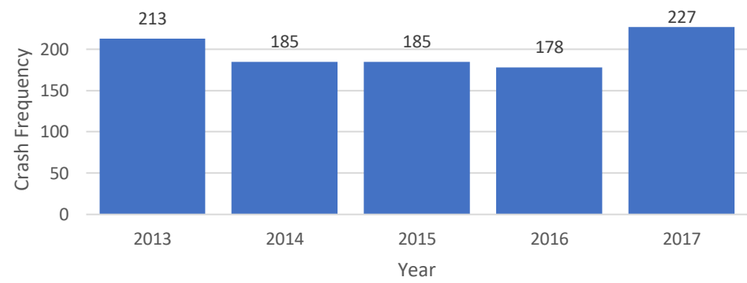
- The segment of SR 87 from Rye (MP 241) to Green Valley Pkwy/BIA 101 (MP 250) performed "below average" in the top five Arizona Strategic Highway Safety Plan (SHSP) emphasis areas. The segment of SR 87 from Fort McDowell Rd (MP 191) to SR 188 (MP 235) performed "below average" in motorcycle-involved crashes. The safety performance area became an emphasis area for the corridor in the CPS.
- SR 87 southbound at MP 246, known as Corvair Curve, has historically had many crashes. Temporary jersey barriers were placed in the past, but they have since been removed.
- The SR 188/SR 87 intersection experienced the greatest frequency of intersection related crashes. A Road Safety Assessment (RSA) was completed prior to 2016. The RSA observations identified that many vehicles ran the stop sign on SR 188. The area experiences heavy recreational use (trucks with trailers or boats). During outreach efforts for the CPS, a grade-separated interchange at SR 188/SR 87 was suggested by the District.

2.9.2 2013 – 2017 Corridor-Level Safety Analysis

To gain insight into crash occurrence for the SR 87 corridor so that effective countermeasures can be identified, an updated analysis of crash data was performed for the most recent five years (2013-2017). The results of this analysis provide an overview of crash trends and patterns, and those resulting in fatalities (K) and serious injuries (A). Corridor-wide crash statistics are provided in **Figure 12**.

During the 2010 to 2014 evaluation period for the 2017 SR 87/SR 360/ SR 377 CPS, 971 crashes occurred between MP 191 and MP 250. During the 2013 to 2017 evaluation period for the 2019 SR 87 MP 191 to MP 250 CDS, 988 crashes occurred between MP 191 and MP 250, as shown in **Figure 11**. The overall trend of crash frequencies over both evaluation periods is about the same with an average of 196 crashes occurring annually. Preliminary 2018 crash statistics indicate a 6% increase in crashes along the corridor from 2017.

Figure 11: Total Crash Frequencies (2013-2017)



Each year, there have been between two and twelve crashes resulting in serious injury and between two and nine crashes resulting in death. **Figure 13** shows the number of crashes by injury severity. The following definitions and attributes of Injury Severity (Status) are extracted from the Model Minimum Uniform Crash Criteria (MMUCC) Guidelines, Fourth Edition (2012), as required by FHWA for MAP-21 compliance and to conform to KABCO framework. KABCO is used by law enforcement to code crashes by the severity of injury that occurs as follows:

1. No Injury (O) - No apparent injury is a situation where there is no reason to believe that the person received any bodily harm from the motor vehicle crash. There is no physical evidence of injury and the person does not report any change in normal function.
2. Possible Injury (C) - An injury reported or claimed which is not a fatal, suspected serious or suspected minor injury. Examples include momentary loss of consciousness, claim of injury, limping, or complaint of pain or nausea. Possible injuries are those which are reported by the person or are indicated by his/her behavior, but no wounds or injuries are readily evident.
3. Suspected Minor Injury (B) - A minor injury is any injury that is evident at the scene of the crash, other than fatal or serious injuries. Examples include lump on the head, abrasions, bruises, minor lacerations (cuts on the skin surface with minimal bleeding and no exposure of deeper tissue/muscle).
4. Suspected Serious Injury (A) - Any injury other than a fatal injury which results in one or more of the following:
    a. Severe laceration resulting in exposure of underlying tissues/muscle/organs or resulting in significant loss of blood
    b. Broken or distorted extremity (arm or leg)
    c. Crush injuries
    d. Suspected skull, chest, or abdominal injury other than bruises or minor lacerations
    e. Significant burns (second and third-degree burns covering 10% or more of the body)
    f. Unconsciousness when taken from the crash scene
    g. Paralysis
5. Fatal Injury (K) - Any injury that results in death within 30 days after the motor vehicle crash occurred. If the person did not die at the scene but died within 30 days of the motor vehicle crash in which the injury occurred, the injury classification should be changed from the attribute previously assigned to the attribute "Fatal Injury".

Figure 12: SR 87 Corridor-Wide Crash Statistics (2013-2017)

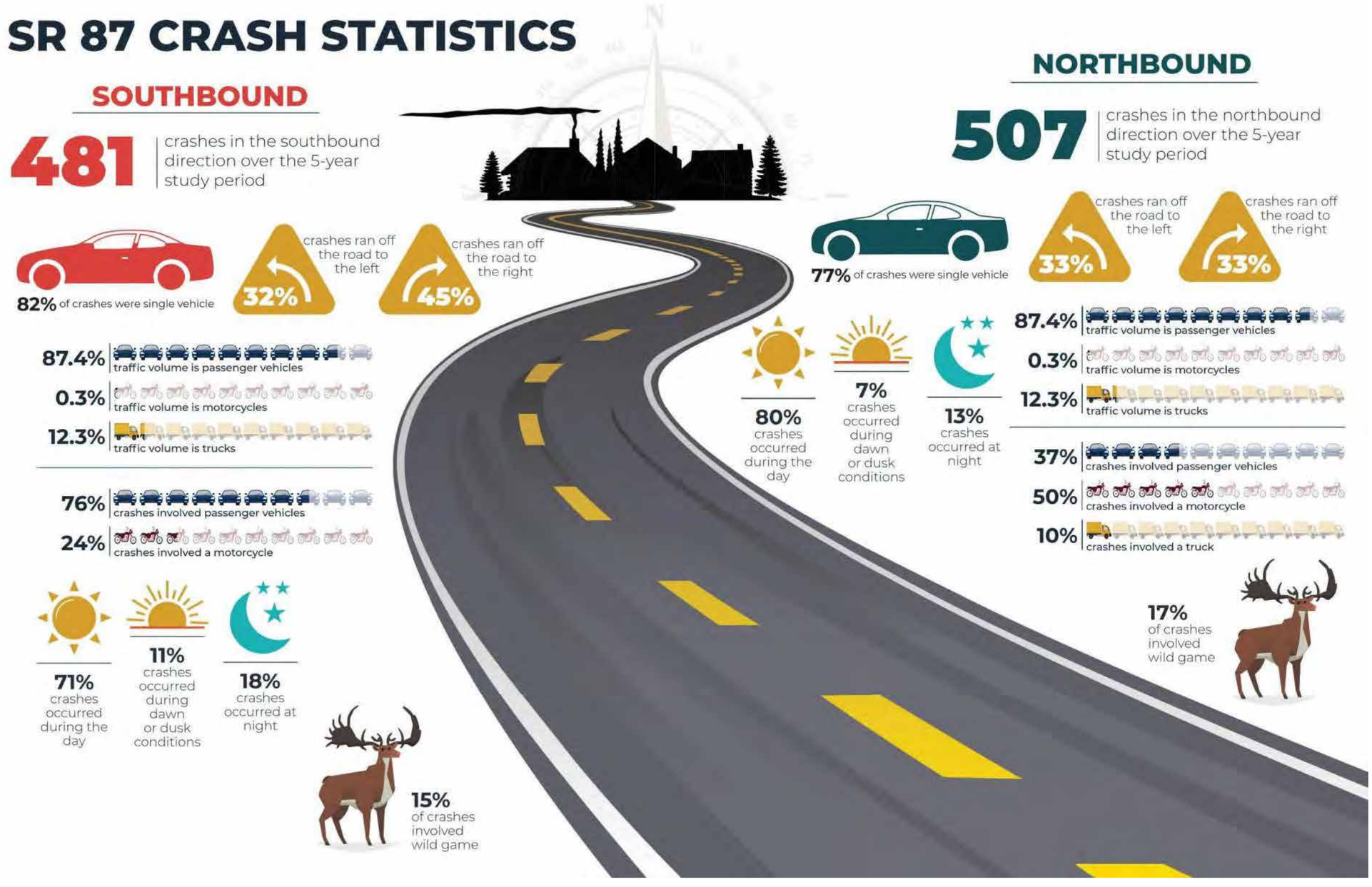
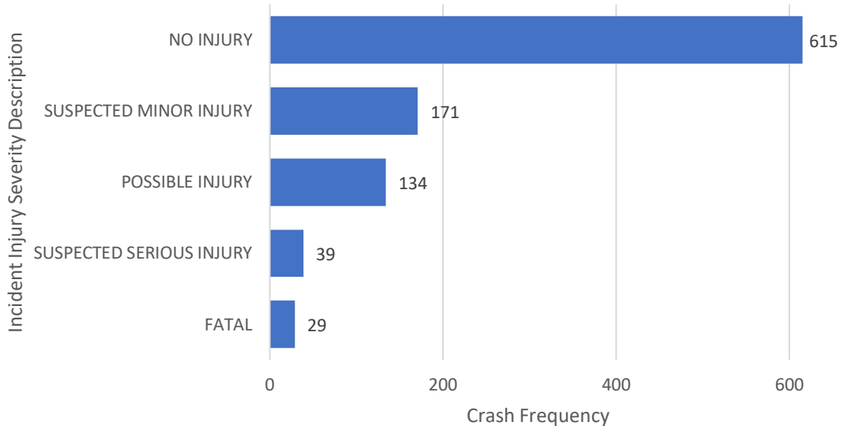
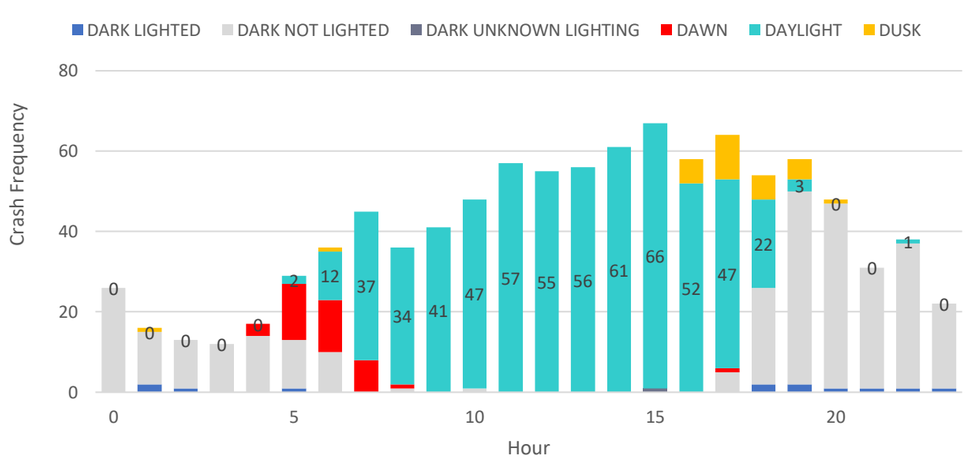


Figure 13: Crashes by Injury Severity (2013-2017)



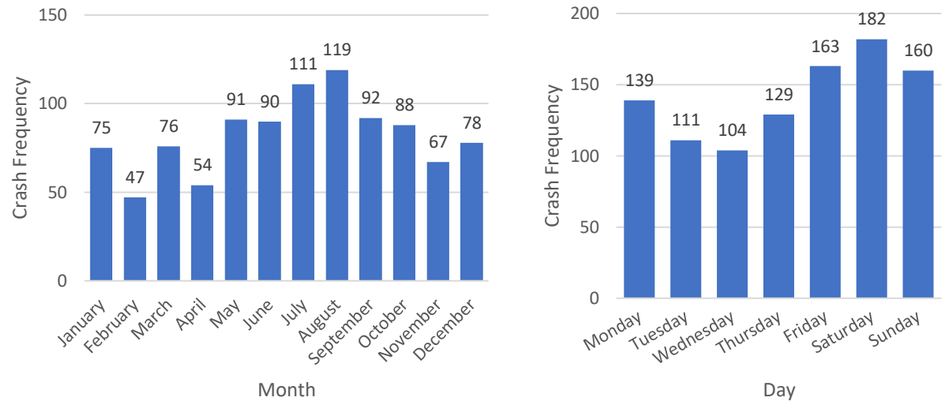
Crashes have occurred most frequently in afternoon and evening hours of the day as depicted by light condition in **Figure 14** below.

Figure 14: Crashes by Hour of Day and Lighting Condition (2013-2017)



The most crashes have occurred during the months of July and August and on weekends, as illustrated in **Figure 15**. This correlates with the greatest amounts of traffic on the corridor for recreation and tourism.

Figure 15: Crashes by Month and Day (2013-2017)



The most severe injury (A) and fatal crashes (K) have occurred during the months of March and May and on Saturdays and Sundays, as illustrated in **Figure 16**. Motorcyclists on the corridor are involved in 35% of acute injury and fatal crashes as shown in **Figure 17**; however, represent less than 1% of total traffic. The lack of a protected vehicle compartment means that motorcycle riders and passengers are much more vulnerable to injury crashes. The task of operating a motorcycle is much more demanding than operating a passenger vehicle. Riders must focus on coordinating speed and body lean, and managing traction and control, while navigating various surfaces, curves, and conditions.

Figure 16: Severe Injury Crashes by Month and Day (2013-2017)

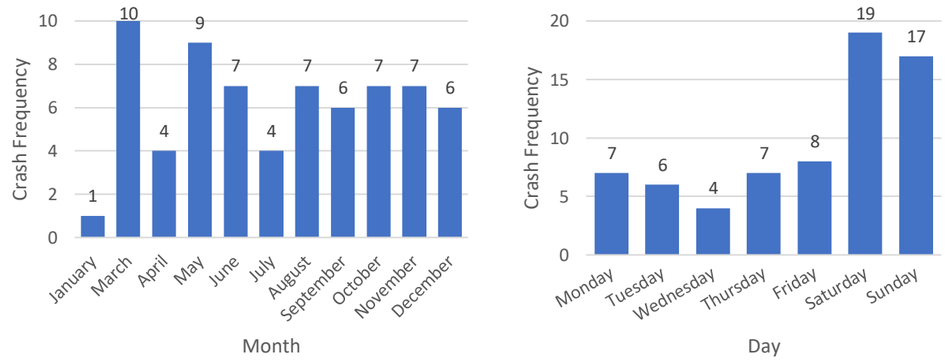
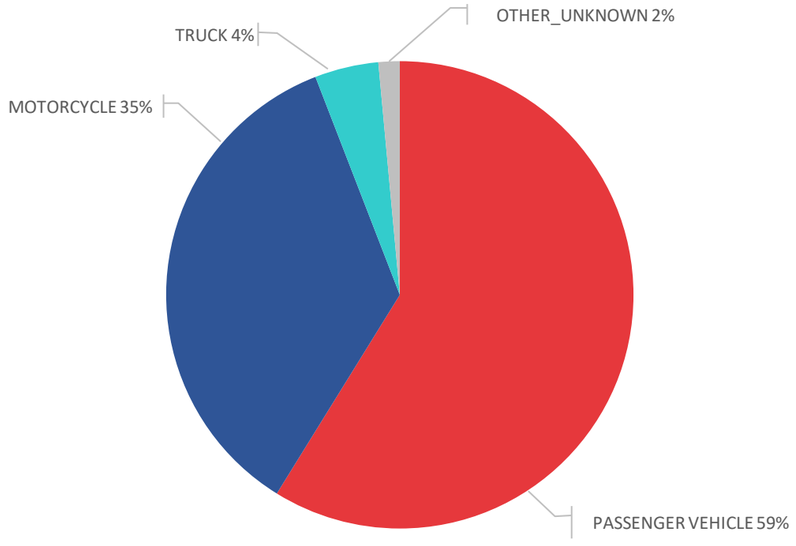


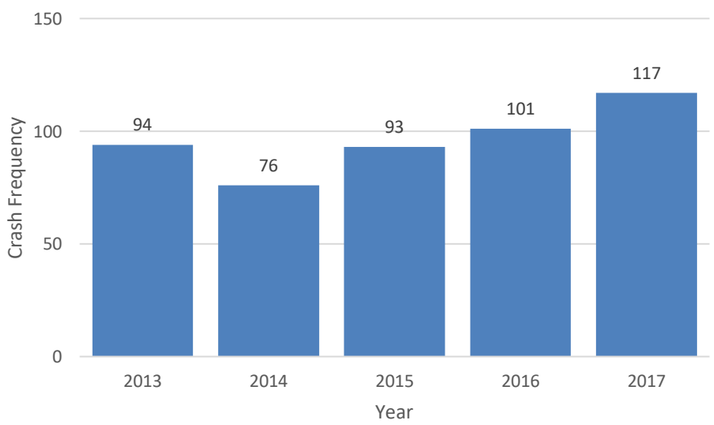
Figure 17: Suspected Serious Injury (A) and Fatal Crashes (K) by Vehicle Type (2013-2017)



2.9.3 2013 – 2017 Crash Trends and Hot Spots in the Southbound Direction

There have been 481 crashes on SR 87 in the southbound direction between MP 191 and MP 250 over the past five years. The overall trend of crash frequencies over the five-year analysis period is increasing as shown in **Figure 18** despite the total annual crashes on the corridor maintaining a steady frequency.

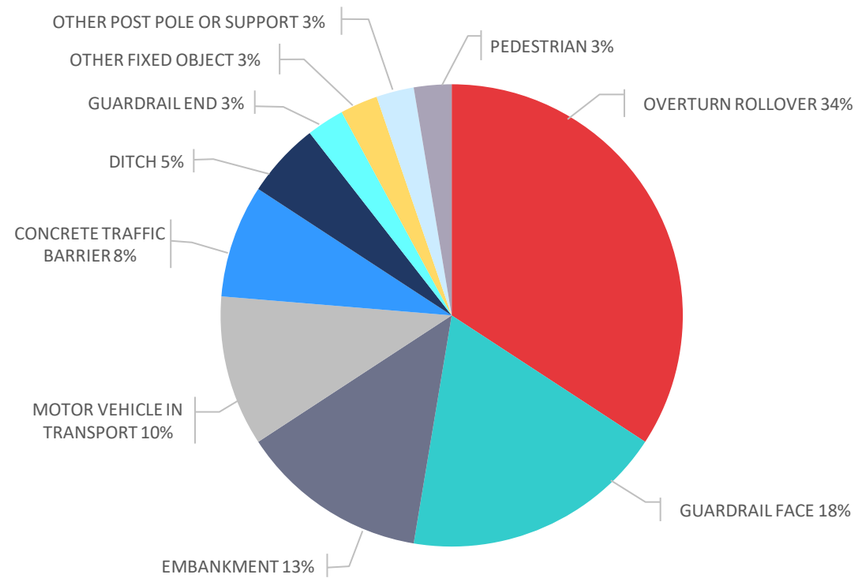
Figure 18: Southbound Crash Frequencies (2013-2017)



- 82% were single vehicle crashes.
- 90% of crashes occurred with dry surface conditions.
- 18% of crashes occurred at night, 71% occurred during the day, and 11% of crashes occurred during dawn or dusk conditions.
- 76% of crashes involved passenger vehicles. 24% crashes involved a motorcycle.
- Drivers were traveling too fast for conditions in 40% of the crashes.
- Alcohol, drugs, medication, or fatigue were influential in 37% of the crashes.
- 63% of drivers used a safety device (seat belt or helmet).
- 45% of crashes ran off the road to the right; 32% of crashes ran off the road to the left.

During the five-year study period, 17 crashes resulted in suspected serious injury (A) and 21 crashes resulted in death (K). A summary of first harmful event for the serious injury and fatal crashes in the southbound direction is provided in **Figure 19**.

Figure 19: Southbound Serious Injury and Fatal Crashes by First Harmful Event (2013-2017)



Crashes of all severities were reviewed by frequency, location, types, and trends. In the southbound direction, there is one hot spot that has a propensity for crashes as illustrated in **Figure 20** at MP 246, also known as Corvair Curve. Two additional locations were identified as hot spots for severe crashes, as illustrated in **Figure 21.** These locations have been further analyzed.

Figure 20: Hot Spot Analysis of All Crashes (2013-2017)

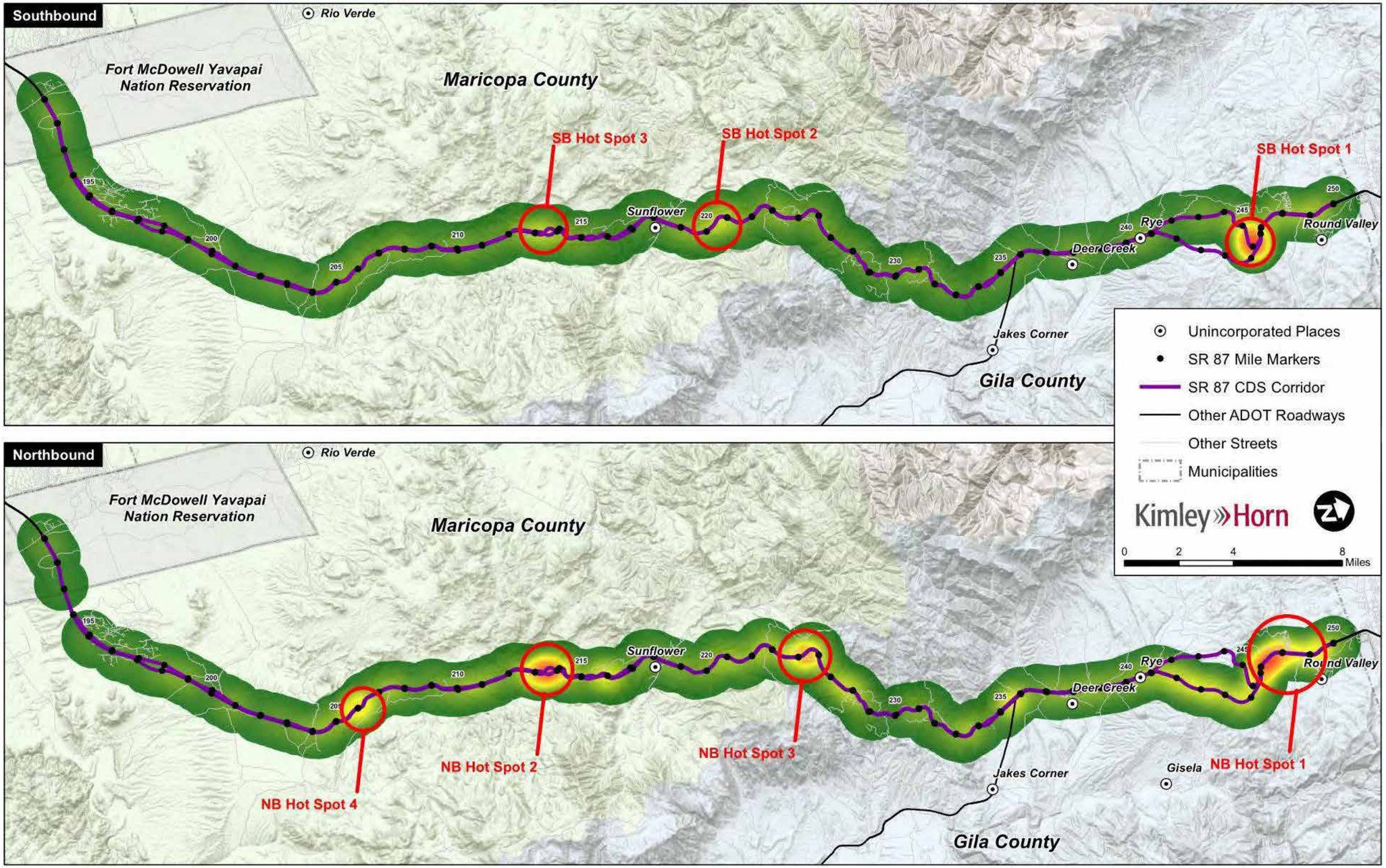
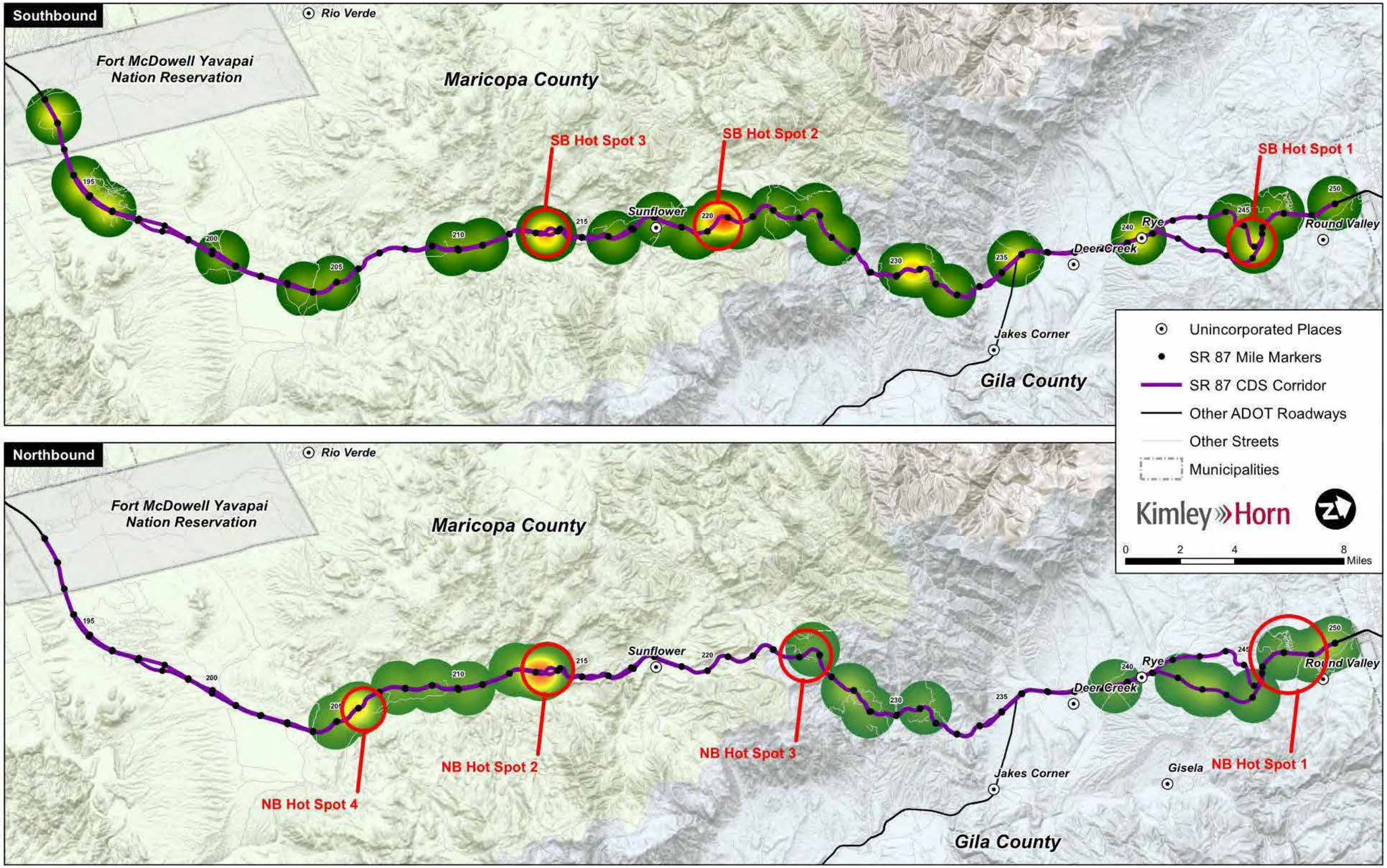


Figure 21: Hot Spot Analysis of Serious Injury and Fatal Crashes (2013-2017)



SB Hot Spot Location 1 - SR 87 southbound at MP 246, known as Corvair Curve, has historically had many crashes and continues to be identified as the most significant crash hot spot with 63 crashes on the curve (which is approximately 1.8 miles in length) for the five-year analysis period, and 41 of those crashes occurred within a 1,000-foot roadway segment within the curve. Below are statistics specifically for crashes at Corvair Curve:

- 87% were single vehicle crashes.
- 46% of crashes occurred with wet surface conditions; 11% occurred with ice, frost, or snow surface conditions.
- 46% of crashes occurred at night (there is no roadway lighting in this area).
- 94% of crashes involved passenger vehicles. One crash involved a motorcycle and two crashes involved trucks.
- Drivers were traveling too fast for conditions in 57% of the crashes.
- Alcohol, drugs, or fatigue were influential in six of the crashes.
- Four of the crashes involved wild game.
- 92% of drivers used a safety device (seat belt or helmet).
- One crash resulted in serious injury and one crash resulted in a fatality.

SB Hot Spot Location 2 - SR 87 southbound for the mile and a half between MP 220.0 to MP 221.5 is also identified as a hot spot for both the frequency and severity of crashes in the southbound direction, with 27 total crashes.

- 81% were single vehicle crashes.
- 15% of crashes occurred with wet surface conditions, 11% occurred with ice or frost conditions.
- 26% of crashes occurred at night (there is no roadway lighting in this area).
- 81% of crashes involved passenger vehicles, four crashes involved a motorcycle, and one involved a truck.
- Drivers were traveling too fast for conditions in 56% of the crashes.
- Alcohol was influential in two of the crashes.
- One of the crashes involved wild game, seven (26%) involved overturning, and eight (30%) struck the concrete barrier or guardrail.
- 78% of drivers used a safety device (seat belt or helmet).
- Three crashes resulted in serious injuries and two motorcycle crashes resulted in a fatality.
- 33% ran off the road to the right; 4% ran off the road to the left; 33% hit the concrete traffic barrier; four crashes involved equipment failure.

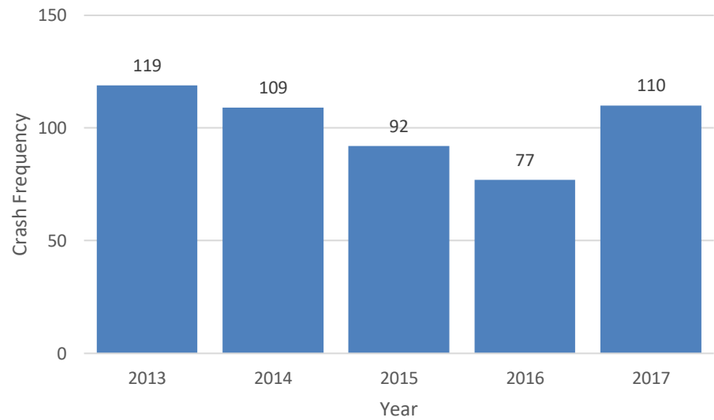
SB Hot Spot Location 3 - SR 87 southbound for the mile between MP 214.0 to MP 213.0 is also identified as a hot spot for both the frequency and severity of crashes in the southbound direction, with 20 total crashes.

- 48% were single vehicle crashes.
- 11% of crashes occurred with wet surface conditions.
- 19% of crashes occurred at night (there is no roadway lighting in this area).
- 75% of crashes involved passenger vehicles, two crashes involved a motorcycle, and two involved a truck.
- Drivers were traveling too fast for conditions in 33% of the crashes.
- Fatigue was influential in three of the crashes.
- Two of the crashes involved wild game, five (19%) involved overturning, and two (7%) struck the concrete barrier or guardrail.
- 63% of drivers used a safety device (seat belt or helmet).
- Two crashes resulted in serious injuries, of which, one was a motorcycle, and one crash resulted in a fatality.
- 11% ran off the road to the right; 19% ran off the road to the left; 19% hit another motor vehicle in transport; one crash involved equipment failure; one crash involved fire/explosion.

2.9.4 2013 – 2017 Crash Trends and Hot Spots in the Northbound Direction

There have been 507 crashes on SR 87 in the northbound direction between MP 191 and MP 250 over the past five years. Twenty-two resulted in serious injury and eight resulted in death. The overall trend of crash frequencies has been slightly decreasing over the past five years of data as shown in **Figure 22**.

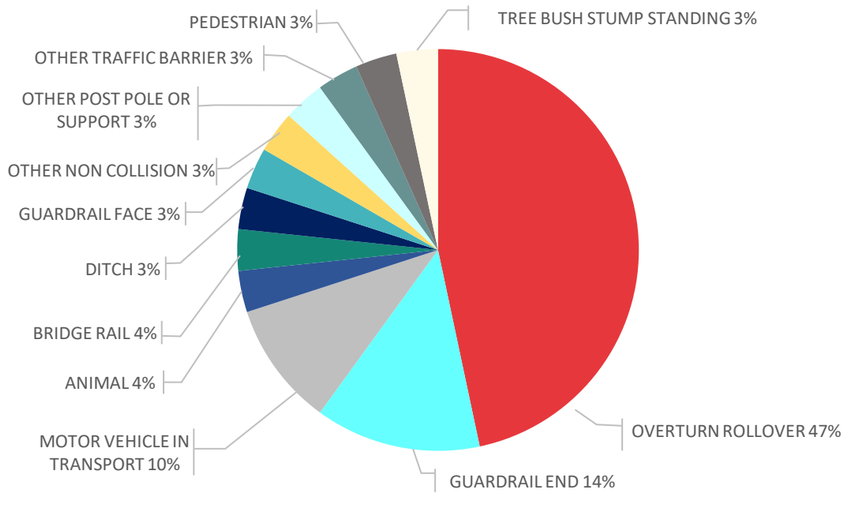
Figure 22: Northbound Crash Frequencies (2013-2017)



- 77% were single vehicle crashes.
- 90% of crashes occurred with dry surface conditions.
- 13% of crashes occurred at night. 80% occurred during the day.
- 37% of crashes involved passenger vehicles. 15 crashes (50%) involved a motorcycle and three crashes (10%) involved a truck.
- Drivers were traveling too fast for conditions in 43% of the crashes.
- Alcohol, drugs, or medication were influential in three (10%) of the crashes.
- One of the crashes involved wild game.
- 63% of drivers used a safety device (seat belt or helmet.)
- One of the crashes was crossover related and one was intersection related.
- 33% ran off the road to the right, 33% ran off the road to the left, two overturned, two crossed the centerline.

A summary of first harmful event for the serious injury and fatal crashes in the northbound direction is provided below in **Figure 23**.

Figure 23: Northbound Serious Injury and Fatal Crashes by First Harmful Event (2013-2017)



In the northbound direction, there are four notable hot spots that have a propensity for crashes as illustrated in **Figure 20**. Two of these have also been identified as hot spots for severity, as illustrated in **Figure 21**.

NB Hot Spot Location 1 - SR 87 northbound between MP 247.0 to MP 249.9 is the hot spot with the greatest frequency of crashes in the northbound direction, with 62 crashes.

- 81% were single vehicle crashes.
- 95% of crashes occurred with dry surface conditions and one crash occurred with snowy surface conditions.
- 48% of crashes occurred at night (there is limited roadway lighting in this area).
- 79% of crashes involved passenger vehicles. More than half of these were “pickup trucks less than one ton”. Two crashes involved a motorcycle and eight crashes involved trucks.
- Drivers were traveling too fast for conditions in 19% of the crashes.
- Alcohol or fatigue were influential in six (10%) of the crashes.
- 45% of crashes involved wild game.
- 90% of drivers used a safety device (seat belt or helmet).
- One crash resulted in serious injury and two crashes resulted in fatalities.
- 24% of crashes ran off the road to the right; 13% ran off the road to the left; one overturned; two crossed the centerline and three involved a fire or explosion.
- Four crashes were intersection or crossover related.

NB Hot Spot Location 2 - SR 87 northbound between MP 213.0 to MP 214.9 is an identified hot spot for both the frequency and severity of crashes, with 48 crashes.

- 88% were single vehicle crashes.
- 77% of crashes occurred with dry surface conditions. 17% of crashes occurred with wet surface conditions, three crashes occurred with ice or frost surface conditions, and debris contributed to four crashes (three involving motorcycles).
- 19% of crashes occurred at night (there is no roadway lighting in this area).
- 60% of crashes involved passenger vehicles, 16 crashes (33%) involved a motorcycle, and two crashes involved trucks.
- Drivers were traveling too fast for conditions in 50% of the crashes.
- Fatigue was influential in two of the crashes.
- 13% of crashes involved wild game.
- 85% of drivers used a safety device (seat belt or helmet.)
- Six crashes resulted in serious injuries (all were motorcyclists), but there were no fatalities.
- 31% ran off the road to the right; 17% ran off the road to the left; 15% ran off the road into an embankment, guardrail, or other non-fixed object; one crossed the centerline, two involved a fire or explosion; and four involved equipment failures.
- Six occurred from MP 213.2 to MP 213.5 where the driver was negotiating a curve, ran off the road to the right, and the vehicle overturned. There is no guardrail or barrier on the right side of the roadway between MP 213 and MP 213.41.

NB Hot Spot Location 3 - SR 87 northbound between MP 223.8 to MP 224.8 is a hot spot for crash frequencies, with 30 crashes.

- 77% were single vehicle crashes.
- 65% of crashes occurred with dry surface conditions, 19% of crashes occurred with wet surface conditions, and 15% of crashes occurred with snow surface conditions.
- 38% of crashes occurred at night (there is no roadway lighting in this area).
- 92% of crashes involved passenger vehicles and one crash involved a truck.
- Drivers were traveling too fast for conditions in 50% of the crashes.
- Alcohol, illness, or fatigue was influential in four of the crashes.
- No crashes involved wild game.
- 88% of drivers used a safety device (seat belt or helmet).
- One crash resulted in a serious injury; there were no fatalities.
- 23% ran off the road to the right; 12% ran off the road to the left; 27% ran off the road into guardrail or concrete traffic barrier; two involved a fire or explosion; and three involved equipment failures.

NB Hot Spot Location 4 - SR 87 northbound between MP 205.0 and MP 206.5 is an identified hot spot for both the frequency and severity of crashes with 27 total crashes.

- 85% were single vehicle crashes.
- 85% of crashes occurred with dry surface conditions and 15% of crashes occurred with wet surface conditions.
- 11% of crashes occurred at night (there is no roadway lighting in this area).
- 56% of crashes involved passenger vehicles and 44% of crashes involved a motorcycle.
- Drivers were traveling too fast for conditions in 26% of the crashes.

- Alcohol was influential in one of the crashes.
- 37% of crashes involved a vehicle overturning.
- 78% of drivers used a safety device (seat belt or helmet.)
- Three crashes involving motorcyclists resulted in serious injuries, two crashes involving motorcyclists striking a guardrail end or face resulted in fatalities.
- 56% ran off the road to the left; 11% ran off the road into guardrail; one involved a fire or explosion; one involved equipment failure; one crossed the centerline; and four overturned or jackknifed.

2.9.5 2013 – 2017 Intersection and Intersection-Related Crash Trends and Hot Spots

There are 33 intersections on SR 87 from MP 191 to MP 250. There are relatively few intersection-related crashes, with 18 occurring within the five-year analysis period as summarized below in Table 13.

Table 13: Intersection Crash History

MP	Intersection	Grade Separated	Access	Crashes
191.8	Hiawatha Hood Road	No	4-way	1
192.1	Rodeo Drive	No	4-way	0
194.5	Burnt Water Tail	No	3-way	0
195.2	Vista del Oro	No	3-way	0
196.0	Goldfield Road	No	3-way	0
196.3	Pleasant View Road	No	Right-in-right-out	1
196.6	Median Crossover	No	3-way	0
197.3	Meridian Road	No	Right-in-right-out	0
199.1	Bush Highway	Yes	Diamond Interchange	0
203.9	Cline Cabin Road	No	4-way	1
207.8	FR 68 Access Road	No	4-way	1
209.5	FR 68	No	4-way	0
210.5	Ballantine Trailhead	No	4-way	1
212.7	Sycamore Creek	No	4-way	1
217.4	FR 1704	No	3-way	0
218.0	Sunflower	No	4-way	0
218.5	FR 22	No	3-way	0
220.0	Unnamed Road	No	Right-in-right-out	0
222.7	FR 626	No	4-way	0
229.6	FR 26	Yes	Right-in-right-out	1
235.7	SR 188	No	4-way	4
236.7	Unnamed Road	No	3-way	0
237.6	Deer Creek Drive	No	4-way	0
238.5	FR 1438	No	3-way	0
239.2	Barnhardt Road	No	4-way	0
239.5	Gisela Road	No	3-way	1
240.0	Matlock Gas	No	3-way	1
240.5	South Rye Crossover	No	4-way	2
240.8	North Rye Crossover	No	4-way	0
247.8	FR 535	No	3-way	1
248.4	Ox Bow Estates	No	3-way	0
248.7	FR 375B	No	3-way	0
249.0	Gibson Ranch Road	No	3-way	2

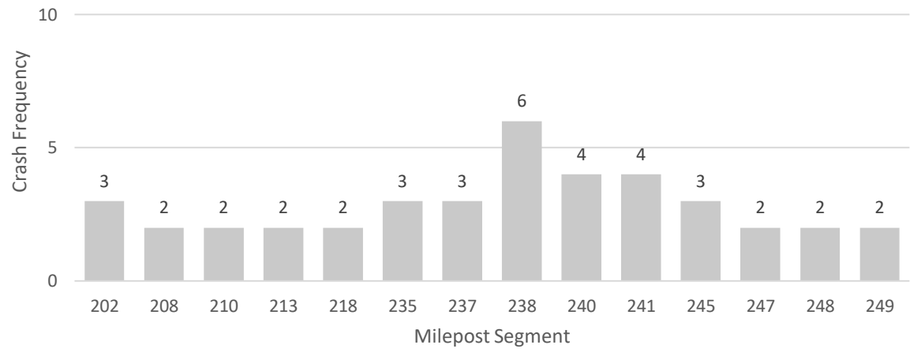
The SR 188/SR 87 intersection experienced the most intersection-related crashes. In 2016, signage, rumble strips, and turn lanes were added at the SR 188/SR 87 intersection upon recommendation of a Road Safety Assessment (RSA). There were no recorded crashes at this intersection in 2017. There is insufficient crash data available for a period after the improvements were made to draw conclusions from the improvements.

2.9.6 2013 – 2017 Other Crash Trends and Hot Spots

2.9.6.1 Animal – Related Crashes

The most crashes involving animals have occurred on SR 87 SB between MP 238.0 and MP 238.9, as illustrated below in **Figure 24**, where SR 87 transverses Clover Wash and roadside vegetation is denser. Rye Creek to the north and Deer Creek to the south form part of the Tonto Creek Basin where wild game is prevalent.

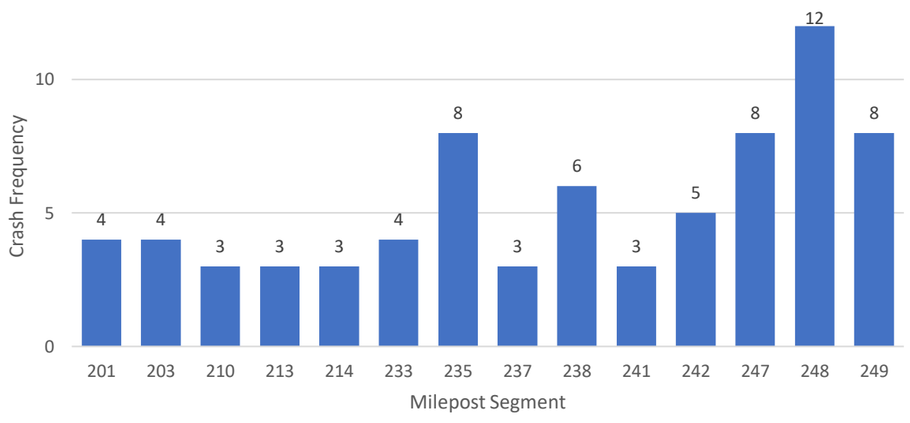
Figure 24: Top 10 Southbound Segments for Animal-related Incidents



The most crashes involving animals have occurred on SR 87 NB between MP 235.0 and MP 235.9, MP 238.0 and MP 238.9, MP 247.0 and MP 249.9 as illustrated below in **Figure 25**, where wild game is prevalent and roadside vegetation is denser. Between MP 235.0 and MP 235.9, there appears to be a water source to the east of SR 87 which may be attracting wild game.

Arizona is home to approximately 35,000 elk. The preferred and most effective wildlife mitigation on State highways are underpasses and overpasses in combination with wildlife fencing in between to direct the animals to these crossings. An at-grade elk detection and warning system currently exists on SR 260 (two lanes), ten miles east of Payson. Installed in 2007, at a cost of $700,000 for the three-mile project area, the system has reduced elk-vehicle crashes by 98%; from an average of 11 elk-vehicle collision per year to three over 10 years. Due to the volumes and speed of motor vehicle traffic on SR 87, an at-grade elk crossing is not recommended. Dynamic elk warning systems should be explored at hot spots for animal-related incidents as a near-term safety countermeasure. ADOT should coordinate with AGFD to locate and design grade separated crossings as the ultimate countermeasure.

Figure 25: Top 10 Northbound Segments for Animal-related Incidents



2.9.6.2 Rollover Crashes

Rollover incidents are more likely to result in serious injury or death. Drivers travelling too fast for conditions navigating curves, swerving to avoid an object in the road, or who are impaired are more likely to lose control of their vehicle and run off the road. Depending on their vehicle type and presence of physical barriers, the vehicle may overturn. As depicted in **Figure 26** and **Figure 27**, the most rollover incidents occurred in the segment of SR 87 SB mileposts 194, 220, and 249 and in the segment of SR 87 NB mileposts 205, 207, and 213.

Figure 26: Top 10 Southbound Segments for Rollover Incidents

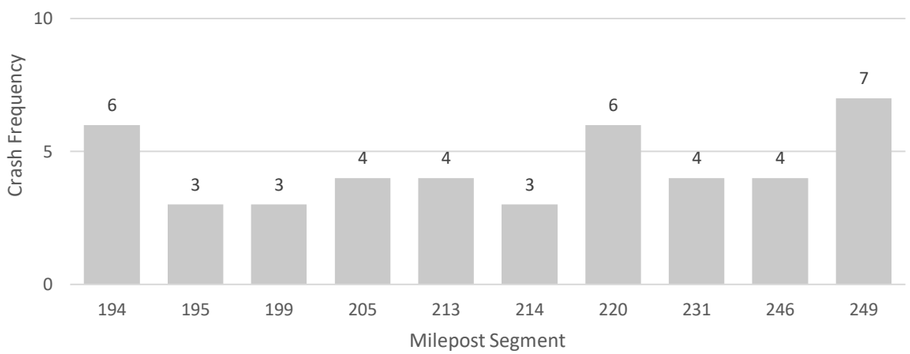
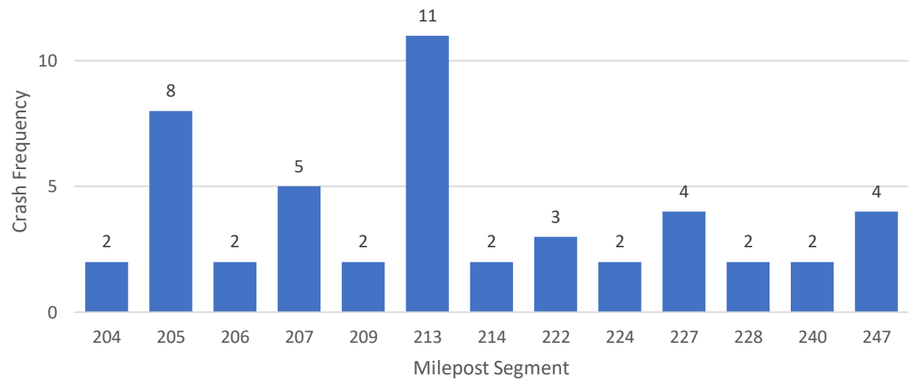


Figure 27: Top 10 Northbound Segments for Rollover Incidents



2.9.6.3 Debris-related Crashes

There is a history of rockfall from embankments along the corridor. **Figure 28** and **Figure 29** indicate the segments along the corridor with the highest crash experience related to debris in the roadway.

Figure 28: Top Southbound Segments for Incidents with Debris in the Roadway

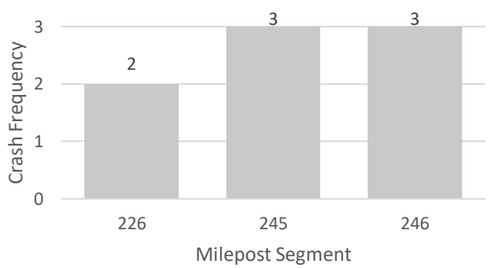
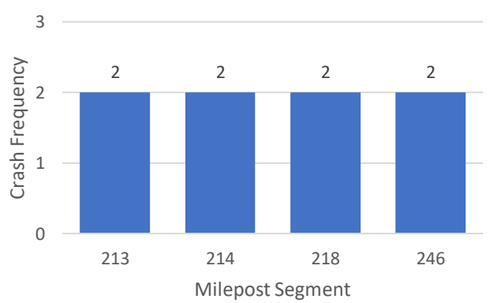


Figure 29: Top Northbound Segments for Incidents with Debris in the Roadway



2.9.7 *Corridor Safety Analysis Summary*

The corridor safety analysis reveals the need to address crashes on horizontal curves, speeding-related crashes, crashes involving motorcycles, and run-off-road crashes. Likely contributing factors were developed based on the information obtained through the overall crash analysis, hot spot crash summaries, and previously completed safety-related projects. The following are primary contributing factors of crashes on SR 87 between MP 191 and MP 250:

- Speed too fast for conditions
- Roadway departure
- Pavement surface condition
- Improper lane changes
- Shoulder/rumble strip condition
- Roadway geometry
- Clear zone slopes and obstructions
- Slippery/wet pavement surface
- Animals on roadway
- Inadequate lighting
- Driving under the influence

The locations where solutions will be investigated in more depth are summarized below in **Table 14**.

2.9.8 *Crash Variability and Regression to the Mean*

Crashes are random events that naturally fluctuate over time at any given site. Over a span of several years, crash data fluctuates between several high and low points around an expected average crash frequency. A short-term average crash frequency may be significantly higher or lower than the long-term average crash frequency. Typically, a minimum of three years of crash data is used for analysis. Five years of data was used in the analysis for the 2017 CPS and this study to avoid the regression to the mean phenomenon; however, shifts in the locations of crash hot spots along the corridor were observed between the two analysis periods. Safety countermeasures proposed in this study include both spot improvements and systemic improvements, which identify sites based on roadway characteristics.

Table 14: Safety Summary on the SR 87 Corridor

Direction	Approx. Begin	Approx. End	Crash Frequency (per mile)	Description
Northbound Corridor	191.0	250.0	507 (8.6)	• 77% were single vehicle crashes • 50% involved a motorcycle • 10% involved a truck • 66% of vehicles ran off road • Vehicles overturning, hitting guardrail end, and hitting other vehicles resulted in 70% of serious injury and fatal crashes
Northbound Hotspot	205.0	206.5	27 (16.9)	• 15% occurred with wet surface conditions • 44% involved a motorcycle • 37% involved overturning • 56% of vehicles ran off the road to the left • 15% involved overturning or jackknifing
Northbound Hotspot	205.0	205.9	8 (8.0)	• Crashes in the hot spot involved overturning
Northbound Hotspot	213.0	214.0	48 (43.6)	• 23% occurred with wet, ice, or frost surface conditions • 8% involved debris in the roadway • 13% involved wild game • 33% involved a motorcycle • 48% of vehicles ran off the road
Northbound Hotspot	213.0	213.9	11 (11.0)	• Crashes in the hot spot involved overturning
Northbound Hotspot	223.8	224.8	30 (27.3)	• 34% occurred with wet or snow surface conditions • 38% occurred at night • 50% of drivers were traveling too fast for conditions • 13% involved impairment • 35% of vehicles ran off the road • 27% of vehicles struck guardrail or concrete traffic barrier
Northbound Hotspot	235.0	235.9	8 (8.0)	• Crashes involved wild game
Northbound Hotspot	247.0	249.9	62 (21.4)	• 48% occurred at night • 13% involved a truck • 45% of crashes involved wild game • 10% involved impairment • 37% of vehicles ran off the road
Northbound Hotspot	247.0	249.9	28 (9.7)	• Crashes in the hot spot involved wild game
Southbound Corridor	250.0	191.0	481 (8.1)	• 82% were single vehicle crashes • 24% involved a motorcycle • 37% involved impairment • 77% of vehicles ran off the road • Vehicles overturning, hitting guardrail face, and hitting embankments resulted in 66% of serious injury and fatal crashes
Southbound Hotspot	246.0	246.9	63 (63.0)	• 57% occurred with wet, ice, frost, or snow surface conditions • 46% occurred at night • 57% of drivers were traveling too fast for conditions • 10% involved impairment
Southbound Hotspot	194.9	194.0	6 (6.0)	• Crashes involved overturning
Southbound Hotspot	220.0	221.5	27 (16.9)	• 26% occurred with wet, ice, frost, or snow surface conditions • 56% of drivers were traveling too fast for conditions • 26% involved overturning • 33% ran off the road to the right
Southbound Hotspot	220.9	220.0	6 (6.0)	• Crashes in the hot spot involved overturning
Southbound Hotspot	238.9	238.0	6 (6.0)	• Crashes involved wild game
Southbound Hotspot	249.9	249.0	7 (7.0)	• Crashes involved overturning

3 ENVIRONMENTAL OVERVIEW (CORRIDOR LEVEL)

The following Environmental Overview (EO) documents environmental conditions within the SR 87 corridor study area to identify environmental opportunities and constraints that will be considered in developing and evaluating potential roadway improvements.

3.1 Affected Environment

3.1.1 Physical and Natural Environment

3.1.1.1 Topography/Physiology

The EO study area consists of the existing ADOT right-of-way (ROW) along the study corridor. The SR 87 study area extends through multiple jurisdictions and land owned or managed by various entities in Maricopa and Gila counties. The southern portion of the corridor from MP 191 to MP 193, crosses the Fort McDowell-Yavapai Nation (FMYN) Reservation. From MP 193 to MP 250, SR 87 travels through the Tonto National Forest (TNF), though there is a mix of private lands at various locations along the corridor; most notably near Sunflower, Deer Creek, and Rye. The study area passes through the southern end of the McDowell Mountains, traverses the Mazatzal Mountains, crosses Sycamore Valley and Tonto Basin, increasing in elevation from approximately 1,365 feet above mean sea level (MSL) at MP 191 to 4,990 feet above MSL at MP 250.

3.1.1.2 Vegetation

According to Biotic Communities, Southwestern United States and Northwestern Mexico, the study area passes through the Arizona Upland Subdivision-Sonoran Desertscrub, Semi-Desert Grassland, Interior Chaparral, and Great Basin Conifer Woodland biotic communities. The majority of the study area is disturbed as it consists of SR 87 and associated roadway improvements (shoulders, entrance and exit ramps, turning lanes, bridges, emergency vehicle turnarounds, and bypasses). Areas adjacent to SR 87 primarily consist of undeveloped native lands. Vegetation within the study area consists of agave (*Agave sp.*), Arizona cypress (*Cupressus arizonica*), barrel cactus (*Ferocactus wislizenii*), blue paloverde (*Cercidium floridum*), buckhorn cholla (*Opuntia acanthocarpa*), catclaw acacia (*Acacia greggii*), creosote (*Larrea tridentata*), Engelmann's prickly pear (*Opuntia engelmannii*), foothill paloverde (*Parkinsonia microphylla*), Fremont cottonwood (*Populus fremontii*), Gambel oak (*Quercus gambelii*), Goodding's willow (*Salix gooddingii*), hedgehog cactus (*Echinocereus sp.*), Mormon tea (*Ephedra sp.*), ocotillo (*Fouquieria splendens*), one-seed juniper (*Juniperus monosperma*), saguaro (*Carnegiea gigantea*), and velvet mesquite (*Prosopis velutina*).

3.1.1.3 Biology

Threatened and Endangered Species

The official species list for the study area was obtained from the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) system on December 19, 2018. The list included 14 threatened or endangered species and designated critical habitat for the Mexican spotted owl that should be evaluated during future projects. Species included in the USFWS list, are included in **Table 15.**

During future studies and projects conducted for the roadway improvements, the USFWS list of threatened, endangered, proposed, and candidate species and Arizona Game and Fish Department (AGFD) On-Line Environmental Review Tool (OERT) should be reviewed to determine if new species have been identified or any changes in listing status have occurred.

Table 15: Species Included in USFWS Species List

Species	Status	Habitat Requirements (USFWS 2016)
Amphibians		
Chiricahua leopard frog (***Rana chiricahuensis***)	ESA LT	Cienegas, pools, livestock tanks, lakes, reservoirs, streams and rivers between 3,281 and 8,890 feet elevation. Often restricted to the upper portion of watersheds that are free from non-native predators.
Birds		
California least tern (***Sterna anitllarum browni***)	ESA LE	Open, bare or sparsely vegetated sand, sandbars, gravel pits, or exposed flats along shorelines of inland rivers, lakes, reservoirs, or drainage systems below 2,000 feet.
Mexican spotted owl (***Strix occidentalis lucida***)	ESA LT	Mature montane forest and woodland, shady wooded canyons, and steep canyons at elevations between 4,100 to 9,000 feet. Key habitat components include uneven-aged stands with high canopy closure, high tree density, and a sloped terrain.
Designated Critical Habitat for Mexican spotted owl	CH	Critical habitat is located within the study area.
Southwestern willow flycatcher (***Empidonax traillii extimus***)	ESA LE	Dense riparian woodland communities along rivers, streams, lakesides, and wetlands below 8,500 feet elevation. Prefers dense canopy cover, large volume of understory foliage, and surface water during mid-summer.
Yellow-Billed Cuckoo (***Coccyzus americanus***)	ESA LT	Uses large contiguous patches of multi-layered riparian habitat, such as cottonwood-willow gallery forests along rivers and streams below 6,600 feet in elevation.
Yuma clapper rail (***Rallus longirostris yumanensis***)	ESA LE	Requires wet substrate (mudflat, sandbar) with dense herbaceous or woody vegetation for nesting and foraging. Fresh-water marshes dominated by cattail or bulrush are preferred habitat. Typically found below 4,500 feet of elevation.
Fishes		
Desert pupfish (***Cyprinodon macularius***)	ESA LE	Habitats include clear, shallow waters with soft substrates associated with cienegas, springs, streams, margins of larger lakes and rivers, shoreline pools, and irrigation drains and ditches below 5,200 feet in elevation.
Gila chub (***Gila intermedia***)	ESA LE	Found in pools in smaller streams, cienegas, and artificial ponds ranging in elevation from 609-1,676 meters.
Gila Topminnow (incl. Yaqui) (***Poeciliopsis occidentalis***)	ESA LE	Topminnow prefer shallow, warm, fairly quiet waters in ponds, cienegas, tanks, pools, springs, small streams and the margins of larger streams. Found below 4,500 feet of elevation.
Razorback Sucker (***Xyrauchen texanus***)	ESA LE	Mainstem channels to slow backwaters and lakes along the Colorado River. In impoundments, water depths of a meter or more over sand, mud or gravel substrate is preferred.

Species	Status	Habitat Requirements (USFWS 2016)
Spikedace (***Meda fulgida***)	ESA LE	Found in moderate to large perennial streams, where they inhabit shallow riffles (those shallow portions of the stream with rougher, choppy water) with sand, gravel, and rubble substrates.
Woundfin (***Plagopterus argentissimus***)	ESA LE/XN	Found in warm, swift streams of high turbidity, preferring a stream speed of one to two feet per second and a depth of eight to eighteen inches. Lives in part of salty streams, avoiding clear waters and rarely can be found in quieter pools.
Mammals		
Mexican gray wolf (***Canis lupus***)	ESA LE/XN	Vegetation type not required for survival. However, habitat must support sufficient prey populations, such as elk or deer. Generally found between 3,000 to 12,000 feet of elevation.
Status Definitions: CH = Critical Habitat; ESA = Endangered Species Act; LE = Listed Endangered, LT = Listed Threatened, XN = Experimental Non-essential Population		

Arizona Special Status Species

The AGFD OERT report, accessed on December 19, 2018 listed 35 special status species and special areas documented within two miles of the EO study area. The species and special areas listed below in **Table 16** will need to be evaluated during further project designs.

Table 16: Special Status Species Documented within Two Miles of Project Vicinity

Scientific Name	Common Name	USFWS	USFS*	SGCN*
Agave delamateri	Tonto Basin Agave	SC	S	
Agave murpheyi	Hohokam Agave	SC	S	
Agosia chrysogaster	Gila Longfin Dace	SC		1B
Aquila chrysaetos	Golden Eagle	BGA		1B
Aquila chrysaetos	Golden Eagle	BGA		1B
CH for Strix occidentalis lucida	Mexican Spotted Owl Designated Critical Habitat			
Catostomus clarkii	Desert Sucker	SC	S	1B
Catostomus insignis	Sonora Sucker	SC	S	1B
Cicindela oregona maricopa	Maricopa Tiger Beetle	SC		
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S	1A
Cyprinodon macularius	Desert Pupfish	LE		1A
Falco peregrinus anatum	American Peregrine Falcon	SC	S	1A
Fremontodendron californicum	Flannel Bush			
Gila robusta	Roundtail Chub	CCA	S	1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	1A
Haliaeetus leucocephalus (wintering pop.)	Bald Eagle - Winter Population	SC, BGA	S	1A
Haliaeetus leucocephalus pop. 3	Bald Eagle - Sonoran Desert Population	SC, BGA	S	1A
Heloderma suspectum cinctum	Banded Gila Monster	SC		1A
Heloderma suspectum	Reticulate Gila Monster			1A
Heloderma suspectum	Gila Monster			1A
Kinosternon sonoriense	Desert Mud Turtle			1B
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	1A
Lupinus lemmonii	Lemmon's Lupine		S	
Myotis velifer	Cave Myotis	SC		1B
Poeciliopsis occidentalis	Gila Topminnow	LE		1A
Rallus obsoletus yumanensis	Yuma Ridgway's Rail	LE		1A
Strix occidentalis lucida	Mexican Spotted Owl	LT		1A
Tadarida brasiliensis	Brazilian Free-tailed Bat			1B
Thamnophis eques megalops	Northern Mexican Gartersnake	LT	S	1A
Xantusia bezyi	Bezy's Night Lizard		S	1B

Status Definitions: LE = Listed Endangered, LT = Listed Threatened, SC = Species of Concern, CCA = Candidate Conservation Agreement, BGA = Bald and Golden Eagle Protection Act
***SGCN = AGFD Species of Greatest Conservation Need**
***USFS = United States Forest Service**

Initial scoping discussions with the TNF and the AGFD included the request for evaluation of wildlife movement corridors, Sonoran Desert tortoises, and Saguaro cacti. Recommendations included that existing culverts be modified to allow wildlife movement and passage. Installation of directional fencing was also recommended to encourage wildlife to utilize these culverts. It was requested that existing Sonoran desert tortoise fencing be maintained and additional fencing be installed to help reduce collisions from passing traffic. Lastly, it was recommended that all saguaro cacti be surveyed and analyzed during project design to prevent impacts from construction. Any saguaros which may be impacted, shall be salvaged and transplanted.

In addition to Federal and State listed species evaluations, consideration for potential Tribal species of concern should be reviewed for areas in the FMYN Reservation.

Arizona Potential Linkage Zones

The Arizona Wildlife Linkages Workgroup (AWLW) has taken a collaborative approach to account for habitat fragmentation associated with Arizona's continuing population, economical, and infrastructural growth. The AWLW has identified large blocks of protected habitat, potential important wildlife movement corridors between these blocks (potential linkage zones), and the factors threatening to disrupt the linkage zones.

The EO study area passes through Potential Linkage Zone (PLZ) 53 North-South Mazatzal Mountains. PLZ 53 has been identified as an important area of movement for 17 species native to Arizona (AWLW 2006).

Wildlife movement corridors should be considered during project design to determine the best way to construct the roadway improvements while maintaining uninhibited wildlife movement and connectivity within

the study area and vicinity. Major drainages and upland areas that have been identified as wildlife movement corridors should incorporate wildlife-friendly roadway design considerations such as wildlife-friendly fencing and oversized select drainage culverts/bridges for maximum large mammal passage to adequately address maintaining or improving wildlife movement capabilities within and through the roadway ROW, especially along regional drainages. Coordination with AGFD should be continued to ensure wildlife-friendly roadway crossings are incorporated where appropriate into the roadway improvement design.

Noxious and Invasive Plants

Noxious and invasive plant species are plants that are not native to Arizona and were introduced accidentally or intentionally. These plants rapidly displace desirable plants that provide habitat for wildlife and food for people and livestock. Noxious and invasive species are listed by state and federal law, and are generally considered exotic and negatively impact agriculture, navigation, fish, wildlife, and public health.

Under Executive Order 13112, dated February 3, 1999, projects that occur on federal lands or are federally-funded must be "subject to the availability of appropriations, and within administrative budgetary limits, use relevant programs and authorities to:

(1) Prevent the introduction of invasive species;
(2) Detect and respond rapidly to, and control, populations of such species in a cost-effective and environmentally sound manner;
(3) Monitor invasive species populations accurately and reliably; and
(4) Provide for restoration of native species and habitat conditions in ecosystems that have been invaded."

Noxious and invasive plant species present within the study area include buffelgrass (*Pennisetum ciliare*), Russian thistle (*Salsola tragus*), Caucasian blue stem (*Bothriochloa ischaemum*), and knapweed species (*Centaurea sp.*). During future projects and construction, mitigation measures should be implemented to prevent the introduction or further spreading of invasive species.

Arizona Protected Native Plants

The Arizona Native Plant Law (Arizona Revised Statues 3-905) protects listed native plant species from collection, removal, and/or destruction on all lands regardless of ownership. Protected native plants present in the study area include barrel cactus, blue paloverde, buckhorn cholla, Engelmann's prickly pear, foothill paloverde, hedgehog cactus, ocotillo, saguaro, and velvet mesquite. During future project designs, native plant surveys should be conducted to determine if any protected native plant species would be impacted as a result of the improvements. Coordination with the Arizona Department of Agricultural (AZDA) should be conducted as impacts to native plants may require a Notice of Intent and/or specific permitting prior to construction per Article 11: Arizona Native Plants. A salvage and/or re-vegetation plan may be necessary depending on the type of native plants and quantity impacted by construction.

3.1.1.4 Hydrology

Clean Water Act (Section 404/401)

The U.S. Army Corps of Engineers (Corps) regulates the discharge of dredge and/or fill material into waters of the U.S. (WOUS) under Section 404 of the Clean Water Act (33 U.S.C. §1251 et seq. (1972)).

Any activity that will discharge dredge or fill material into jurisdictional waters, including wetlands, will require a Clean Water Act Section 404 Permit [either a Nationwide Permit (NWP) or an Individual Permit (IP)]. These activities include, but are not limited to, the installation of riprap, channel maintenance activities, bank protection, new bridges or extensions of bridges, corrugated metal pipes, and box culverts to allow for roadway crossings. It should be noted that the Environmental Protection Agency (EPA) is responsible for Section 401 Water Quality Certifications (WQC) on tribal lands that it has not delegated that authority to. Work in WOUS on Fort McDowell Yavapai Nation lands would have a Water Quality Certification (WQC) issued by the EPA.

The northern portion of the study area drains east/southeast toward Tonto Creek and the southern portion of the project area drains west/southwest toward the Verde River. Named potential WOUS within the EO study area include Boone Moore Wash, Camp Creek, Clover Wash, Corral Creek, Deer Creek, Gold Creek, Hardt Creek, Mesquite Wash, Picadilla Creek, Pine Creek, Rye Creek, Slate Creek, St. Johns Creek, Sycamore Creek, Sycamore Wash, and the Verde River. The EO study area also includes numerous unnamed ephemeral washes.

It is anticipated that several of the rivers, creeks, and washes in the study area could be determined to be potentially jurisdictional WOUS by the Corps. An evaluation to determine boundaries of WOUS should be conducted during the design phase of future projects through a Preliminary Jurisdictional Determination (PJD) or an Approved Jurisdictional Determination (AJD) to aid in avoiding and minimizing impacts to the WOUS. A PJD is a non-binding delineation that is typically pursued in the planning and design phases of a project. An AJD is a delineation that is binding for five years that requires more data and processing time through the Corps. After the delineation is complete, the project should be designed to avoid and minimize impacts to WOUS. If there are unavoidable impacts to WOUS, a Section 404 permit will then be required along with compensatory mitigation activities for the proposed impacts to WOUS.

Arizona Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) is a national permit program under Section 402 of the Clean Water Act that regulates discharges of pollutants from point sources into WOUS, including sediment and pollutants that can be generated during ground-disturbing activities and transported by stormwater runoff.

The Environmental Protection Agency has delegated to the Arizona Department of Environmental Quality the authority to operate the permit program within Arizona. The state's version of the NPDES permit program is referred to as the Arizona Pollutant Discharge Elimination System (AZPDES). The AZPDES permit program requires a general permit for construction activities that disturb one or more acres of land as well as for construction activities that disturb WOUS (Section 401 Certification). A Stormwater Pollution Prevention Plan (SWPPP) must be prepared as a part of the permit.

The construction of the roadway improvements would likely impact more than one acre of land and/or WOUS; therefore, a construction general permit, Section 401 Certification, and SWPPP will likely be required during future project development. However, project specific evaluations should occur during project design.

100-Year Floodplain

There is one mapped FEMA floodplain within the study area; the Verde River (Zone A). The FEMA floodplain is located on FIRM panel 04013C1825L effective October 16, 2013. Potential impacts to floodplains should be evaluated during project design.

3.1.1.5 Noise

As required by 23 CFR 772.5, ADOT defines a Substantial Increase in noise levels as an increase in noise levels of 15 dB(A) in the predicted noise level over the existing noise level (shown in **Table 17**). Any Receptor that meets this criterion is considered impacted. The Federal Highway Administration (FHWA) traffic noise regulations do not define the point at which a noise level "approaches" the Noise Abatement Criteria (NAC) for a specific land use category. As required by 23 CFR 772.11(e), the point at which the noise levels "approach" the NAC is defined by ADOT as one dB(A), for Categories A, B, C, D, and E. There is no noise impact threshold for Category F or Category G locations.

Table 17: 23 CFR Part 772, NAC

Activity Category	$L_{eq}(h)$	$L_{10}(h)$[2]	Analysis Location	Description of Activity Category
A	57	60	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[3]	67	70	Exterior	Residential.
C[3]	67	70	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	55	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[3]	72	75	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F				Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G				Undeveloped lands that are not permitted.

[1]Either $L_{eq}(h)$ or $L_{10}(h)$ (but not both) may be used on a project.
[2]Either $L_{eq}(h)$ and $L_{10}(h)$ Activity Criteria values are for impact determination only and are not design standards for noise abatement measures.
[3]Includes undeveloped lands permitted for this activity category.

There are scattered noise sensitive receivers located within 650 feet of the existing SR 87 ROW; therefore, detailed noise analysis may be necessary to assess potential impacts near N. Blue Coyote Trail, Sunflower, Bear Creek (Deer Creek Drive), Rye, and Oxbow Estates as potential future projects are developed. In general, scope of work that increases highway capacity, alters the vertical or horizontal alignment requires detailed noise analyses.

3.1.1.6 Air Quality

The federal Clean Air Act (CAA) requires that impacts to air quality be analyzed and addressed in the preparation of environmental documents. Pursuant to the CAA, the Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six air pollutants:

- Carbon monoxide (CO);
- Lead (Pb);
- Nitrogen dioxide (NO_2);
- Ozone (O_3);
- Particulate matter (PM) for both PM_{10} and $PM_{2.5}$; and
- Sulfur dioxide (SO_2).

Based on federal and state air quality standards, a specific geographic area can be classified under the federal CAA as "attainment," "non-attainment," or "maintenance" for each criteria pollutant. The criterion for non-attainment designation varies by pollutant so that an area can be in attainment for some pollutants and non-attainment for others.

If a pollutant in a region meets or exceeds the NAAQS set by the EPA, it is defined as an attainment area. If a pollutant does not meet the minimum NAAQS, it is defined as a non-attainment area. Maintenance areas are areas previously defined as non-attainment areas that are in transition to becoming attainment areas after monitoring data demonstrates air quality standards are being met.

The study area from MP 191 to MP 197 is located within a non-attainment area for particulate matter (PM_{10}) and MP 191 to MP 193 is located within a maintenance area for carbon monoxide (CO). The study area from approximately MP 191 to MP 223 is within a non-attainment area for Ozone. There is a PM_{10} maintenance area near Payson from approximately MP 246 to 250. Air quality analysis will need to be conducted to determine if the improvements to SR 87 will deem future projects as one of air quality concern.

3.1.1.7 Hazardous Materials

Hazardous materials are regulated by the Federal Resources Conservation and Recovery Act (RCRA) (42 U.S.C. s/s 321 et seq. (P.L. 94-580) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) [(42 U.S.C. §9601 et seq. (1980)], commonly known as the Superfund. The Arizona Department of Environmental Quality (ADEQ) implements CERCLA and its amendments, the Superfund Amendments and Reauthorization Act (SARA) of 1986 (P.L. 99-499; October 17, 1986; 100 Stat. 1613).

ADEQ's eMaps website was reviewed for facilities with potential hazardous materials concerns. No facilities were documented within or adjacent to the study area. Additional review should be completed for potential hazardous materials during future project design.

3.1.1.8 Section 4(f) Resources

Section 4(f) of the Department of Transportation (DOT) Act of 1966 stipulates that DOT agencies cannot approve the use of land from recreation areas, wildlife and waterfowl refuges, publicly owned parks, or private and public historical sites unless:

(a) There is no prudent or feasible alternative to using that land;
(b) The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use (49 CFR Part 303(c)); and
(c) The use would not affect the features, activities, or attributes which qualify the property for Section 4(f) consideration, and FHWA has made a determination that the Section 4(f) use is de minimis.

A "use" of a Section 4(f) resource, as defined in 23 CFR Part 774 occurs:

(1) When land is permanently incorporated into a transportation facility;
(2) When there is a temporary occupancy of land that is adverse in terms of the statute's preservationist purposes; or
(3) When there is a constructive use of the land.

A constructive use of a Section 4(f) resource (23 CFR 774.15) occurs when the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired, even though the transportation project does not incorporate land from the Section 4(f) resource. For example, a constructive use can occur when:

(a) The projected noise level increase attributable to the project substantially interferes with the use and enjoyment of a noise-sensitive facility of a resource protected by Section 4(f);
(b) The proximity of the proposed project substantially impairs aesthetic features or attributes of a resource protected by Section 4(f), where such features or attributes are considered important contributing elements to the value of the resource. An example of such an effect would be the location of a proposed transportation facility in such proximity that it obstructs or eliminates the primary views of an architecturally significant historical building, or substantially detracts from the setting of a park or historic site which derives its value in substantial part because of its setting; and/or,
(c) The project results in a restriction on access, which substantially diminishes the utility of a significant publicly owned park, recreation area, or historic site.

Potential Section 4(f) resources within the study area include the following recreation areas located in TNF:

- Diamond Trail is a 2.1-mile trail located near Sunflower.
- Sunflower Trail is a 5.1-mile trail located near Sunflower.
- Pine Creek Loop and Ballantine Trail is a 6.6-mile trail located near Fountain Hills.
- Mount Ord Trail is a 14.4-mile trail located near Rye.
- Deer Creek Loop Trail is a 15.9 mile trail located near Rye.

Archaeological sites that are eligible for the NRHP under Criteria A (event), B (person), or C (construction) are considered Section 4(f) resources and include roads, structures, and rock art. Section 4(f) properties within the study area include:

- Heber-Reno Sheep Driveway
- Forest Highway 9/ AZ U:8:60(ASM)/ AR-03-12-06-2028/ AR-03-12-04-1286
- State Route 87/ AZ AA:6:63(ASM)/ AR-03-12-03-680
- Sunflower CCC Camp/ AR-03-12-06-678/ NA17344
- Ashdale CCC Side Camp/ AZ U:3:61(ASM)/ AR-03-12-06-475
- Round Valley Site/ AZ U:3:341(ASM)/ AR-03-12-03-461
- AZ U:3:312(ASM)/ AR-03-12-03-575
- AZ U:3:313(ASM)/ AR-03-12-03-493
- AZ U:3:322(ASM)/ AR-O3-12-03-582
- AZ U:3:342(ASM)/ AR-03-12-03-460

Impacts to potential Section 4(f) resources must be reevaluated during project design, including appropriate consultation, as appropriate.

3.1.1.9 Section 6(f) Resources

The Land and Water Conservation Fund Act (LWCF) of 1965 (16 U.S.C. §§460l-4, et seq.) was signed into law on September 3, 1964. The purpose of the LWCF is to provide matching grants to state and local governments to acquire and develop public outdoor recreation areas and facilities. The LWCF strives to protect and maintain these areas and facilities for long-term, high-quality outdoor recreation experiences. The provisions under Section 6(f)(3) mandate that these investments be protected, but recognize that changes in land use, especially in growing urban areas, can impact these protected areas. The LWCF contains provisions to protect these areas from conversions. Property that is acquired or developed cannot be converted to uses other than public outdoor recreation uses unless it is approved by the Secretary of the Interior. The Secretary can approve such a land use change if the conversion is consistent with the then existing comprehensive statewide outdoor recreation plan. When necessary, the Secretary can also require that other properties be identified as a substitute for the loss of a converted outdoor recreation area. The other properties should be at least of equal fair market value and be similar in usefulness and location as the converted outdoor recreation area.

The list for LWCF-funded projects in Maricopa and Gila Counties was reviewed and it appears that no LWCF funded projects are present in the study area (NPS 2019). Therefore, there are no anticipated impacts to Section 6(f) resources at this time. However, evaluation as to the presence of Section 6(f) resources and potential impacts should be made during final project designs.

3.1.1.10 Demographics, Socioeconomics Considerations and Title VI/Environmental Justice Populations

Demographics

Population centers of various sizes exist along the SR 87 corridor. **Table 18** summarizes populations of communities along the corridor. While the Phoenix metropolitan area is projected to experience significant growth over the next 20 years (58% Maricopa County), moderate population growth is projected between 2010 and 2040 in these communities, per data provided by the Arizona State Demographer's Office.

Table 18: Current and Future Population

Community	2010 Population	2016 Population Estimate	2040 Population	% Change 2010-2040	Total Growth
Maricopa County	3,817,117	4,152,800	6,031,000	58%	2,213,883
Mesa	439,041	467,600	597,200	36%	158,159
Fountain Hills	22,489	23,800	30,400	35%	7,911
Gila County	53,597	54,611	54,531	2%	934
Payson	15,301	15,993	17,095	12%	1,794

Figure 30 shows the population density by census block group. While the overall population density is very low compared to the more urban areas that the highway serves, there are some areas of dense population at either end of the corridor. The central part of the corridor has very low population densities of less than two persons per square mile.

Figure 31 shows median income by census block group. The highest median incomes are in the south-central portion of the corridor, where the median income is over $138,000. The lowest median income is on the Fort McDowell-Yavapai Indian Reservation, at less than $43,000.

Figure 32 shows the percentage of unemployed adults over the age of 16. The highest unemployment rate is on the Fort McDowell – Yavapai Indian Reservation at 12.5%. The lowest unemployment rate is experienced is along the western side of the roadway at the northern end of the corridor, which has zero reported unemployed adults.

Figure 33 shows the percentage of zero-vehicle households by census block group along the SR 87 corridor. The highest percentage of zero-vehicle households are along the south half of the corridor. Census block groups in the northern half of the corridor generally have lower rates of zero-vehicle households.

The purpose of a socioeconomic analysis is to describe the existing social conditions within the study area and identify populations that may require additional consideration during future investigations such as National Environmental Policy Act (NEPA) studies. Socioeconomic analyses are also used to identify environmental justice populations that may experience disproportionate adverse impacts from a project.

Environmental justice populations are minority populations that are protected by Title VI and Executive Order 12898. Title VI of the Civil Rights Act of 1964 and Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, issued February 11, 1994, require federally-funded projects to include identification of any disproportionately high and adverse human health effects from environmental impacts on minority and low-income people. These federal regulations also ensure that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination as a result of, proposed projects on the basis of race, color, age, sex, disability, income level, or national origin.

Disproportionately high and adverse effects on minority or low-income populations can be defined as an adverse effect that (1) is predominantly borne by a minority or low-income population; or (2) will be suffered by the minority or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or the non-low-income population. For the purpose of social impact analyses for minority and low-income populations, disproportionate adverse impacts are likely to occur when the minority or low-income population is either 50 percent or greater than the total population for the census tract (CT), block group (BG), or is more than double the percentage of the population within the comparative county.

Because this is a feasibility study and the detailed roadway improvements and implementation schedules are unknown, exact population group impacts cannot be determined as of the date of this document. General impacts such as additional potential increases in ambient noise levels may occur depending on the future scope of roadway improvements. Therefore, further consideration for disadvantaged populations may be warranted for future environmental clearance documents.

3.1.2 Cultural Resources

A file search and literature review of the 59-mile-long segment of SR 87, between MP 191 and 250 in Maricopa and Gila Counties, Arizona was conducted. Records were examined in the Arizona State Museum (ASM) online AZSITE database and the online ADOT Portal database to determine the location of any previously conducted archaeological surveys or previously recorded archaeological sites within the existing ADOT ROW. General Land Office (GLO) maps and historic United States Geological Survey (USGS) topographic maps were also consulted to evaluate the possible presence of historic Euro-American infrastructure in the project area. The National Register Information System database was also reviewed. This Class I was conducted as a preliminary study; records from TNF or FMYN were not examined. However, project reports available on the ADOT portal were examined to identify sites on TNF and FMYN lands.

A total of 64 previous projects have been completed within the Area of Potential Effects (APE), including 45 survey projects, seven survey and data recovery projects, three data recovery projects, two archival studies, one monitoring project, and six other projects. Monitoring has been conducted during seven projects. A total of 199 sites have been previously documented within the APE. Cultural affiliations include Archaic, Hohokam, Salado, Central Arizona Tradition, Yavapai, Apache, and Euro-American affiliations. Site types include habitations, villages, artifact scatters, water control features, roads, a mine, and a sheep driveway. Of these sites, 120 have been determined or recommended eligible for inclusion on the National Register of Historic Places (NRHP), 35 sites have been determined or recommended not eligible for the NRHP; 43 sites are unevaluated, or the NRHP-status is unknown; and two sites have been completely destroyed, including one site previously determined eligible. Of the 199 sites in the project area, 101 have been previously subjected to a data recovery program, which include Phase 1 Testing, Phase 2 data recovery, eligibility testing, surface collection, or archival research. Work was primarily conducted within the ROW prior to the realignment of SR 87 and during maintenance projects for the highway.

Additionally, GLO plats and historic USGS topographic maps depict 94 historic map properties crossing the project area. These historic map properties comprise 53 roads, 26 unimproved roads, 10 trails, two structures, one fence, one ditch, and the Heber-Reno Sheep Driveway.

Sites that have not yet been subject to data recovery, but that are eligible for the NRHP, as well as sites for which the NRHP status is unevaluated or unknown, should be avoided by all ground-disturbing activities. If project plans may potentially impact a NRHP-eligible site or property that has not been completely excavated within the ROW, it is recommended that the site area be inspected at the beginning of the project to evaluate the site condition within the ROW. This field assessment is recommended to assist with making an updated NRHP-eligibility recommendation, and to identify avoidance areas. This information can be further used to develop appropriate treatment plans if a NRHP-eligible site cannot be avoided. The treatment plans should be developed in coordination with ADOT, TNF, FMYN, and the State Historic Preservation Office (SHPO), as appropriate. The plans should include a program for testing and data recovery prior to construction, and/or archaeological monitoring during all ground-disturbing activities. If work is proposed on lands owned or managed by the TNF or FMYN, the agency or tribe should be consulted with to determine if additional cultural resources or culturally sensitive areas are present within or adjacent to the project area.

All information contained in this document is the property of ADOT. It contains sensitive information about the location of cultural resources and is provided for information only as allowed by ADOT. If site locations are required for the planning process, please contact the ADOT Historic Preservation Specialist for access and permission. This information is not for distribution

Figure 30: Population Density by Census Block Group

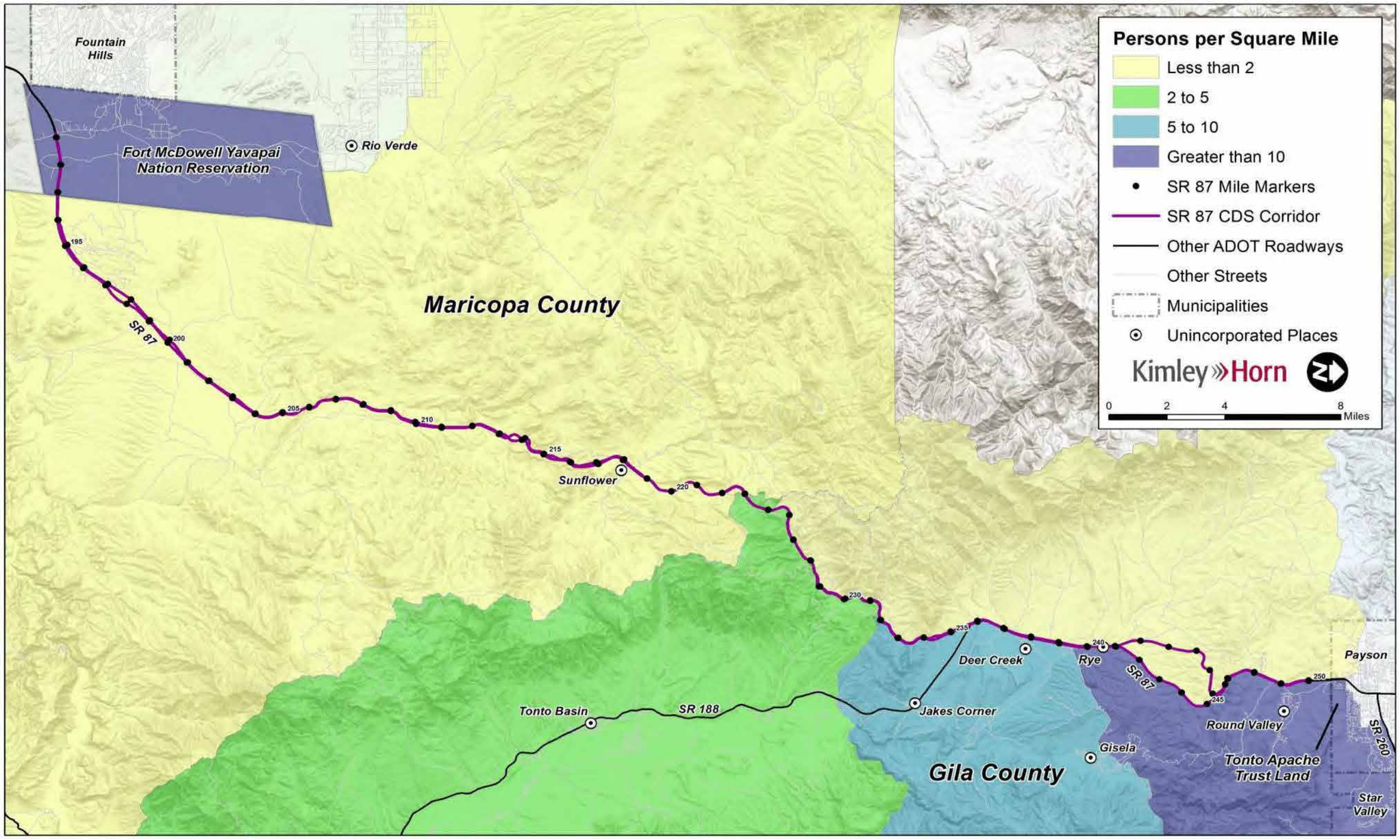


Figure 31: Median Income by Census Block Group

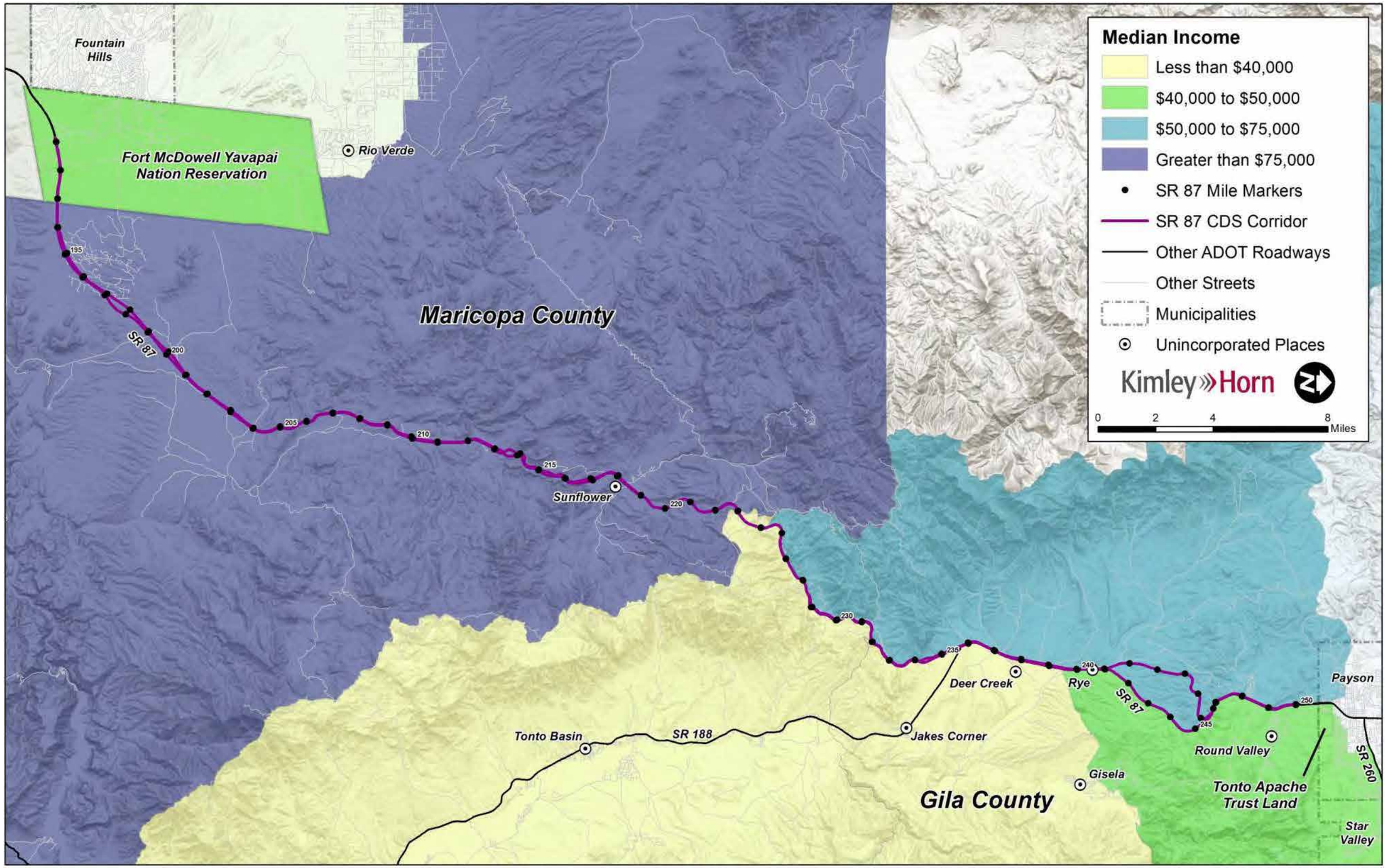


Figure 32: Unemployed Population by Census Block Group

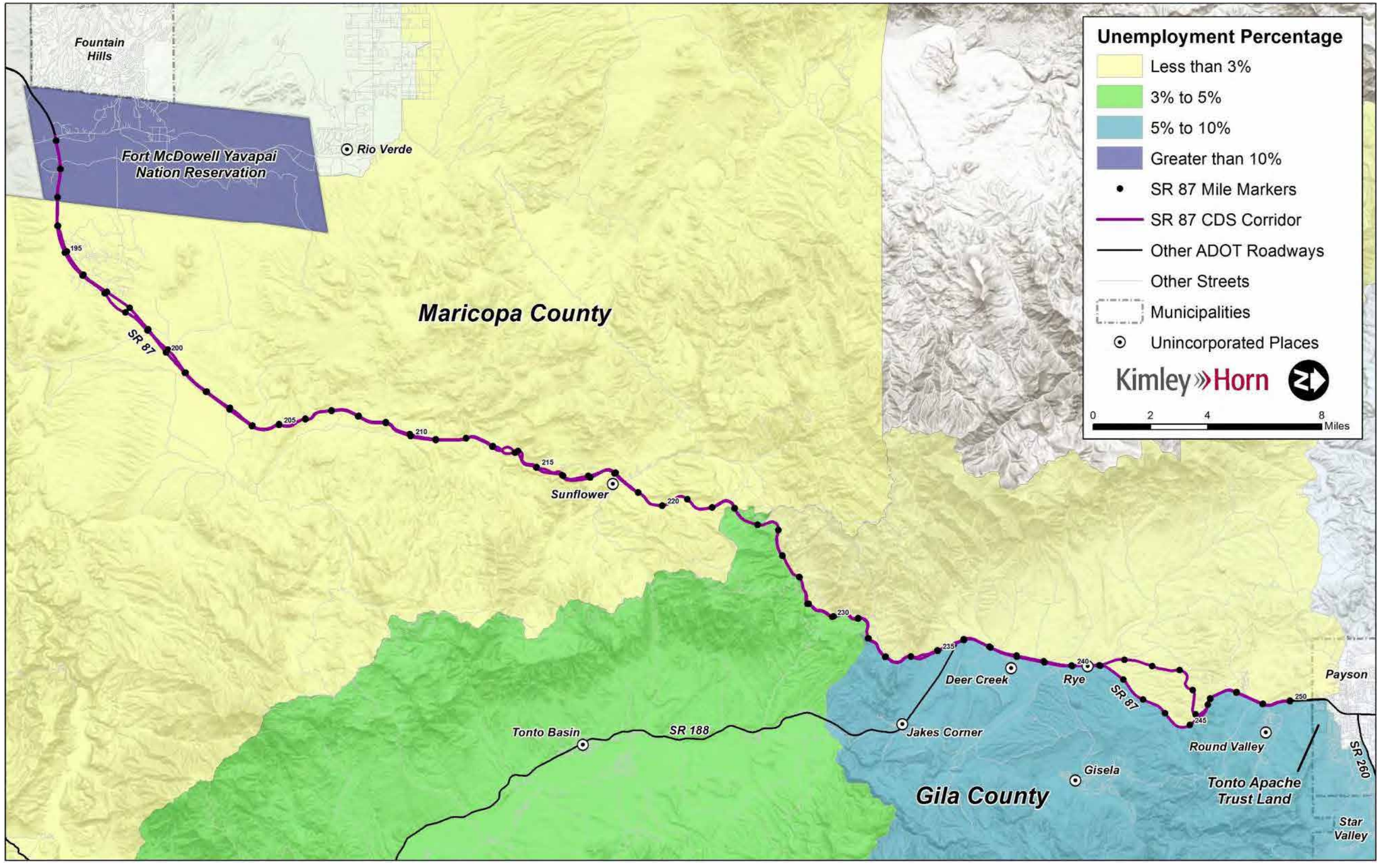
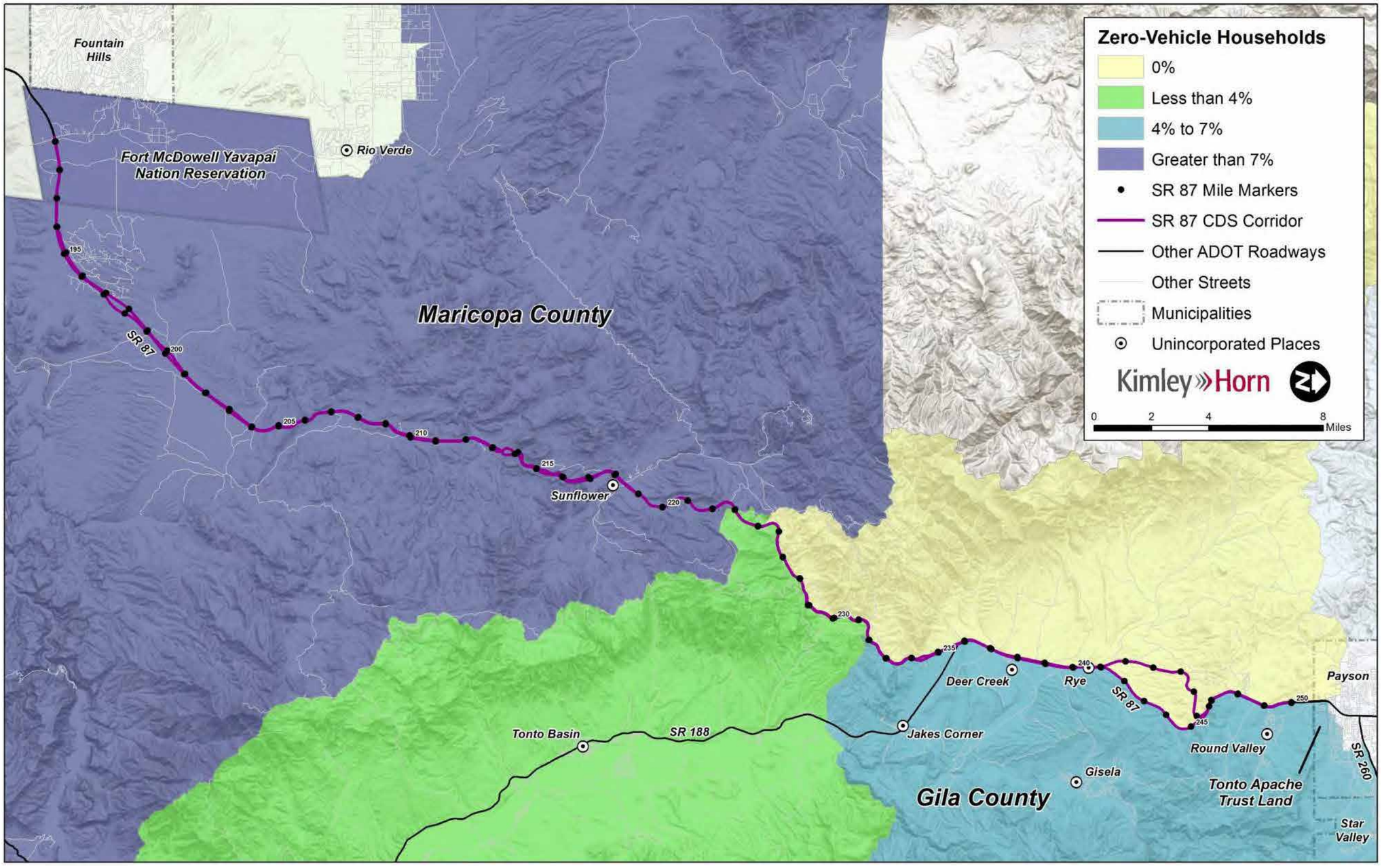


Figure 33:Percentage of Zero-Vehicle Households by Census Block Group



3.2 Environmental Overview Findings Summary

- Biological resources:
  - There are 14 threatened or endangered species likely present along the SR 87 corridor;
  - There are 35 Arizona special status species and areas within two miles of the corridor;
  - The corridor passes through PLZ 53 (North-South Mazatzal Mountains), where improvements should maintain uninhibited wildlife movement;
  - There are four noxious/invasive species identified along the corridor; and
  - There are nine protected plant species identified along the corridor.
- Cultural resources: sites not yet subject to data recovery, but eligible for NRHP or the status is unknown, should be avoided by ground-disturbing activities.
  - There are 199 cultural sites previously documented within the APE:
    - 120 sites determined or recommended eligible for the NRHP;
    - 35 sites not recommended for the NRHP;
    - 43 sites unevaluated or the NRHP status is unknown; and
    - Two sites have been destroyed.
- Clean Water Act: several rivers, creeks, and washes could be determined to be WOUS and an evaluation of boundaries should be conducted during design of future projects.
- Arizona Pollutant Discharge Elimination System: roadway improvements that impact more than one acre of land and/or WOUS would require Section 401 certification and a SWPPP.
- 100-year floodplains: the only FEMA-mapped floodplain in the study area is the Verde River.
- Noise: noise analyses will be necessary to assess potential impacts near the North Blue Coyote Trail, Sunflower, Bear Creek, Rye, and Oxbow Estates.
- Air quality: MP 191-197 is in nonattainment for PM_{10} and MP 191-193 is in nonattainment for CO.
- Section 4(f) resources: five recreation sites and 10 archaeological sites are considered 4(f) resources.

4 ALTERNATIVE DEVELOPMENT AND EVALUATION

A list of 113 potential projects was developed that address corridor needs and deficiencies. The projects emanate from previous plans and studies, stakeholder engagement, analysis of the existing built conditions and deficiencies, the environmental overview, and the safety analysis. A complete list of the 113 projects is provided in **Appendix B**.

4.1 Projects Removed from Further Consideration

A corridor field review was performed in March 2019 to review the identified projects, refine the project limits, and identify design considerations that would impact the feasibility of specific project elements. Based upon the field review, several projects were removed from further consideration. Projects removed from further analysis are listed in **Table 19**.

Table 19: Projects Removed from Further Consideration

Project No.	Description	MP	Justification for Removal
5	Add northbound guardrail	194.0-194.9	Slopes are modest and do not require guardrail protection
7	Improve geometrics at Vista del Oro intersection	195.2	No crashes (2013-2017), geometrics appear to be adequate
9	Prevent OHV access (SB)	200.5	Already addressed by ADOT
10	Prevent OHV access (NB)	201.4	Already addressed by ADOT
16	Speed feedback sign (NB)	207.7	Not an identified crash hot spot, too close to previous speed feedback sign recommendation
48	Speed feedback sign (NB)	220.5	Not an identified crash hot spot, on an uphill incline
52	Address erosion on east side of the road	222.8-222.9	Not an active issue
61	Reconstruct access ramp	229.5	Major reconstruction would be needed to address slope and geometrics for minimal improvement
81	Add SB left-turn lane and NB right-turn lane	239.2	The turn lanes would only serve a single private driveway (gated)
82	Address rough bridge transitions	239.4	Bridge transitions are adequate, NB bridge itself is bumpy
105	Address intersection grade issues at FR 375B	231.0	Project removed in favor of realigning FR 375B

4.2 Project Packages

Projects were grouped, to the extent feasible, into 12 ‘major’ projects packages. The major projects packages were prepared with input from the ADOT Central and Northcentral districts to assemble project packages that can be considered through the ADOT Planning to Programming (P2P) process and the Highway Safety Improvement Program (HSIP).

Less construction-intensive project interventions such as ITS, signage, rock-fall, or shoulder improvements are grouped by project type and by ADOT district. These may be considered for funding through ADOT District Minor Funding or HSIP funds.

Large roadway-improvement focused projects are grouped by geographic location. These 12 major projects are listed below, and fact sheets showing their locations and individual project elements are on the subsequent pages.

- Package Project No. 1. Central District ITS/Signage Improvements (MP 191-218) – **Figure 34**
- Package Project No. 2. Central District Shoulder Improvements (MP 196-211) – **Figure 35**
- Package Project No. 3. Northbound Roadway Improvements (MP 212-218) – **Figure 36**
- Package Project No. 4. Central District Rock-Fall Mitigation (MP 213-218) – **Figure 37**
- Package Project No. 5. Northcentral District ITS/Signage Improvements (MP 218-251) – **Figure 38**
- Package Project No. 6. Northcentral District Rock-Fall Mitigation (MP 222-247) – **Figure 39**
- Package Project No. 7. Northbound Roadway Improvements (MP 218-226) – **Figure 40**
- Package Project No. 8. Slate Creek Roadway Improvements (MP 226-232) – **Figure 41**
- Package Project No. 9. Rye Roadway Improvements (MP 239-241) – **Figure 42**
- Package Project No. 10. Northbound Roadway Improvements (MP 241-248) – **Figure 43**
- Package Project No. 11. Southbound Roadway Improvements (MP 244-250) – **Figure 44**
- Package Project No. 12. Northbound Roadway Improvements (MP 247-250) – **Figure 45**

Projects that are geographically isolated were not packaged with others. **Table 20** lists these stand-alone projects.

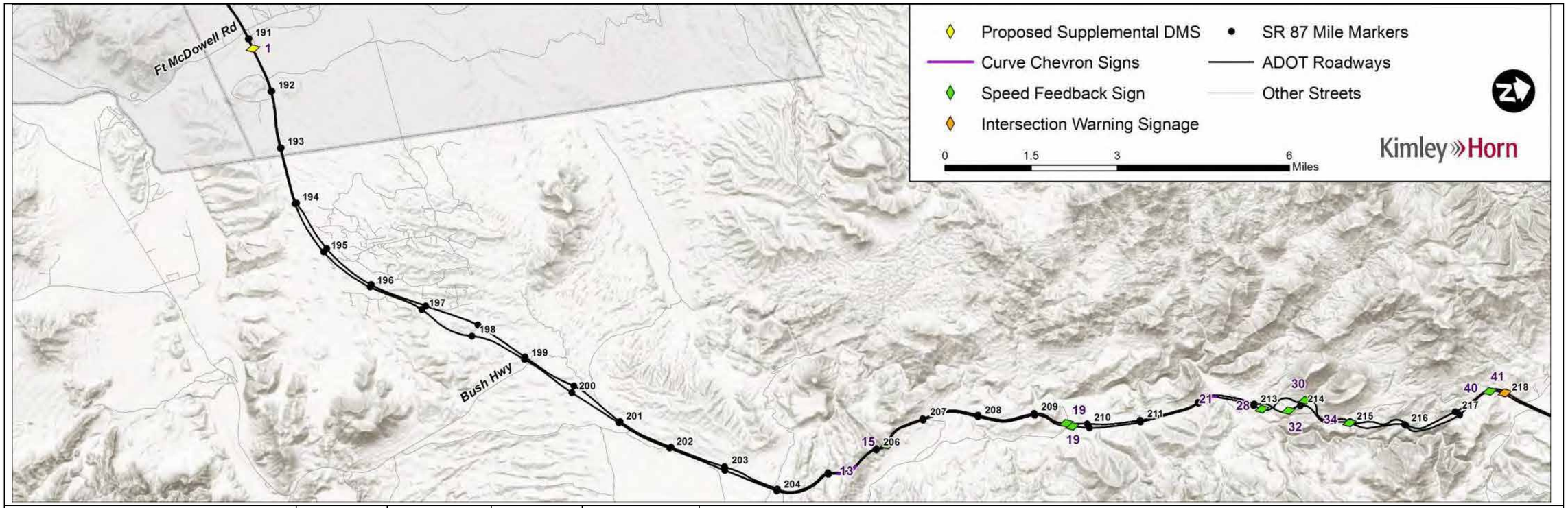
4.3 Project Cost Estimates

Itemized cost estimates were prepared for the Packaged Projects and presented in **Appendix E, Pre-Scoping Forms**. Costs for signage and ITS improvements were derived from the Corridor Profile Study.

Table 20: Stand-Alone Projects

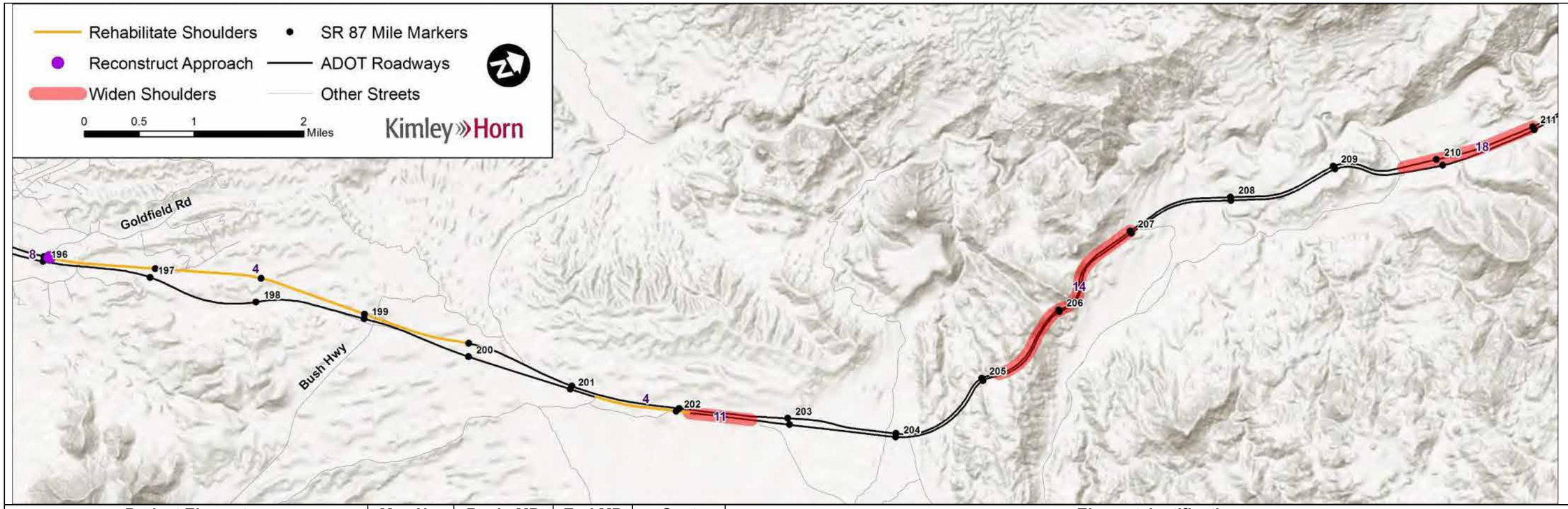
Project No.	Description	MP	Est. Cost
2	NB RT lane, SB RT lane, outside accel lane at Hiawatha Hood	191.8	$701,800
3	NB RT lane at Rodeo Rd	192.1	$184,900
6	Improve intersection geometrics on SB side at Burnt Water Trail	195.2	$357,600
12	Inside and outside accel lanes both directions - Four Peaks	203.9	$1,624,200
17	Inside and outside accel lanes both directions - Mesquite OHV Area	207.8	$1,448,700
20	Add NB outside accel lane, SB inside accel lane - Ballantine Trailhead	210.4	$1,373,300
24	Construct new rest area	212.7	$8,300,000
42	NB and SB inside and outside accel lanes, fix SB shoulders both sides – Sunflower	218	$1,928,300
62	Prevent OHV access to SB lanes	230.5	$34,000
64	Address dip in NB roadway	230.5-230.6	$712,600
70/71	Wildlife fencing, signage, and crossing	235-235.9	$3,486,000
74	Extend NB acceleration lane to 1300' - SR 188, SB inside accel lane	235.7	$911,200
75	Evaluate grade separation - SR 188 (both directions)	235.7	$35,910,000
76	Rehabilitate rest area	235.7	$4,150,000
78	NB LT lane, SB RT lane - Deer Creek Dr	237.6	$619,500
79/80	Wildlife fencing, signage, and crossing	238-238.9	$3,486,000

Figure 34: Package Project No. 1. Central Dictrict ITS/Signage Improvements (MP 191-218)



Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. SB New DMS	1	191.2	191.2	$250,000	Provides the ability to direct SB traffic to different routes (SR 87 vs. Shea Blvd.) in response to incidents further south on the corridor.
2. NB curve chevron signage	13	205.2	205.7	$50,000	Demonstrated crash history with a high percentage of run off the road crashes.
3. NB speed feedback sign	15	206.2	206.2	$25,000	Demonstrated crash history with 26% of crashes resulting from drivers traveling too fast for conditions.
4. NB and SB speed feedback signs	19	NB 209.7 SB 209.6	NB 209.7 SB 209.6	$50,000	Speeding is an issue at this location; the nearby speed analysis at MP 205 showed an 85th percentile speed of 74 mph.
5. NB curve chevron signage	21	212.2	212.4	$12,500	The downhill grade in combination with a curve increases the risk of run off the road crashes in this area.
6. NB speed feedback sign	28	213	213	$25,000	Six crashes occurred on the curve in this section where the vehicle ran off the road to the right and the vehicle overturned
7. SB speed feedback sign	32	213.6	213.6	$25,000	One fatal and three serious injury crashes occurred on the curve in this section
8. NB speed feedback sign	30	214	214	$25,000	This location is within an identified crash hot spot where 50% of crashes involved speeding.
9. SB speed feedback sign	34	215	215	$25,000	Speeding is an issue at this location, a speed study at MP 214 showed an 85th percentile speed of 72 mph.
10. NB speed feedback sign	40	217.8	217.8	$25,000	Demonstrated crash history at curves north of the proposed feedback sign location.
11. Intersection warning signage	41	218	218	$5,000	Relatively inexpensive treatment to increase awareness of the Sunflower intersection.
			Total:	**$517,500**	

Figure 35: Package Project No. 2. Central District Shoulder Improvements (MP 196-211)

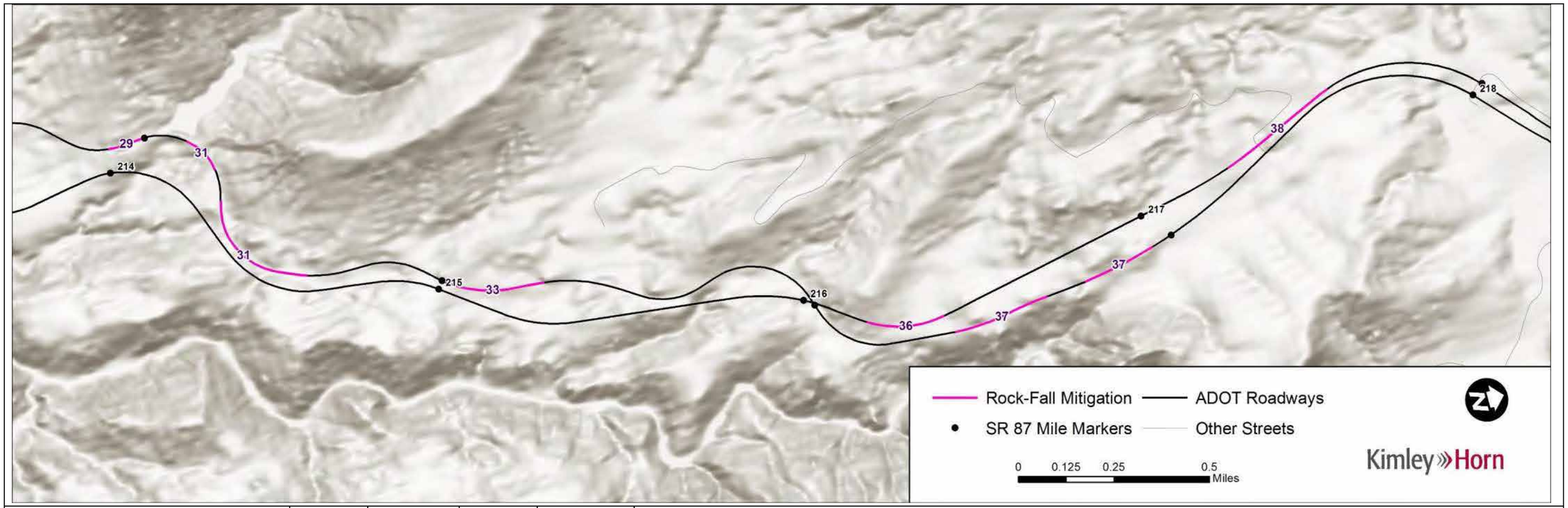


Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. Rehabilitate shoulders	4	SB :196 NB:201.3	SB:200 NB:202.1	$2,560,400	Current shoulders are in poor condition.
2. Reconstruct north approach at Goldfield Rd	8	196.1	196.1	$76,800	Current approach is in poor condition and in need of reconstruction.
3. Widen NB inside shoulder to 4’	11	202.1	202.6	$552,700	The current shoulders are of insufficient widths per current safety standards and for effective emergency response.
4. Widen SB outside shoulder to 10’	14	205.2	207	$3,247,500	The current shoulders are of insufficient widths per current safety standards and for effective emergency response.
5. Widen SB inside shoulder to 4’	18	209.6	211	$1,244,300	The current shoulders are of insufficient widths per current safety standards and for effective emergency response.
			Total:	**$7,681,700**	

Figure 36: Package Project No. 3. Northbound Roadway Improvements (MP 212-218)

Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. Widen NB inside shoulder to 4'	22	212.5	213	$450,700	Current inside shoulder is insufficient width
2. Left- and right-turn/deceleration lanes, inside and outside lanes in both directions at the Log Coral Wash intersection	23	212.7	212.7	$2,330,600	There are no turn/deceleration lanes at this intersection, there is a high percentage of vehicles with trailers that may warrant acceleration lanes.
3. Construct NB climbing lane	26	213	216.7	$8,973,700	Approximately 15% of traffic on this segment is heavy commercial vehicles, average speeds are 8 mph under the speed limit, 33% of vehicles are traveling greater than 10 mph under the speed limit, this location is within an identified crash hot spot.
4. Add guardrail on east side of roadway	27	213	213.4	$207,700	Six crashes occurred on the curve in this section where the vehicle ran off the road to the right and the vehicle overturned
5. Address drainage issue between SB and NB alignments	35	216	216	$50,000	During rain events, water draining from the southbound alignment seeps through the rock face onto the northbound alignment below, causing water to gather in the outside northbound travel lane. If this is in sufficient quantity to accumulate to hazardous amounts on the roadway, it implies a seepage mechanism that would not be expected in this rock and may imply geotechnical stability problems.
6. Add NB left-turn and SB right-turn lane	39	217.5	217.5	$465,800	There are currently no deceleration/turn lanes at this intersection.
			Total:	**$12,478,500**	

Figure 37: Package Project No. 4. Central District Rock-Fall Mitigation (MP 213-218)



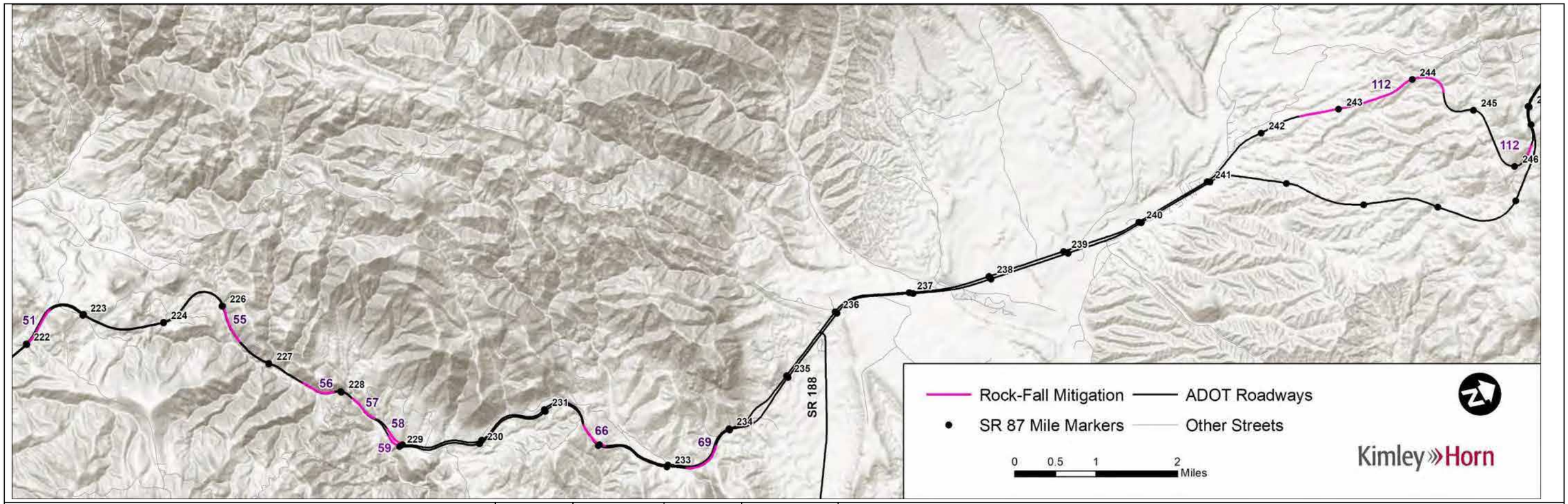
Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. NB both sides – re-slope to ¾:1, widen and deepen ditches	29	213.9	214	$250,000	Frequent cleanup required on shoulder, cut eroding and raveling, short sight distance
2. NB left side – re-slope ¾:1 (1st stretch), ½:1 (2nd stretch, rock portions), and 1:1 (earth, saprolite); round crest in gravels; pinned netting in earthen materials; widen and deepen ditch; rock lined crown ditch	31	1: 214.2 2: 214.4	1: 214.3 2: 214.6	1: $995,000 2: $350,000	1st stretch: Wedge and toppling geometries plus raveling lead to frequent rock on shoulder, differential erosion features slope to roadway 2nd stretch: Slabby granite with planar fractures leading to raveling, toppling and wedge releases to shoulder and roadway; accumulations of saprolite w/boulders at crest, some w/inclined surfaces toward roadway
3. NB left side – scale, widen and deepen ditch	33	215	215.2	$170,000	Erosion with unfavorable structure, inadequate ditch
4. SB left side – heavy scaling, bolts, local pinned mesh	36	216.1	216.2	$450,000	Erosion with favorable structure along faults and dikes, continuous and discontinuous fractures dipping toward roadway, toppling
5. NB left side – heavy scaling, bolts, dowels (1st stretch); heavy scaling, spot rock bolting, erosion control (2nd stretch)	37	1: 216.4 2: 216.7	1: 216.6 2: 216.9	1: $100,000 2: $100,000	1st stretch: Differential erosion in saprolite, may release large boulders, outward dipping sliding surface 2nd stretch: Continuous fractures dipping moderately outward, major erosion w/unfavorable structure, eroded faults at MP 216.77
6. SB left side – heavy scaling, pattern bolting, erosion control	38	217.3	217.6	$385,000	Erosion, continuous fractures dipping outward, release along continuous dike, significant recent rockfall history
			Total:	**$2,800,000**	

Figure 38: Package Project No. 5. Northcentral District ITS/Signage Improvements (MP 218-251)

Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. SB speed feedback sign	46	219.6	219.6	$25,000	Speeding is an issue at this location, a speed study at MP 221 showed an 85th percentile speed of 73 mph.
2. SB speed feedback sign	49	221	221	$25,000	Speeding is an issue at this location, a speed study at this location showed an 85th percentile speed of 73 mph.
3. NB speed feedback sign	54	224.5	224.5	$25,000	Within an identified crash hot spot where 50% of crashes involved traveling too fast for conditions, 27% of crashes ran into a concrete traffic barrier, 23% ran off the road to the right, 12% ran off the road to the left.
4. SB speed feedback sign	60	229.3	229.3	$25,000	A downhill grade leading into a relatively sharp curve (with a 55-mph advisory speed) is an optimal location for a speed feedback sign to reinforce the advisory speed.
5. SB speed feedback sign	65	231	231	$25,000	There is a small cluster of serious injury and fatal crashes at this location. A combination of a downhill grade and relatively sharp curves are optimal locations for a speed feedback sign.
6. NB speed feedback sign	68	232.5	232.5	$25,000	A 6% downhill grade leading into a relatively sharp curve is an optimal location for a speed feedback sign to reinforce the speed limit.
7. New NB DMS	72	235	235	$250,000	Provides the opportunity to inform NB drivers of incidents or extreme congestion leading into Payson, approximate delay times, and provides alternative route for travelers going to Show Low or I-40.
8. WB stop sign beacon on SR 188	73	235.7	235.7	$15,000	Improves the visibility of the stop sign to slow traffic down in advance of the intersection.
9. Intersection warning signage – Deer Creek Dr	77	237.6	237.6	$5,000	Relatively inexpensive treatment to increase awareness of the Deer Creek Dr. intersection.
10. Intersection warning signage at Gisela Road	83	239.5	239.5	$5,000	Increase awareness and attention to cross-traffic at the Gisela Road intersection; one crash was reported in the crash analysis at this location.
11. NB speed feedback sign	84	240	240	$25,000	Reinforce the speed limit through the Rye area, the current 85th percentile speed is 73 mph.

12. Intersection warning signage at the S. Rye Crossover	86	240.5	240.5	$5,000	Increase awareness and attention to cross-traffic at the S. Rye Crossover intersection; two crashes were reported in the crash analysis at this location.
13. Intersection warning signage at the N. Rye Crossover	88	240.9	240.9	$5,000	Increase awareness and attention to the cross-traffic at the N. Rye Crossover intersection.
14. Variable speed limits, with DMS on both ends	91	241	247	$844,000	Add the ability to raise and lower speed limits in an area with a high propensity for crashes based on weather, events, crashes, or other factors where reduced speed limits may be warranted.
15. SB speed feedback sign	92	241	241	$25,000	Reinforce the speed limit through the Rye area, the current 85th percentile speed is 74 mph and the average speed is 72 mph.
16. NB and SB RWIS with dynamic warning beacons	95	244	244	$60,000	Provide the ability to warn drivers of adverse weather conditions, could be in communication with the proposed variable speed limits.
17. SB speed feedback sign	96	245	245	$25,000	Increase awareness of the speed limit on the long, downhill grade with sharp curves.
18. NB and SB RWIS with dynamic warning beacons	113	246.3	246.3	$180,000	In the northbound direction, provide the ability to warn drivers of adverse weather conditions and could be in communication with the proposed variable speed limits. In the southbound direction, provide a Dynamic Curve Warning System for Corvair Curve that uses supplemental beacons and/or messages that activate when a motorist approaches the curve at a high speed. A typical dynamic curve warning system combines a speed measuring device (such as loop detectors or radar) with flashing beacon and a variable message sign. The system can incorporate a camera to provide visual surveillance of the curve. The system is designed to slow high-speed vehicles as they approach and enter a horizontal curve. It works by measuring the speeds of approaching vehicles and providing messages to speeding drivers to slow down to an advisory speed.
19. SB speed feedback sign	101	247	247	$25,000	Reinforce the speed limit and driver awareness of their speeds, 85th percentile speeds are 19 mph over the speed limit and average speeds are 17 mph over the speed limit.
20. SB speed feedback sign	110	249.8	249.8	$25,000	Reinforce the speed limit and driver awareness of their speeds.
21. New SB DMS	111	251	251	$250,000	Provides the ability to advise SB traffic to turn around in response to incidents or extreme congestion on the SR 87 corridor south of Payson.
			Total:	**$1,894,000**	

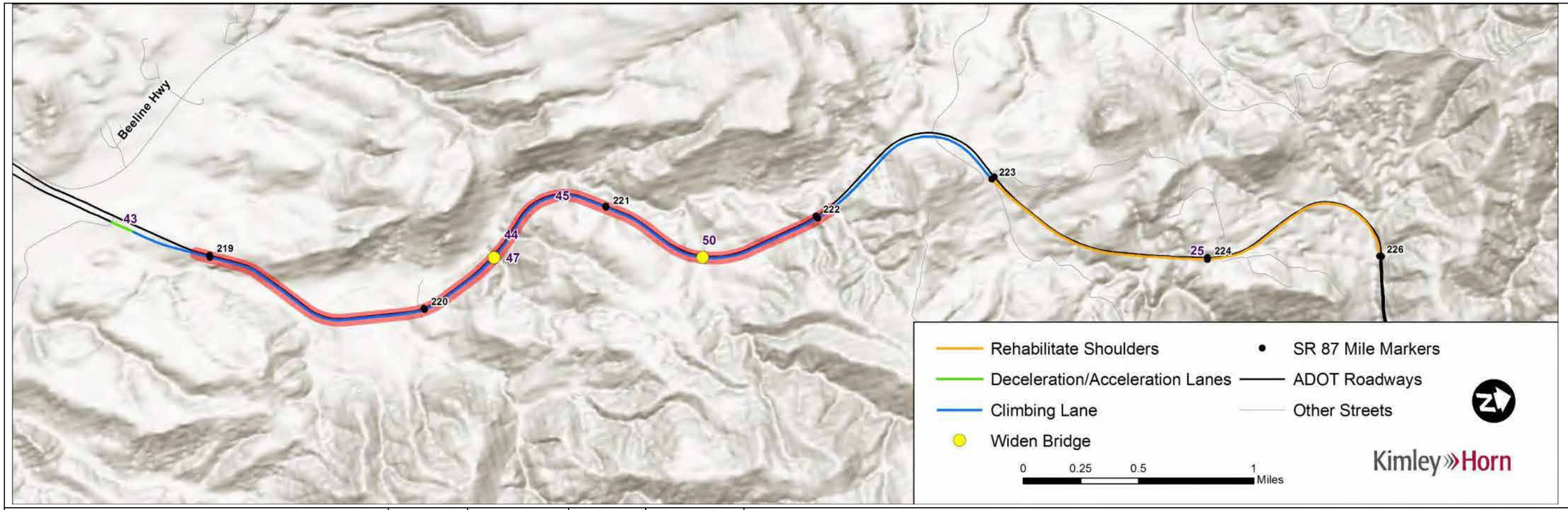
Figure 39: Package Project No. 6. Northcentral District Rock-Fall Mitigation (MP 222-247)



Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. NB both sides – re-grade with rock-lined interceptor channels and crown ditch, gabions	51	222	222.6	$650,000	Re-grade with rock-lined interceptor channels and crown ditch, gabions
2. SB left side – pinned mesh in the narrow shoulder area, deepen ditch to 6', rock fence on bench, grade slope and scale (1st stretch); crest erosion, protect with thrie beam barrier, pinned mesh in crown area gravels, scale (2nd stretch); pinned mesh in the crest, deepen ditch, protect with weathering thrie beam barrier (3rd stretch)	55	1: 226 2: 226.1 3: 226.3	1: 226.1 2: 226.3 3: 226.5	1: $440,000 2: $325,000 3: $550,000	1st stretch: Erosion with boulders, upper bench may be breached, potential upslope contribution above bench. Rock fall is frequent but widened paved shoulder keeps most rock off pavement, despite lack of ditch cross slope. 2nd stretch: Crest erosion, limited catchment with many rock falls 3rd stretch: Local terrace gravels at top of slope cut, rock face well vegetated and mostly stable but catchment is inadequate
3. SB left side – deepen ditch by toe excavation, protect ditch cross slope with weathering thrie beam barrier	56	227.5	227.9	$250,000	Tall cut appx 3/4:1 paved ditch inadequate depth. Rock slope mostly well vegetated and uniform, generally stable. Local raveling and release from crest.
4. SB left side - spot and pattern rock bolting (crane basket), attenuators, local anchored mesh, heavy scaling, widen and deepen ditch and protect with weathering thrie beam or concrete barrier	57	228.2	228.5	$660,000	High & steep cut, widespread plane shear and wedge fracture geometries, erosion along faults and shears. Ditch width and cross slope inadequate. Emergency cleanups have been infrequent, but free-standing rock erosion features are developing and may lead to significant and damaging future falls.
5. SB left side – rock lined crown ditch, dress and revegetate slope, widen and deepen ditch and protect with weathering thrie beam barrier (1st stretch); SB right side - deepen ditch and protect with weathering thrie beam barrier	58	1: 228.7 2: 228.8	1: 229 2: 229	1: $230,000 2: $150,000	1st stretch: Fanglomerate, benches 80%-90% eroded w/vegetation on remnants, rock fall almost to shoulder, ditch depth inadequate. Assume 2018 repair $$ appearing in District records was for this cut. 2nd stretch: Fanglomerate, many rocks in ditch, depth inadequate

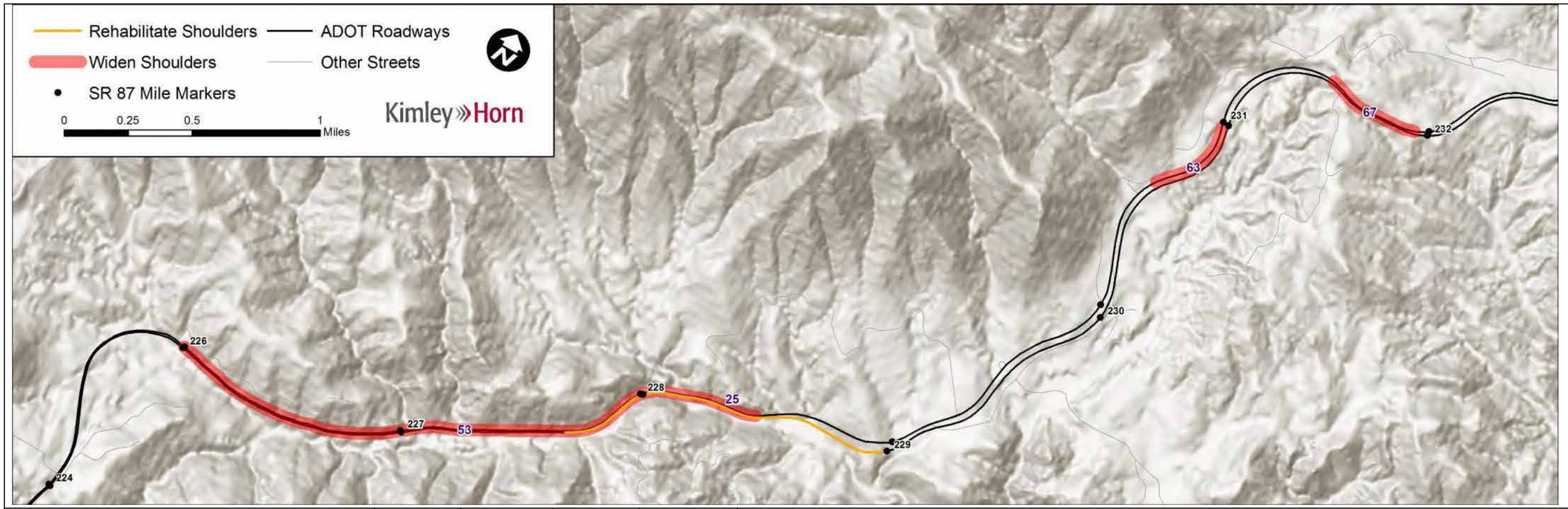
6. NB both sides – re-grade to eliminate remnant benches, use space to improve ditch configuration both sides	59	228.8	229	$160,000	Looser material atop cut overlies denser fanglomerate. Catch benches have filled up, potential for rock bouncing out from face
7. NB right side – re-grade with rock-lined interceptor channels and crown ditch, gabions (1st stretch); SB left side – in rock cut deepen ditch and protect with weathering thrie beam barrier, retain paved shoulders; in alluvium construct rock-lined crown and interceptor ditches, gabions as necessary (2nd stretch)	66	1: 231.6 2: 231.7	1: 231.7 2: 232.1	1: $530,000 2: $485,000	1st stretch: Heavy rill erosion, obvious recent clean-up work 2nd stretch: Partial raveling but mostly kinematically stable rock slope with ditch of inadequate depth. North 2/3 is valley fill sediments with heavy rill erosion, locally undercutting slope face, no crown ditch
8. NB right side – re-grade with rock-lined interceptor channels and crown ditch, gabions	69	233.3	233.7	$780,000	Two tall cuts in unconsolidated alluvium, heavy rill erosion, widened shoulders, history of major sluffing & major reconstruction, may recur.
9. SB left side – Move slope back 10 ft to widen and deepen ditch, revegetate earth slopes, R&R barrier with single-beam weathering type (1st stretch); SB left side – round crest & layback & widen ditch, protect deepened ditch with weathering single-beam barrier (2nd stretch)	112	1: 242.5 2: 246.4	1: 244.5 2: 246.6	1: $500,000 2: $130,000	1st stretch: 6 cuts SB LT, rocks roll out into travel lanes during significant rainfall or snowmelt events 2nd stretch: Boulders at crest eroding out, maintenance activity has occurred in the MP range.
			Total:	**$5,840,000**	

Figure 40: Package Project No. 7. Northbound Roadway Improvements (MP 218-226)



Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. Rehabilitate NB shoulders	25	223	226	$1,111,200	The shoulders in this location are in poor condition, with significant cracking and vegetation growing.
2. NB outside acceleration lane, SB inside acceleration lane at Bushnell Tanks intersection	43	218.5	218.5	$1,330,500	Relatively high level of vehicles with trailers that may warrant acceleration lanes.
3. Widen inside shoulders to 4’ and outside shoulders to 10’	44	218.9	222.1	$4,061,600	The current shoulders are of insufficient widths per current safety standards and for effective emergency response.
4. Construct NB climbing lane	45	218.6	223	$16,108,300	Approximately 15% of traffic on this segment is heavy commercial vehicles, the uphill grade causes low speeds and large speed variances between vehicles.
5. Widen Whiskey Springs bridge	47	220.3	220.3	$2,904,500	Bridge will need to be widened to accommodate the proposed northbound climbing lane.
6. Widen Kitty Joe Creek bridge	50	221.4	221.4	$3,772,500	Bridge will need to be widened to accommodate the proposed northbound climbing lane.
			Total:	**$29,288,600**	

Figure 41: Package Project No. 8. Slate Creek Improvements (MP 226-232)

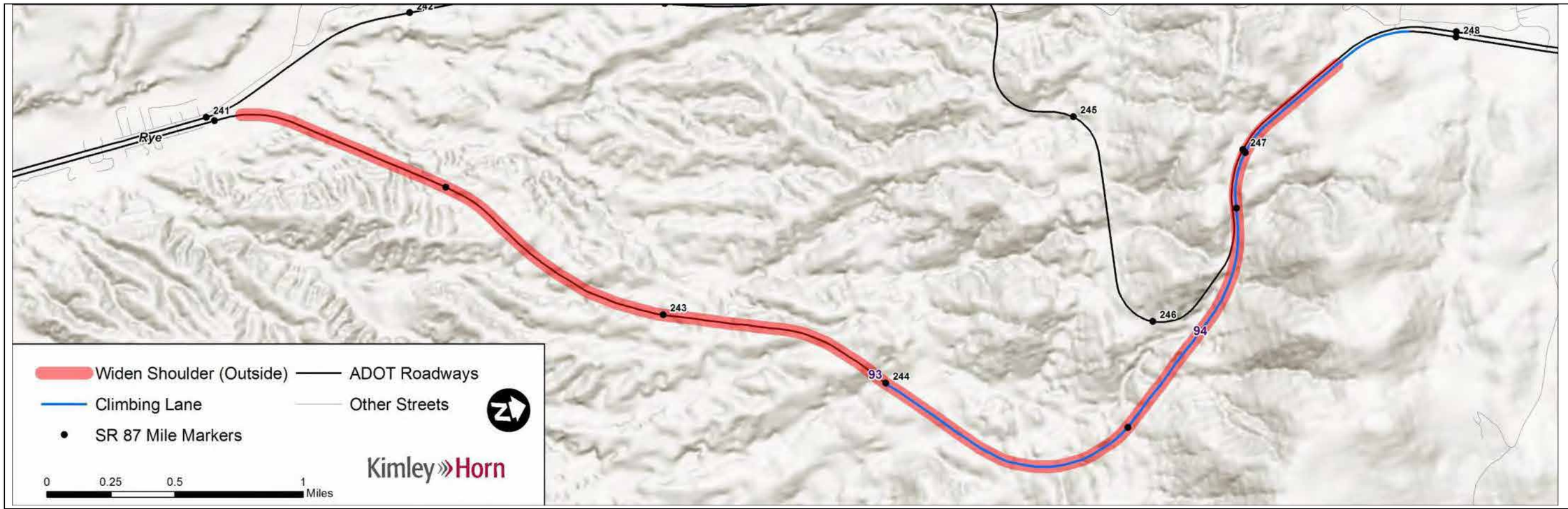


Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. Rehabilitate NB shoulders	25	227.8	229	$666,700	The shoulders in this location are in poor condition, with significant cracking and vegetation growing.
2. Widen inside shoulders to 4’ and outside shoulders to 10’	53	NB: 226 SB: 226	NB: 227.8 SB: 228.5	$15,448,300	The current shoulders are of insufficient widths per current safety standards and for effective emergency response.
3. Widen SB inside shoulders to 4’	63	230.8	230.9	$196,700	The current shoulders are of insufficient widths per current safety standards and for effective emergency response.
4. Widen inside shoulder to 4’ in both directions	67	231.5	232	$1,301,100	The current shoulders are of insufficient widths per current safety standards and for effective emergency response.
			Total:	**$17,612,800**	

Figure 42: Package Project No. 9. Rye Improvements (MP 239-241)

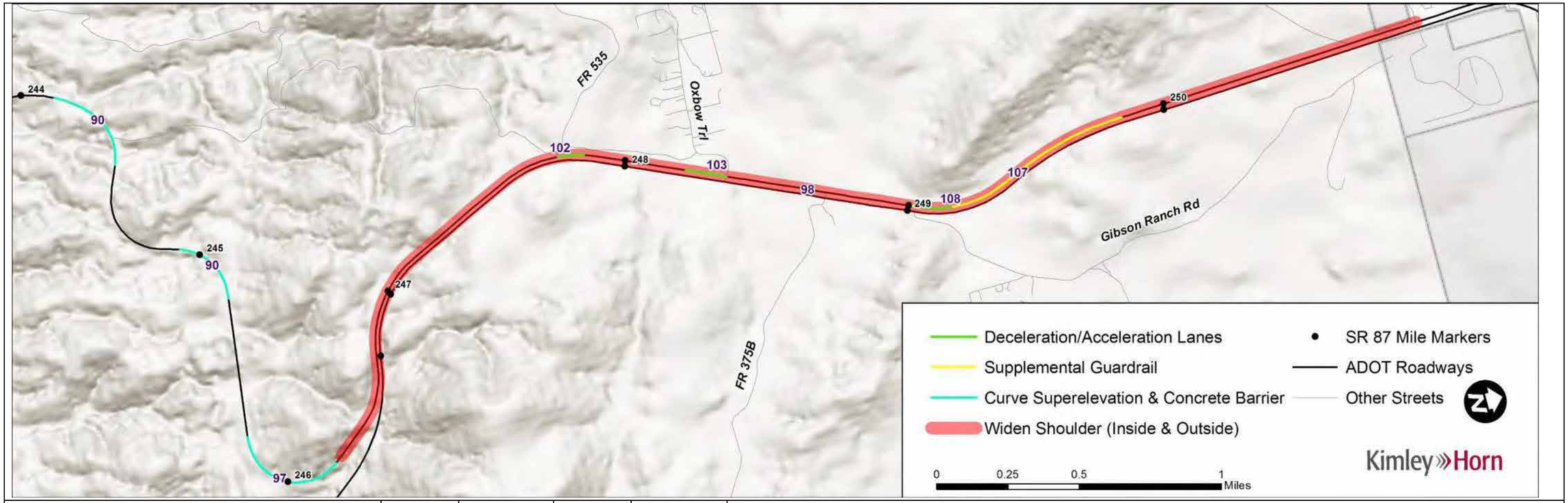
Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. NB outside acceleration lane at Gisela Rd.	83	239.5	239.5	$591,800	Remove slow-moving vehicles from through travel lanes.
2. NB left-turn lane, SB right-turn lane, NB inside acceleration lane, and SB outside acceleration lane at Matlock Gas	85	240	240	$1,593,600	Provide turn/deceleration and acceleration lanes where they do not currently exist, particularly because of the slow-moving vehicles at this location.
3. Right- and left-turn lanes, inside and outside acceleration lanes in both directions at the S. Rye Crossover	87	240.5	240.5	$3,477,800	Provide turn/deceleration lanes where they do not currently exist, two crashes were reported in the crash analysis at this location.
4. SB right-turn lane, NB inside and outside acceleration lanes at the N Rye Crossover	89	240.9	240.9	$1,331,700	Provide turn/deceleration lane where it does not currently exist, especially because of the high speeds measured at this location.
			Total:	**$6,994,900**	

Figure 43: Package Project No. 10. Northbound Roadway Improvements (MP 241-248)



Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. Widen NB outside shoulders to 10'	93	241.1	247.5	$4,249,200	Existing shoulders are of an insufficient width for current highway standards and limit effective emergency response.
2. Construct NB climbing lane	94	244	247.8	$8,968,600	Approximately 12% of traffic on this segment is heavy commercial vehicles, average speeds are 16 mph under the speed limit, 92% of vehicles are traveling greater than 10 mph under the speed limit, the northern portion of the climbing lane is within an identified crash hot spot.
			Total:	**$13,217,800**	

Figure 44: Package Project No. 11. Southbound Roadway Improvements (MP 244-250)



Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. Address curve superelevation, add concrete barrier	90	1: 244.1 2: 244.9	1: 244.3 2: 245.2	$4,276,300	Improve the superelevation of curves to reduce run off the road crashes.
2. Add superelevation to Corvair Curve, add concrete barrier.	97	245.8	246.2	$1,506,000	This location is the most significant crash hot spot within the SR 87 corridor with 63 crashes on the curve, including one fatality and one serious injury during the crash analysis period.
3. Widen SB inside and outside shoulders	98	246.2	250.9	$8,849,000	Existing shoulders are of an insufficient width for current highway standards and limit effective emergency response.
4. SB right-turn lane at FR 535	102	247.8	247.8	$275,000	Provide turn/deceleration lane where it does not currently exist, especially because of the high speeds measured at this location
5. SB outside acceleration lane at Oxbow Trail	103	248.4	248.4	$591,800	Remove slow-moving traffic from through travel lanes.
6. Add SB guardrail, right side	107	249	249.9	$418,900	Unprotected drop-off along the right side of the roadway.
7. Realign SB left-turn lane at Gibson Ranch Road	108	249	249	$464,900	Realign the SB left-turn lane across the median to be adjacent to NB traffic to improve sight distance and address median grade issue. Two crashes occurred at this intersection during the crash analysis period.
			Total:	**$16,381,900**	

Figure 45: Package Project No. 12. Northbound Roadway Improvements (MP 247-250)

Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. Install wildlife fencing and wildlife warning signage, and add a wildlife crossing overpass	99/100	247	249.9	$4,166,000	34 crashes in this segment involved wildlife in the crash analysis.
2. NB inside acceleration lane at Oxbow Trail	103	248.4	248.4	$581,800	Provide an acceleration lane to allow vehicles to accelerate and merge into traffic to avoid the sight distance and grade issues in the SR 87 median.
3. Realign FR 375B	104	248.6	248.6	$247,900	Remove sight distance and grade issues at the intersection of SR 87 and FR 375B.
4. NB right-turn lane at FR 375B	106	248.6	248.6	$110,800	Provide turn/deceleration lane where it does not currently exist.
5. NB right-turn lane and outside acceleration lane at Gibson Ranch Road	109	249	249	$681,941	Provide turn/deceleration lane where it does not currently exist.
			Total:	**$5,788,400**	

5 PROJECT PRIORITIZATION

Projects were prioritized consistent with the Corridor Profile Study (CPS) methodology, developed for the four rounds of Corridor Profile Studies conducted from 2014 through 2018. A secondary methodology was utilized to evaluate and prioritize identified rock-fall areas throughout the corridor, called the Rock-fall Hazard Rating. These two methodologies and the resulting prioritization of projects are described in detail in the subsequent sections.

The CPS methodology conducts performance-based planning, identifies areas of need, develops and evaluates strategic solutions that are cost-effective, and accounts for potential risks. This purpose can be accomplished by following the process described below:

- Define corridor goals and objectives;
- Assess existing performance based on quantifiable performance measures;
- Propose various solutions to improve corridor performance;
- Identify quantifiable benefits relative to the performance measures for each proposed solution; and
- Prioritize solutions for future implementation, accounting for performance effectiveness and risk analysis findings.

The objective of this methodology is to identify a recommended set of prioritized potential solutions for consideration in future construction programs, derived from a transparent, defensible, logical, and replicable process. The following goals are identified as the outcome of this process:

- Link project decision-making and investments on key corridors to strategic goals
- Develop solutions that address identified corridor needs based on measured performance
- Prioritize improvements that cost-effectively preserve, modernize, and expand transportation infrastructure

5.1 Corridor Segments

To remain consistent with the CPS methodology applied during the SR 87/SR 260/SR 377 Corridor Profile Study, the same corridor segments were retained for this evaluation. Four segments from the CPS are within the project limits of the CDS:

- SR 87-3: MP 191-213
- SR 87-4: MP 213-235
- SR 87-5: MP 235-241
- SR 87-6: MP 241-250

These segments are also mapped in **Figure 47**. The corridor is segmented at logical breaks where the context changes due to differences in characteristics such as terrain, daily traffic volumes, or typical sections.

5.2 Corridor Performance

A series of performance measures is used to assess the SR 87 corridor. The results of the performance evaluation are used to define corridor needs relative to the long-term goals and objectives for the corridor.

5.2.1 Corridor Performance Framework

The CPS methodology uses a performance-based process to define baseline corridor performance, diagnose corridor needs, develop corridor solutions, and prioritize strategic corridor investments. In support of this objective, a framework for the performance-based process was developed through a collaborative process involving ADOT and the CPS consultant teams.

Figure 46 illustrates the performance framework, which includes a two-tiered system of performance measures (primary and secondary) to evaluate baseline performance.

Figure 46: Corridor Profile Performance Framework

The following five performance areas guide performance-based corridor analyses:

- Pavement
- Bridge
- Mobility
- Safety
- Freight

The performance measures include five primary measures: Pavement Index, Bridge Index, Mobility Index, Safety Index, and Freight Index. Additionally, a set of secondary performance measures provides for a more detailed analysis of corridor performance. Some performance measures have been retained from the SR 87/SR 260/SR 377 CPS, and some have been updated based on updated data collected for the CDS. **Table 21** provides a complete list of primary and secondary performance measures for each of the five performance areas as well as which performance measures have been updated for the CDS and which have been retained from the CPS.

Figure 47: Corridor Profile Study Segments

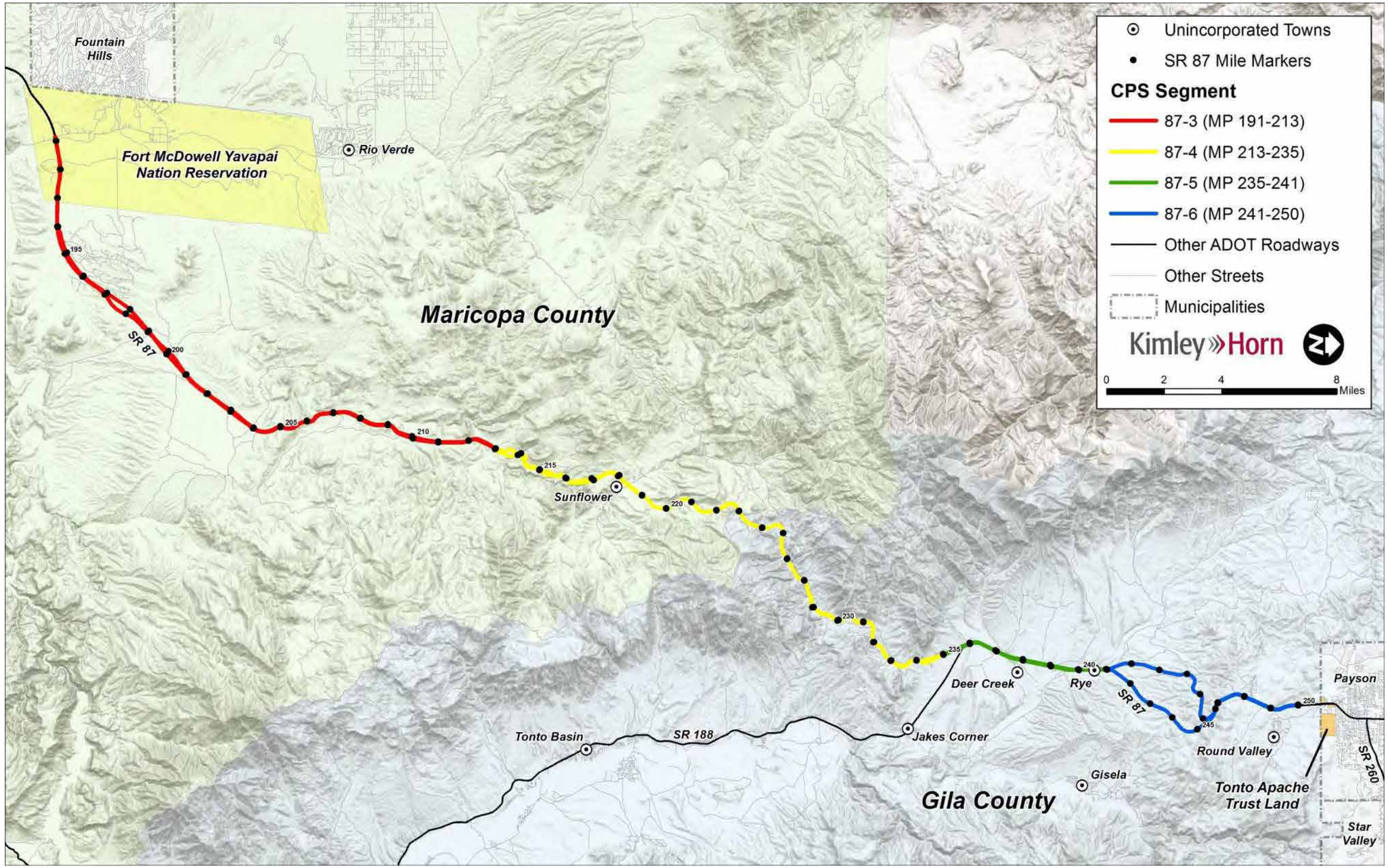


Table 21: Corridor Performance Measures

Performance Area	Primary Measure	Secondary Measures	Updated from CPS
Pavement	**Pavement Index** Based on a combination of International Roughness Index and cracking	• Directional Pavement Serviceability • Pavement Failure • Pavement Hot Spots	No – CPS pavement conditions have been utilized
Bridge	**Bridge Index** Based on lowest of deck, substructure, and superstructure and structural evaluation rating	• Bridge Sufficiency • Functionally Obsolete Bridges • Bridge Rating • Bridge Hot Spots	No – CPS bridge conditions have been utilized
Mobility	**Mobility Index** Based on a combination of existing and future daily volume-to-capacity ratios	• Future Congestion • Peak Congestion • Travel Time Reliability • Multimodal Opportunities	Yes – updated daily volumes and forecasts have been utilized
Safety	**Safety Index** Based on frequency of fatal and incapacitating injury crashes	• Directional Safety Index • Strategic Highway Safety Plan Emphasis Areas • Crash Unit Types • Safety Hot Spots	Yes – updated safety statistics for 2013-2017 were utilized
Freight	**Freight Index** Based on bi-directional truck planning time index	• Recurring Delay • Non-Recurring Delay • Closure Duration • Bridge Vertical Clearance • Bridge Vertical Clearance Hot Spots	No – CPS freight metrics have been utilized

Each of the primary and secondary performance measures identified in the table above is comprised of one or more quantifiable indicators. A three-level scale was developed as part of the CPS to standardize the performance scale across the five performance areas, with numerical thresholds specific to each performance measure:

Good/Above Average Performance – Rating is above the identified desirable/average range

Fair/Average Performance – Rating is within the identified desirable/average range

Poor/Below Average Performance – Rating is below the identified desirable/average range

The terms “good”, “fair”, and “poor” apply to the Pavement, Bridge, Mobility, and Freight performance measures, which have defined thresholds. The terms “above average”, “average”, and “below average” apply to the Safety performance measures, which have thresholds referenced to statewide averages at the time of the CPS.

5.2.2 Corridor Performance Summary

Table 22 shows a summary of corridor performance for all primary measures and secondary measure indicators for the SR 87 corridor. A weighted corridor average rating (based on the length of the segment) was calculated for each primary and secondary measure. Throughout the corridor, the pavement, bridge, and mobility performance areas performed generally “good” or “fair”. Safety and freight performance areas performed generally “poor/below average”. The following general observations were made related to the performance of the SR 87 corridor:

- Pavement Performance: The weighted average of the Pavement Index shows “good” overall performance; with the exception of Segment 87-3, which shows “fair” performance for the % Area Failure measure.
- Bridge Performance: The weighted average of the Bridge Index shows “fair” overall performance; all segments that include bridges have “good” or “fair” performance for Bridge Index, Sufficiency Rating, and Lowest Bridge Rating measures; Segment 87-6 contains no bridges.
- Mobility Performance: The weighted average of the Mobility Index shows “good” overall performance; Closure Extent, Directional Planning Time Index (PTI), % Bicycle Accommodation, and % Non-Single Occupancy Vehicle (SOV) Trips show “poor” or “fair” performance for the corridor in certain locations; all segments show “good” performance in the Mobility Index and Future Daily V/C measures.
- Safety Performance: The weighted average of the Safety Index and Directional Safety Index shows “below average” overall performance; in the 2013-2017 analysis period, there were 29 fatal crashes and 39 incapacitating crashes on the corridor.
- Freight Performance: The weighted average of the Freight Index shows “poor” performance; Closure Duration, Directional Truck Travel Time Index (TTTI), and Directional Truck PTI show “poor” or “fair” performance for the corridor.

Table 22: Corridor Performance Summary by Segment and Performance Measure

Segment #	Segment Length (miles)	Pavement Performance Area				Bridge Performance Area				Mobility Performance Area											
		Pavement Index	Directional PSR		% Area Failure	Bridge Index	Sufficiency Rating	% of Deck Area on Functionally Obsolete Bridges	Lowest Bridge Rating	Mobility Index[u]	Future Daily V/C[u]	Existing Peak Hour V/C[u]		Closure Extent (instances/ milepost/ year/mile)		Directional TTI (all vehicles)		Directional PTI (all vehicles)		% Bicycle Accommodation	% Non-Single Occupancy Vehicle (SOV) Trips
			NB/EB	SB/WB								NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB		
87-3[2^a]	22	3.80	3.80	3.88	11.4%	6.95	96.20	0.0%	6	0.22	0.25	0.14	0.14	0.87	0.11	1.05	1.04	1.54	1.48	99%	16.7%
87-4[2^a]	22	4.05	3.84	3.93	0.0%	6.31	89.18	0.0%	6	0.29	0.36	0.34	0.35	1.47	0.15	1.17	1.05	2.05	1.47	86%	5.2%
87-5[2^a]	5	4.55	4.35	4.36	0.0%	6.31	99.60	0.0%	6	0.21	0.23	0.16	0.16	0.23	0.07	1.01	1.08	1.42	1.51	92%	12.9%
87-6[2^a]	10	4.15	4.10	3.96	0.0%	No Bridges				0.33	0.37	0.22	0.22	0.18	0.27	1.31	1.15	2.38	1.94	79%	12.4%
Weighted Corridor Average		4.02	3.91	3.95	4.25%	6.60	93.40	0.0%	6	0.26	0.31	0.23	0.23	0.92	0.15	1.14	1.07	1.86	1.56	90%	11.4%

SCALES

Performance Level	Non-Interstate			All				Urban and Fringe Urban	All	Uninterrupted		All	
Good/Above Average Performance	> 3.50	> 3.50	< 5%	> 6.5	> 80	< 12%	> 6	< 0.71	< 0.22	< 1.15	< 1.3	> 90%	> 17%
Fair/Average Performance	2.90 - 3.50	2.90 - 3.50	5% - 20%	5.0 - 6.5	50 - 80	12% - 40%	5 - 6	0.71 - 0.89	0.22 - 0.62	1.15 - 1.33	1.3 - 1.5	60% - 90%	11% - 17%
Poor/Below Average Performance	< 2.90	< 2.90	> 20%	< 5.0	< 50	> 40%	< 5	> 0.89	> .62	> 1.33	> 1.5	< 60%	< 11%

Performance Level	Rural	Interrupted	
Good/Above Average Performance	< 0.56	< 1.3	< 3.0
Fair/Average Performance	0.56 - 0.76	> 1.3 & < 2.0	> 3.0 & < 6.0
Poor/Below Average Performance	> 0.76	> 2.0	> 6.0

^Uninterrupted Flow Facility
*Interrupted Flow Facility
[u]Performance Metric Updated for CDS
[a]2 or 3 or 4 Lane Divided Highway
[b]4 or 5 Lane Undivided Highway
[1]Fringe Urban Operating Environment
[2]Rural Operating Environment

Table 22: Corridor Performance Summary by Segment and Performance Measure (Continued)

Segment #	Segment Length (miles)	Safety Performance Area							Freight Performance Area							
		Safety Index[u]	Directional Safety Index[u]		% of Fatal + Incapacitating Injury Crashes Involving SHSP Top 5 Emphasis Areas Behaviors[u]	% of Fatal + Incapacitating Injury Crashes Involving Trucks[u]	% of Fatal + Incapacitating Injury Crashes Involving Motorcycles[u]	% of Fatal + Incapacitating Injury Crashes Involving Non-Motorized Travelers[u]	Freight Index	Directional TTTI		Directional TPTI		Closure Duration (minutes/milepost/year/mile)		Bridge Vertical Clearance (feet)
			NB/EB	SB/WB						NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	
87-3[2^a]	22	1.32	0.66	1.97	76%	Insufficient Data	33%	Insufficient Data	0.53	1.11	1.23	1.38	2.38	2674.13	59.53	16.97
87-4[2^a]	22	1.77	0.67	2.86	66%	Insufficient Data	48%	Insufficient Data	0.51	1.37	1.14	2.38	1.56	4359.89	34.01	18.75
87-5[2^a]	5	0.19	0.08	0.30	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0.56	1.12	1.21	1.45	2.13	49.20	21.67	No UP
87-6[2^a]	10	2.37	2.36	2.38	54%	Insufficient Data	23%	Insufficient Data	0.44	1.55	1.22	2.52	2.01	37.16	287.98	No UP
Weighted Corridor Average		1.57	0.9	2.23	58%	Insufficient Data	37%	Insufficient Data	0.51	1.28	1.19	1.95	1.99	2633.32	85.53	17.86

SCALES

Performance Level	2 or 3 or 4 Lane Divided Highway					Uninterrupted			All	
Good/Above Average Performance	< 0.77	< 44%	< 4%	< 16%	< 2%	> 0.77	< 1.15	< 1.3	< 44.18	> 16.5
Fair/Average Performance	0.77 - 1.23	44% - 54%	4% - 7%	16% - 26%	2% - 4%	0.67 - 0.77	1.15 - 1.33	1.3 - 1.5	44.18-124.86	16.0 - 16.5
Poor/Below Average Performance	> 1.23	> 54%	> 7%	> 26%	> 4%	< 0.67	> 1.33	> 1.5	> 124.86	< 16.0

Performance Level	4 or 5 Lane Undivided Highway					Interrupted		
Good/Above Average Performance	< 0.80	< 42%	< 6%	< 6%	< 5%	> 0.33	< 1.3	< 3.0
Fair/Average Performance	0.80 - 1.20	42% - 51%	6% - 10%	6% - 9%	5% - 8%	0.17 - 0.33	1.3 - 2.0	3.0 - 6.0
Poor/Below Average Performance	> 1.20	> 51%	> 10%	> 9%	> 8%	< 0.17	> 2.0	> 6.0

^Uninterrupted Flow Facility
*Interrupted Flow Facility
[u]Performance Metric Updated for CDS
[a]2 or 3 or 4 Lane Divided Highway
[b]4 or 5 Lane Undivided Highway
[1]Fringe Urban Operating Environment
[2]Rural Operating Environment

Notes: *"Insufficient Data" indicates there was not enough data available to generate reliable performance ratings*
"No UP" indicates no underpasses are present in the segment

5.3 Needs Assessment

5.3.1 Corridor Objectives

Statewide goals and performance measures were established by the ADOT Long-Range Transportation Plan (LRTP), 2010-2035. Statewide performance goals that are relevant to SR 87 performance areas were identified as a part of the CPS and corridor goals were then formulated for each of the five performance areas that aligned with the overall statewide goals established by the LRTP. Based on stakeholder input, corridor goals, corridor objectives, and performance results from the CPS, three "emphasis areas" were identified for the SR 87 corridor: Mobility, Safety, and Freight.

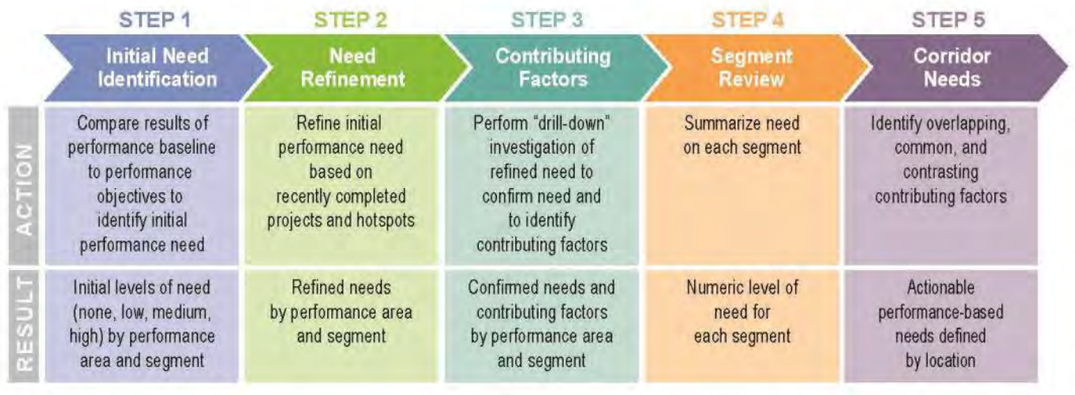
Taking into account the corridor goals and identified emphasis areas, performance objectives were developed for each quantifiable performance measure that identify the desired level of performance based on the performance scale levels for the overall corridor and for each segment of the corridor. For the performance emphasis areas, the corridor-wide weighted average performance objectives are identified with a higher standard than for the other performance areas.

Achieving corridor and segment performance objectives helps ensure that investments are targeted toward improvements that support the safe and efficient movement of travelers on the corridor. Corridor performance is measured against corridor and segment objectives to determine needs – the gap between observed performance and performance objectives.

5.3.2 Needs Assessment Process

The performance-based needs assessment evaluates the difference between the baseline performance and the performance objectives for each of the five performance areas used to characterize the health of the corridor: Pavement, Bridge, Mobility, Safety, and Freight. The performance-based needs assessment process is illustrated in **Figure 48**.

Figure 48: Needs Assessment Process



The needs assessment compares baseline corridor performance with performance objectives to provide a starting point for the identification of performance needs. This mathematical comparison results in an initial need rating of None, Low, Medium, or High for each primary and secondary performance measure. An illustrative example of this process is shown in **Figure 49**.

Figure 49: Initial Need Ratings in Relation to Baseline Performance (Bridge Example)

Performance Thresholds	Performance Level	Initial Level of Need	Description
6.5	Good	None*	All levels of Good and top 1/3 of Fair (>6.0)
	Good		
	Good		
	Fair		
5.0	Fair	Low	Middle 1/3 of Fair (5.5-6.0)
	Fair	Medium	Lower 1/3 of Fair and top 1/3 of Poor (4.5-5.5)
	Poor		
	Poor	High	Lower 2/3 of Poor (<4.5)
	Poor		

5.3.3 Summary of Needs

Table 23 provides a summary of needs for each segment across all performance areas, with the average need score for each segment presented in the last row of the table. A weighting factor of 1.5 is applied to the need scores identified as emphasis areas (Mobility, Safety, and Freight for the SR 87 corridor).

- Pavement Needs: all segments rank as Low or None for pavement needs.
- Bridge Needs: all segments rank as having a need of None for bridges.
- Mobility Needs: all segments rank as having a Low need for mobility.
- Safety Needs: segments 87-3, 87-4, and 87-6 all rank as High for safety. Segment 87-5 ranks as None for safety needs.
- Freight Needs: all segments rank as High for freight.
- Overlapping Needs: Segments 87-3, 87-4, and 87-6 all rank as High for both Safety and Freight.

Table 23: Summary of Needs by Segment

Performance Area	Segment Number and Mileposts (MP)			
	87-3	87-4	87-5	87-6
	MP 191-213	MP 213-235	MP 235-241	MP 241-250
Pavement	Low	Low	None	None*
Bridge	None	None	None	None
Mobility+	Low	Low	Low	Low
Safety+	High	High	None	High
Freight+	High	High	High	High
Average Need	**1.77**	**1.77**	**0.92**	**1.62**

+ Identified as Emphasis Areas for SR 68/SR 95 North Corridor
* A segment need rating of 'None' does not indicate a lack of needed improvements; rather, it indicates that the segment performance score exceeds the established performance

Level of Need	Average Need Range
None*	< 0.1
Low	0.1 - 1.0
Medium	1.0 - 2.0
High	> 2.0

5.4 Solution Evaluation and Prioritization

The CPS evaluation methodology includes the following steps, as shown in **Figure 50**.

- **Life-Cycle Cost Analysis**: Pavement and Bridge projects are evaluated through an LCCA; however, no pavement or bridge projects have been proposed within the 12 major projects being evaluated. As such, this step was not completed for the SR 87 Corridor Development Study.
- **Performance Effectiveness Evaluation**: This step determines a Performance Effectiveness Score (PES) based on how much each project impacts the existing performance needs scores for each segment.
- **Solution Risk Analysis**: All candidate solutions advanced through the Performance Effectiveness Evaluation are also evaluated through a Solution Risk Process. A solution risk probability and consequence analysis was conducted to develop a solution-level risk weighting factor. This risk analysis is a numeric scoring system to help address the risk of not implementing a solution based on the likelihood and severity of the performance failure.
- **Candidate Solution Prioritization**: the PES, weighted risk factor, and segment average need score are combined to create a prioritization score. The projects are ranked by prioritization score from highest to lowest. The highest prioritization score indicates the candidate solution that is recommended as the highest priority based on this analysis. Solutions that address multiple performance areas tend to score higher in this process.

5.5 Summary of Corridor Recommendations

Table 24 shows the prioritized projects recommended for the SR 87 corridor. Implementation of these solutions is anticipated to improve performance of the SR 87 corridor, primarily in the Safety and Freight performance areas. It should be noted that the two rock-fall projects were prioritized through the CPS process and will be prioritized using the Rock-fall Hazard Rating system in the following section.

Figure 50: Project Evaluation Process

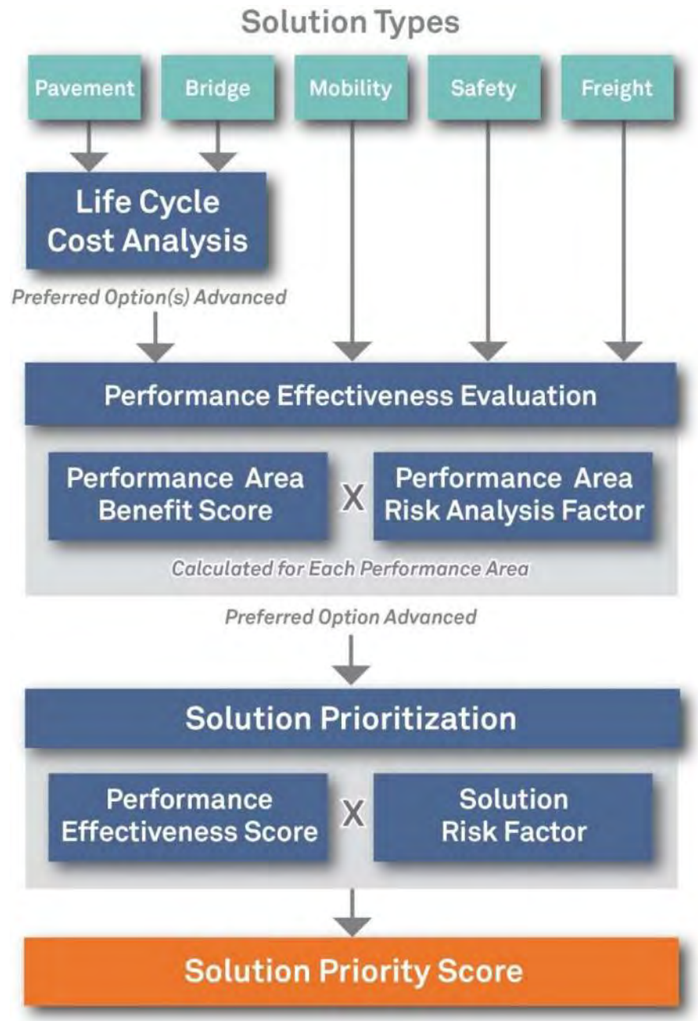


Table 24: Prioritized Recommended Solutions

Rank	Package Project No.	Package Project Name	Package Project Scope	Est. Cost (in $M)	Prioritization Score
1	5	Northcentral District ITS/Signage Improvements (MP 218-251)	• NB speed feedback signs (MP 224.5, 232.5, 240.0) • SB speed feedback signs (MP 219.6, 221.0, 229.3, 231.0, 241.0, 245.0, 247.0, 249.8) • NB DMS (MP 235.0) • SB DMS (MP 251.0) • WB stop sign beacon on SR 188 • Intersection Warning Signage (Deer Creek Drive, Gisela Road, S. Rye Crossover, N. Rye Crossover) • Variable speed limits with DMS on both ends • SB RWIS with dynamic warning beacons (MP 244) • NB and SB RWIS with dynamic warning beacons, southbound Dynamic Curve Warning System approaching Corvair Curve with camera surveillance (MP 246.3)	1.89	130.1
2	8	Slate Creek Improvements (MP 226-232)	• Rehabilitate NB shoulders (MP 227.8-229) • Widen inside shoulders to 4’ and outside shoulders to 10’ (NB MP 226-227.8, SB MP 224.5-228.5) • Widen SB inside shoulders to 4’ (MP 230.8-230.9) • Widen inside shoulders to 4’ in both directions (MP 231.5-232)	17.61	64.4
3	11	Southbound Roadway Improvements (MP 244-250)	• Address curve superelevation and add concrete barrier (MP 244.1-244.3 and MP 244.9-245.2) • Cut back slope and realign the Corvair Curve as well as add concrete barrier (MP 245.8-246.2) • Widen SB inside shoulder to 4’ and outside shoulder to 10’ (MP 246.2-250.9) • SB right-turn lane at FR 535 • SB outside acceleration lane at Oxbow Trail • Add SB guardrail, west (right) side (MP 249.0-249.9) • Realign SB left-turn lane and add an inside acceleration lane at Gibson Ranch Road	16.38	61.9
4	12	Northbound Roadway Improvements (MP 247-250)	• Install wildlife fencing, wildlife warning signage, and wildlife crossing overpass • NB inside acceleration lane at Oxbow Trail • Realign FR 375B • NB right-turn lane at FR 375B • NB right-turn lane and outside acceleration lane at Gibson Ranch Road	5.79	61.0
5	2	Central District Shoulder Improvements (MP 196-211)	• Rehabilitate shoulders (NB MP 201.3-202.1, SB MP 196.0-200.0) • Reconstruct the north side street approach at Goldfield Road • Widen NB inside shoulder to 4’ (MP 202.1-202.6) • Widen SB outside shoulder to 10’ (MP 205.2-207.0) • Widen SB inside shoulder to 4’ (MP 209.6-211.0)	7.68	47.3
6	10	Northbound Roadway Improvements (MP 241-248)	• Widen NB outside shoulder to 10’ (MP 241.1-247.5) • Construct NB climbing lane (MP 244.0-247.8)	13.22	20.7
7	1	Central District ITS/Signage Improvements (MP 191-218)	• SB DMS (MP 191.2) • NB curve chevron signage (MP 205.2-205.7, MP 212.2-212.4) • NB speed feedback signs (MP 205.2, 209.7, 213.0, 214.0, 217.8) • SB speed feedback signs (MP 209.6, 213.6, 215.0) • Intersection warning signage at Sunflower	0.52	8.5
8	9	Rye Improvements (MP 239-241)	• NB outside and SB inside acceleration lanes at Gisela Road • NB left-turn lane, SB right-turn lane, NB inside acceleration lane, SB outside acceleration lane at Matlock Gas • Right- and left-turn lanes, inside and outside acceleration lanes in both directions at S. Rye Crossover • SB right-turn lane, inside and outside acceleration lanes in both directions at N. Rye Crossover	6.99	6.7

Rank	Package Project No.	Package Project Name	Package Project Scope	Est. Cost (in $M)	Prioritization Score
9	3	Northbound Roadway Improvements (MP 212-218)	• Widen NB inside shoulder to 4' (MP 212.5-213.0) • Left- and right-turn lanes, inside and outside acceleration lanes in both directions at Log Coral Wash • Construct NB climbing lane (MP 213.0-216.7) • Guardrail on east (right) side of the roadway (MP 213.0-213.4) • Address drainage issue between SB and NB alignments (MP 216.0) • Add NB left-turn lane and SB right-turn lane (MP 217.5)	2.78	5.8
10	7	Northbound Roadway Improvements (MP 218-226)	• Rehabilitate NB shoulders (MP 223.0-226.0) • NB outside acceleration lane, SB inside acceleration lane at Bushnell Tanks • Widen inside shoulders to 4' and outside shoulders to 10' (MP 218.9-222.1) • Construct NB climbing lane (MP 218.6-223.0) • Widen Whiskey Springs bridge to accommodate the climbing lane (MP 220.3) • Widen Kitty Joe Creek bridge to accommodate the climbing lane (MP 221.4)	29.29	3.0
-	4	Central District Rock-Fall Mitigation (MP 213-218)	• NB both sides (MP 213.9-214) • NB left side (MP 214.2-214.3, 214.4-214.6, 215-215.2, 216.4-216.6, 216.7-216.9) • SB left side (MP 216.1-216.2, 217.3-217.6)	2.80	N/A (see section 5.6)
-	6	Northcentral District Rock-Fall Mitigation (MP 222-247)	• NB both sides (MP 222-222.6, 228.8-229) • NB right side (MP 231.6-231.7, 233.3-233.7) • SB left side (MP 226-226.5, 227.5-227.9, 228.2-228.5, 228.7-229, 231.7-232.1, 242.5-244.5, 246.4-246.6) • SB right side (MP 228.8-229)	5.84	N/A (see section 5.6)

5.6 Rockfall Hazard Rating System Prioritization

ADOT's Rockfall Hazard Rating System (RHRS) utilizes a combination of the physical characteristics of a slope and ditch, roadway characteristics, climate, as well as rockfall size and frequency to produce a numeric RHRS score which can be used to prioritize rockfall issues statewide on a single scale. A similar but distinct rating structure was used for soil cuts.

The RHRS form is broken down into 14 categories, each of which is rated between 1 and 81 points. The points from the 14 categories are summed to create a final RHRS score. Any location scoring over 500 points is recommended to be prioritized in near-term funding. The scoring system is shown in more detail in **Table 25**, a sample scorecard for the RHRS.

Table 25: Rockfall Hazard Rating System Sample Scorecard

Rating			1 Point	3 Points	9 Points	27 Points	81 Points
Slope Height (ft.)			0-20	20-40	40-60	60-80	>80
Slope Length (ft.)			<100	100-200	200-400	400-800	>800
Traffic (ADT)			1-1,000	1,000-2,000	2,000-3,000	3,000-5,000	>5,000
Precip/Climate (inches/year)			<8" Precip; warm winters	8"-12" Precip; warm winters	12"-16" Precip; short freezing periods	16"-25" Precip; long freezing periods	>25" Precip; long freezing periods
Ditch Dimensions (FHWA, 1989 Ditch Design Chart Depth and Width Criteria)			Meets FHWA (1989) criteria	Adequate width with inadequate depth	Moderate catchment (50%-95% of criteria width)	Limited catchment (20%-50% of criteria width)	<20% of criteria width
Sight Distance			Adequate stopping distance (>1,500') full shoulder	Good visibility (1,000'-1,500') & shoulder width	Moderate visibility (600'-1,000') & shoulder width	Limited visibility (400'-600') & shoulder width	Very limited visibility (<400') & shoulder width, speed limit ≥45 mph
Roadway Width (Including Paved Shoulders)			>44'	38'-44'	30'-38'	22'-30'	<22'
GEOLOGIC CHARACTER	**CASE 1**	**Structural Condition**	Massive, no fractures dripping out of slope	Discontinuous fractures, random orientation	Fractures form wedges	Discontinuous fractures dropping out of slope	Continuous fractures dripping out of slope
		Rock Friction	Massive	Rough, irregular	Undulating	Planar	Smooth, slicken-sided or clay, gouge, faulted
	CASE 2	**Structural Condition**	None or 1 differential features	Few differential erosion features	Occasional erosion features	Many erosion features	Major erosion features
		Difference in Erosion Rates	No difference or very small difference	Small difference	Moderate difference	Large difference, favorable structure	Large difference, unfavorable structure
Slope Continuity			No launching features	Possible launch features	Some minor features	Many launching features	Major launching features
Block Size			<6"	6"-12"	1'-2'	2'-5'	>5'
Rockfall History (Maint. Severity Rating)			No falls (Severity 1)	Few falls (Severity 2)	Occasional falls (Severity 3)	Regular falls (Severity 4)	Many falls (Severity 5)

There are slopes in both the Central (one location) and Northcentral (three locations) districts that rate as advisable to address due to their risk for rock-fall issues impacting the travel way. Locations that score above 500 on the RHR scale include:

- Northbound MP (214.2-214.3)
- Southbound MP (228.2-228.5)
- Southbound MP (242.5-244.5)
- Southbound MP (246.4-246.6)

The full list of RHRS ratings for each of the identified rock-fall areas is provided in **Table 26**.

Table 26: Rockfall Hazard Rating System Prioritization

Project	Rock-fall Location	RHRS Score	Rank
Package Project No. 4. Central District Rock-Fall Mitigation	Northbound both sides (MP 213.9-214)	294	18
	Northbound left side (MP 214.2-214.3)	552	2
	Northbound left side (MP 214.4-214.6)	474	5
	Northbound left side (MP 215-215.2)	474	5
	Southbound left side (MP 216.1-216.2)	376	11
	Northbound left side (MP 216.4-216.6)	450	6
	Northbound left side (MP 216.7-216.9)	424	10
	Southbound left side (MP 217.3-217.6)	474	5
Package Project No. 6. Northcentral District Rock-Fall Mitigation	Both directions both sides (MP 222-222.6)	308	16
	Southbound left side (MP 226-226.1)	430	9
	Southbound left side (MP 226.1-226.3)	364	12
	Southbound left side (MP 226.3-226.5)	442	7
	Southbound left side (MP 227.5-227.9)	432	8
	Southbound left side (MP 228.2-228.5)	666	1
	Southbound left side (MP 228.7-229)	274	19
	Southbound right side (MP 228.8-229)	228	20
	Northbound both sides (MP 228.9-229)	300	17
	Northbound right side (MP 231.6-231.7)	314	14
	Southbound left side (MP 231.7-232.1)	352	13
	Northbound right side (MP 233.3-233.7)	310	15
	Southbound left side (MP 242.5-244.5)	510	4
	Southbound left side (MP 246.4-246.6)	534	3

6 IMPLEMENTATION

A variety of funding sources can be considered as potential mechanisms for programming the projects identified as part of the CDS. Three potential sources include:

- P2P Programming (P2P): projects compete against projects from across the state through a standardized scoring process to identify statewide priority projects to be added to the 5-year program.
- District Minor Funding: state monies allocated to each of the seven ADOT districts across the state to fund projects identified as priorities by each district.
- Highway Safety Improvement Program (HSIP) Funding: HSIP funding is allocated to locations that have a demonstrated fatal and severe injury crash history and projects with effective countermeasures. HSIP funding can also be used for systemic improvements, such as ITS or signage improvements.

A potential funding source of the for each of the 12 packaged projects is identified in **Table 27**, though this list should not exclude exploration of additional funding sources.

Table 27: Recommended Funding Sources

CPS Rank	Project	Potential Funding Source		
		P2P	District Minor	HSIP
1	Northcentral District ITS/Signage Improvements (MP 218-251)			X
2	Slate Creek Improvements (MP 226-232)	X		
3	Southbound Roadway Improvements (MP 244-250)	X		
4	Northbound Roadway Improvements (MP 247-250)		X	
5	Central District Shoulder Improvements (MP 196-211)		X	
6	Northbound Roadway Improvements (MP 241-248)	X		
7	Central District ITS/Signage Improvements (MP 191-218)			X
8	Rye Improvements (MP 239-241)		X	
9	Northbound Roadway Improvements (MP 212-218)	X		
10	Northbound Roadway Improvements (MP 218-226)	X		
N/A	Central District Rock-Fall Mitigation (MP 213-218)		X	
N/A	Northcentral District Rock-Fall Mitigation (MP 222-247)		X	

P2P pre-scoping forms have been developed for each of the 12 packaged projects to provide background detail and justification to pursue projects through the P2P program. Although not all projects are recommended to be pursued through the P2P funding avenue, pre-scoping forms have been developed for all projects in the event that P2P funding becomes the preferred source in the future. The pre-scoping forms are provided in **Appendix E**.

7 PUBLIC AND AGENCY INVOLVEMENT

7.1 Technical Advisory Committee

ADOT established a Technical Advisory Committee (TAC) consisting of ADOT, FHWA, and Metropolitan Planning Organization (MPO) and Council of Governments (COG) representatives. Member organizations are summarized in **Table 28**.

Table 28: Technical Advisory Committee Member Organizations

TAC Member Organizations
ADOT Bridge Design
ADOT Central District
ADOT Central District Traffic
ADOT Communications
ADOT Drainage Design
ADOT Environmental Planning Group
ADOT Geotechnical
ADOT Multimodal Planning
ADOT Northcentral District
ADOT Pavement Design
ADOT Project Management Group
ADOT Transportation Technology Group
ADOT Traffic Design
ADOT Traffic Systems Management and Operations
ADOT Tribal Coordination
ADOT Traffic Systems Management and Operations – Northern Region Traffic
Central Arizona Governments
Federal Highway Administration (FHWA)
FHWA Planning Region 1
FHWA Project Delivery – Central
FHWA Project Delivery – North Central
Maricopa Association of Governments
Northern Arizona Council of Governments

The Technical Advisory Committee met five times over the course of the project. Meeting summaries are provided in **Appendix C**.

7.2 Stakeholder Meetings

As discussed in Chapter 1, SR 87 is bounded by U.S. Forest Service land, except for both ends of the corridor. There are few residents in the corridor. As such, it was determined that outreach is best accomplished through individual stakeholder meetings and input from Technical Advisory Committee representatives.

Individual stakeholder meetings were held with representatives of municipalities, DPS, and ADOT to review potential projects and obtain input on potential issues and project ideas to address those issues. The purpose of the interviews was to:

- Inform stakeholders about the study process and intent
- Obtain input on the projects recommended through the Corridor Profile process
- Identify key concerns of stakeholders and the public regarding ADOT's efforts to improve traffic operations and safety on SR 87 within the study limits
- Identify environmental issues
- Identify opportunities beyond those already presented in previous studies

The format of the meetings was to review proposed projects from the Corridor Profile Study, determine if they should advance to further analysis or removed from further consideration or if previously recommended projects should be modified, or new projects discussed. A summary of the meeting input is summarized in **Table 29**.

Table 29: Stakeholder Meeting Summaries

Stakeholder Meeting	Meeting Date	Input Received
ADOT Northcentral District	9/18/2018	• MP 201-202.5 the shoulders are in poor condition and have an old style of rumble strips. MP 203.9-208 has new slurry, but rumble strips are inconsistent. • an overhead DMS sign in advance of the Fort McDowell Road intersection with real-time travel times to Payson and Show Low would allow vehicles to detour during times of extreme congestion. • Rockfall mitigation is needed in these areas: NB MP 214.2-214.6, SB MP 228.9-228.7, and SB MP 228.5-228.0. At SB MP 217.6-218.0 It was indicated that this location had experienced enough rock-fall that the problem has largely taken care of itself and should be considered a low priority. • The locations noted for speed feedback signs and speed advisory warning signs with flashing beacons at curves were noted as good locations. NB MP NB 224.5 was noted as a top priority. • MP 229-218 has a lot of guardrail that inhibits emergency access. There are dips in the current shoulders that need to be addressed. • In addition to widening inside shoulders, also improve areas where the outside shoulders are less than 10' as well because of guardrail, which should be remedied. • Constructing a NB climbing lane at NB 213-215, this project is a top priority for the Central District. • Constructing a NB climbing lane at MP 219-223, this project is a priority for the Northcentral District. Carry the climbing lane all the way to the brake check location at the summit of Mount Ord. • Regarding the widening the Whiskey Springs Bridge and the Upper Kitty Joe Bridge, this is needed to accommodate the proposed climbing lane. • Provide an overhead DMS sign in advance of the SR 188 intersection with real-time travel times to Payson and Show Low to provide drivers detour options • Adding intersection warning signage at Sunflower (MP 218) would be beneficial due to a high amount of cross traffic. • Regarding adding a merge lane from the brake check area (MP 223), trucks frequently use the shoulder to accelerate from the brake check area to merge back into traffic. This location could benefit from longer acceleration lanes to allow trucks to gain speed off the shoulders. • Sloughing on the northbound side at MP 231 has been a continuous issue. There are also drainage issues in the area, resulting in mud over the road during a monsoon season. Identify locations where there are not 10' wide outside shoulders.
		• Deer Creek Drive intersection - residential area, horse trailers entering and exiting west leg of intersection, signage should be added • Gisela Road intersection – a lot of crossovers, signage should be added • Rye (MP 240.5 and 240.9) – this section of roadway is straight and flat, leading to higher speeds. There is a lot of cross traffic in the area, signage should be added • Adding a flashing beacon at WB stop sign on SR 188 was affirmed as a project that should remain in the study. • SR 188 intersection - If acceleration lanes are lengthened or added, they should be concrete to avoid the current issue of a washboard effect on the asphalt because of heavy vehicle acceleration. Add a southbound acceleration lane along the median for traffic from SR 188. Turn lanes to SR 188 should be lengthened to allow for more deceleration distance. • Constructing climbing lanes, NB MP 243-247- this project would work on normal weekends but may cause additional back-ups during congested times due to merging. The shoulders should get widened at the same time as this project (MP 241-247) to improve emergency response abilities. • RWIS with Dynamic Weather Warning Beacons at MP 245 – low priority project. If it does move forward, move the SB location to MP 244 and NB location to MP 246 with cameras. • Proposed variable speed limits, MP 241-246 - low priority. • A SB DMS sign proposed at SB MP 247 would be more helpful near the casino, to provide people the opportunity to turn around at Gibson Ranch Road or Oxbow Trail before they enter the congested area. The sign could be mounted on a new pedestrian overpass. • A DMS sign at NB MP 240 is not necessary – a sign before SR 188 or at the top of Mount Ord would be more useful. • Widen shoulders at SB MP 246.2-250.9 - this should be a top priority, and that consistent 10' right shoulders should continue all the way to MP 241. Also, NB shoulders should be widened out where guardrails are to provide 10' of space for emergency response. • Current superelevation and drainage issues at SB MP 241-250 cause sheets of water to cross the roadway and ADOT responds to crashes at these locations frequently during rain events, particularly at MP 246-242. • SR 87 is becoming an alternate route for I-17, due to the unreliability of that facility. Drivers use SR 87 through Payson to SR 260 west to Camp Verde, or Lake Mary Road (County Road 3) to Flagstaff. • Traffic volumes have been increasing rapidly over the last few years, particularly RV's and vehicles towing boats. Update the traffic analysis to more recent counts. • Responding to incidents would be much easier if the entire corridor had 10' right shoulders. • Proposed speed feedback signs should be incorporated into ADOT's real-time travel information to allow DMS signage to provide travel times to Payson and Show Low. • Review appropriate applications of temporary transverse rumble strips. • A runaway truck ramp was installed for northbound traffic near MP 227 due to the steep descent from the summit of Mount Ord. The lighted 'Occupied' sign should be relocated at the summit of Mount Ord. • A concrete barrier at the 'Corvair Curve' (SB MP 246-245) would be very beneficial and encourage motorists to slow down through the curve. • A project to reopen the rest area is in the 5-year program.
Department of Public Safety and Gila County	10/23/2018	• NB MP 224.5 is a great location for speed feedback signs; in fact, there could be more speed feedback signs on the northbound side in advance of curves going down the hill from the summit of Mount Ord. • NB MP 213-215 there are a lot of crash and near misses in this area and a climbing lane would be very helpful to take slow traffic out of the through lanes. • MP 223 – 228.5 is a 5+ mile stretch that has continuous concrete median barrier that does not provide adequate emergency crossover locations. An additional crossover

Stakeholder Meeting	Meeting Date	Input Received
		would reduce emergency response times. A tunnel, like the one at MP 220, could be a good solution. • Near NB 226, there is a location on the northbound side where there is a rise followed by an immediate left curve with poor superelevation that occasionally causes crashes. • At MP 239.3, there are transitions between the roadway and the bridge over Rye Creek are bumpy and cause vehicles to bounce and lose control at the bridge. • Regarding installing speed feedback signs and advisory warning signs with flashing beacons at curves, SB MP 247 is a good location because it would help reinforce the speed restrictions in advance of 'Corvair Curve' • Regarding a project to widen shoulders at SB MP 246.2-250.9, there is only one safety pull-out in this stretch and it has very poor visibility for vehicles re-entering the roadway. • The curve at SB MP 246 (Corvair Curve) is the biggest safety problem in the entire district. Crashes are mostly single vehicle – run off road and rollover crashes. • Regarding a proposal to realign SR 87 to remove "Corvair Curve" (MP 246), an alternative could be to realign the SB lanes to the west to remove the curve and some of the subsequent sharp curves. There may be opportunities to follow the existing drainage elevations to straighten out the roadway. • Regarding a proposal to address sight visibility issues at crossovers at Ox Bow Trl, FR 375B, and Gibson Ranch Rd, there is a difference in elevation between the two sides of SR 87, which causes sight distance issues and acceleration issues for vehicles turning onto the roadway from side streets. Additional acceleration lanes may be warranted at these locations. • Regarding a proposed project to realign FR 375B, an alternative suggested was to realign FR 375B to a frontage road along the east side of SR 87 northward to Gibson Ranch Road. This alternative would allow for the removal of the intersection of SR 87 and FR 375B. • The southern of the two crossover tunnels on SR 87, MP 220 is used heavily as an emergency crossover and may be a good model to improve emergency access in areas with center concrete barriers.
ADOT Central District	10/23/2018	• Supplemental DMS at SB MP 191.2 can alert drivers to crashes ahead so that they can detour onto Shea Boulevard or Gilbert Road. A SB DMS sign north of Bush Highway would be the optimal location, but there is no power available, so it would be expensive to implement. • Between MP 194 to 205 NB and SB the shoulders are in acceptable condition but are approximately 25 years old and would likely need to be rehabilitated in the next 5-10 years. • The inside shoulders MP 211-209 should be widened. • Proposed speed feedback signs should be placed in advance of curves • SB MP 212 -213 - supplemental chevron signs and delineators would be helpful. • NB MP 214.2-214.6 should be a top priority for rock-fall mitigation. • SB MP 217.6-218.0 is also in need of rock-fall mitigation. • Intersection warning signs at Sunflower is a good idea. • NB climbing lanes at NB MP 213-215 and NB MP 219-223 are a good idea • There is a long gap in emergency crossovers between MP 213-217.5 and it would be nice to have additional access in this area, however; the terrain is challenging. • There is a drainage structure on the SB roadway near MP 216 just north of the crossover bridge, but that water drains into the rocks just before it enters the structure and follows cracks in the rocks onto the northbound lanes and shoots out of the northbound lane under the crossover bridge, requiring roadway patches every time there is a sizeable rain event. • The roadway is buckling from MP 217.2-217.7 (northbound and southbound), causing vehicles to bounce on the roadway, possibly contributed by standing water in the median. • All of the guardrail in the Central District along SR 87 is at least several years old and does not meet current standards. If any of the projects impact the shoulders with guardrails, the guardrail will need to be replaced with the current standard.
Maricopa County, Town of Payson, Town of Fountain Hills	10/30/2018	• A supplemental DMS sign SB approximately MP 191.2 would be helpful to be able to alert drivers to congestion on Shea Boulevard in Fountain Hills so that drivers can divert to SR 87 or Gilbert Road. • cross-traffic at Goldfield Ranch Road has been increasing in recent years, and more substantial infrastructure may be warranted. The alignment of some of the crossovers is atypical and may cause safety issues. • it may be beneficial to add additional speed feedback signs on the northbound side of the roadway along the decline from the summit of Mount Ord along Slate Creek to approximately mile post 229. • A DMS located NB at MP 235.5 would be very beneficial. • At the SR 188 intersection - location may warrant grade separation in the future, but an added acceleration lane will help in the short-term. • Public comments that the Mazatzal rest stop should be rehabilitated. • Between NB MP 241- 246 observed that vehicles overheating on the long incline on the northbound lanes and that the shoulders are too narrow to safely pull out of traffic. • Between Rye and Payson there is poor cell phone reception in this area and people that break down cannot call for help. • Review the corridor for inadequate shoulder widths. • MCDOT is adding message signs (both DMS and permanent signage) to Bush Highway warning drivers about wildlife (Salt River Horses). SR 87 may experience the same issues.
United States Forest Service and Game and Fish Department	10/31/2018	• Projects on U.S. Forest Service land shall follow the "Guidelines for Highway on BLM and USFS Lands". • A highway easement deed may be required in areas of new construction. J. Mona added that this applies to any capacity improvements that require additional right-of-way. • Planning for potential waste areas and/or borrow sources shall be coordinated in advance and analyzed during the NEPA planning phase. It is preferred that all projects are designed to be balanced. • Contractor staging areas shall be sited in advance and analyzed during the NEPA planning phase. • Construction water shall be coordinated in advance. • Geotechnical exploration shall be analyzed early in the NEPA planning phase. • Salvage and transplant Saguaro cacti that impacted by construction. • Install directional fencing to encourage wildlife to use culverts for crossing. • Modify existing culvert designs to accommodate wildlife movement and passage. • Projects shall include treatment for noxious and invasive weeds. • Provide livestock signage in the Bush Highway area (for the Salt River horses). • Fence continuity shall be maintained in areas with active grazing allotments. • Project shall include fire plan requirements. • Projects shall comply with the Tonto National Forest Plan visual quality objectives. • USFS may come out with an updated plan within the next two years, but that the current plan's requirements should suffice for the time being. • Weathering steel shall be used for all new guardrail and galvanized end sections shall be treated with Natina. • The area around MP 224 has continuously suffered from slope failures. A larger project involving a permanent solution should be developed rather than responding to potential and actual failures. Any improvements planned for this area should consider the larger permanent solution being developed. • Be aware of a hazardous material waste site NB and SB near MP 248.8. • USFS has changed its policy approach from minimizing the footprint of highways to allowing adequate right-of-way for stable slopes. USFS also believes that wide medians are more in line with the aesthetic guidelines in the Forest Plan. • USFS would like to get a cultural survey for the entire corridor to speed up the process for general maintenance need

Stakeholder Meeting	Meeting Date	Input Received
Town of Payson	11/6/2018	• 'Corvair curve' (southbound curve at MP 246) is the biggest safety concern on the highway. • Wrong-way drivers are sometimes an issue on SR 87. The most common location is people exiting the Mazatzal Casino • Congestion on summer weekends is a major source of complaints received by the Town. • Because the majority of vehicles are turning right at SR 260, all the vehicles are using the right lane and the left lane is relatively empty. • At the intersection with SR 188, the southbound left and westbound left turn movements cause the majority of the crashes as they cross the northbound through lanes. if the Mazatzal Rest Area is reopened, it would likely exacerbate this problem. A preferred solution would to grade separate the intersection. • Additional emergency crossovers would be helpful for emergency response purposes
ADOT Central District	6/12/2019	• Update description of project section 3 to "Reconstruct north leg at Goldfield Road" • Check with TSMO on whether they want to add FMS conduit the length of the project (or at least to the DMS) • Subdivide the rockfall mitigation that would be in the widening section and combine them into one project • Combine the remainder of rockfall mitigation not included in comment above into another separate project • Always keep the projects separated by ADOT District • Ask the U.S. Forest Service for their preference on slope rockfall mitigation types – ADOT District Maintenance does not yet have a preference

7.3 Public Engagement

An online survey was conducted to obtain public input on each of the twelve project packages. The survey was conducted from September 16 through September 30, 2019. The survey was advertised through an ADOT press release, and distribution through jurisdiction websites and social media. A total of 814 persons responded to the survey. It should be noted that not all respondents commented on every project package.

7.3.1 Survey Responses on Project Packages

For each project package, a map and a list of the project elements, location, and costs were given, and respondents were asked to respond to the statement, "These projects are needed in this area" by clicking on responses that ranged from "strongly agree" to "strongly disagree." Respondents were also given the opportunity to write additional comments for each of the project packages. A summary of the responses on this part of the survey are provided in Table 30.

The project packages that had the most positive responses were Project Packages 3 (Northbound Improvements, MP 212 to 218) and 10 (Northbound Roadway Improvements (MP 241-248), which had a combined sum of "Agree" or "Strongly Agree" responses of 81% and 80%, respectively. The project packages that had the least positive responses were Project Packages 1 (ADOT Intelligent Transportation System and Signage Improvements from MP 191 to MP 218) and 5 (ADOT Northcentral District Intelligent Transportation System / Signage Improvements (MP 218-251) which had a combined sum of responses of "Agree" or "Strongly Agree", of 46% and 48%, respectively. Project package 1 had the largest number of additional comments, which were 75 individual comments.

A complete listing of comments and responses is provided in **Appendix D**.

Table 30: Summary of Survey Responses to Project Packages

Project Package Number	Project Package Name	Number of Responses	Strongly Agree (%)	Agree (%)	Sum of Strongly Agree and Agree	Neutral (%)	Disagree (%)	Strongly Disagree (%)	Sum of Strongly Disagree and Disagree	Number of Additional Comments
1	ADOT Intelligent Transportation System and Signage Improvements from MP 191 to MP 218	781	25%	21%	46%	18	15	11	26	75
2	ADOT Central District Shoulder Improvements (MP 196 -211)	771	33	34	67	16	8	5	13	25
3	Northbound Improvements, MP 212-218	781	49	32	81	7	4	4	8	31
4	ADOT Central District Rockfall Mitigation (MP 213-218)	779	35	35	70	19	5	3	8	35
5	ADOT Intelligent Transportation System / Signage Improvements (MP 218-251)	779	25	23	48	20	15	10	25	48
6	ADOT Northcentral District Rock-Fall Mitigation (MP 222-247)	773	33	35	68	21	5	3	8	21
7	Northbound Roadway Improvements (MP 218-226)	778	43	33	76	9	8	4	12	20
8	Slate Creek Improvements (MP 226-232)	775	36	31	67	18	9	4	13	19
9	Rye Improvements (MP 239-241)	774	34	32	66	16	10	6	16	19

Project Package Number	Project Package Name	Number of Responses	Strongly Agree (%)	Agree (%)	Sum of Strongly Agree and Agree	Neutral (%)	Disagree (%)	Strongly Disagree (%)	Sum of Strongly Disagree and Disagree	Number of Additional Comments
10	Northbound Roadway Improvements (MP 241-248)	772	49	31	80	7	6	5	11	13
11	Southbound Roadway Improvements (MP 244-250)	775	44	33	77	11	5	5	10	21
12	Northbound Roadway Improvements (MP 247-250)	778	38	28	66	18	8	5	13	25

7.3.2 Survey Responses on Standalone Projects

Standalone projects were projects that were geographically isolated and not packaged with other projects. The individual projects were listed, the survey respondents were asked to check the projects you think are needed in this area. The individual projects were listed, and there was an option to check "Other – Please specify" and provide a comment. A summary of the results for this question is provided in Table 31. There were 614 responses to this question. The most commonly checked projects (over 200 responses) were:

- Rehabilitate rest area, milepost 235.7
- Inside and outside acceleration lanes both directions - Four Peaks, milepost: 203.9
- Address dip in NB roadway, mileposts 230.5 - 230.6
- Construct new rest area, milepost 212.7
- NB and SB inside and outside accel lanes, fix SB shoulders both sides – Sunflower, milepost 218
- Wildlife fencing, signage, and crossing, milepost: 235-235.9
- Wildlife fencing, signage, and crossing, milepost 238-238.9
- Extend NB acceleration lane to 1300' - SR 188, SB inside acceleration lane, milepost 235.7

There were 70 comments. Several of the comments related to providing a bypass around Payson, (20 comments). Several persons commented about the need to open or reopen rest areas (10 comments). Other comments are provided in full in **Appendix E.**

Table 31: Survey Responses on Standalone Projects

Standalone Project Descriptions	Replies to "Please check the projects you think are needed in this area"	
	Percent of Total Responses	Number of Responses
NB RT lane, SB RT lane, outside accel lane at Hiawatha Hood, Milepost 191.8	21%	129
NB RT lane at Rodeo Rd, Milepost 192.1	21%	126
Improve intersection geometrics on SB side at Burnt Water Trail, Milepost: 195.2	15%	94
Inside and outside accel lanes both directions - Four Peaks, Milepost: 203.9	44%	269
Inside and outside accel lanes both directions - Mesquite OHV Area, Milepost: 207.8	30%	186
Add NB outside accel lane, SB inside accel lane - Ballantine Trailhead, Milepost 210.4	29%	175
Construct new rest area, Milepost: 212.7	38%	232
NB and SB inside and outside accel lanes, fix SB shoulders both sides – Sunflower, Milepost 218	36%	221
Prevent OHV access to SB lanes, Milepost 230.5	22%	133
Address dip in NB roadway, Mileposts 230.5 - 230.6	39%	239
Wildlife fencing, signage, and crossing, Milepost: 235-235.9	35%	213
Extend NB acceleration lane to 1300' - SR 188, SB inside accel lane, Milepost 235.7	33%	202
Evaluate grade separation - SR 188 (both directions), Milepost 235.7	19%	116
Rehabilitate rest area, Milepost 235.7	51%	311
NB LT lane, SB RT lane - Deer Creek Dr, Milepost 237.6	21%	126
Wildlife fencing, signage, and crossing, Milepost 238-238.9	34%	207
Other (please specify)	11%	70
	Answered	**614**

7.3.3 Additional Comments

The final section of the survey asked respondents if they had any additional comments on the study and needed projects. Two hundred responses were received on this question.

The largest number of comments regarded the need for rest areas (37 comments). There were 32 comments regarding the need for a bypass around Payson because of congestion, particularly on the weekends. Another concern was related to project costs, either the project was too expensive or funding should be spent on other roads, such as SR 260, SR 188, or I-17 (17 comments). There were some enforcement concerns regarding speeding and wrong way drivers (5 comments). All comments are provided in **Appendix E.**

Five additional comments were received by email or mail. The full text of the comments is provided in **Appendix E**, and a summary of the comments are:

- At MP 250 or as close to the south end of Payson, consider installing an overhead highway message sign. It would be a good investment.
- Widen and straighten out SR 87 west of Sunflower on the way to Payson. That part of the SR 87 needs to be made safer. It is narrow and has too many curves.
- Make as much of SR 87 two lanes each way and that's it.
- Construct signs to prevent engine breaking from Shea Blvd north to just past Bush Highway. Construct an overpass at milepost 197 for easier access to the homes on the northwest side of the Beeline.
- Construct more signs about “Slower traffic keep to the right.” Also, open up the rest area at SR 87 & SR 188.

APPENDICES

Appendix A: Previous Studies and Recommendations

STUDY	SUMMARY	RECOMMENDATIONS
Framework and Statewide Studies		
Arizona Statewide Dynamic Message Master Plan, November 2011 (Final)	This plan provides specific justification warrants, criteria, and consideration of permanent DMS design requirements for the Arizona highway system.	Proposed Dynamic Message Signs: SB SR 87 at MP 201
ADOT Intelligent Transportation System Design Guide (2015)	This design guide provides direction on ITS for both rural and urban applications. https://www.azdot.gov/docs/default-source/rural-public-transportation-program/adot-its-design-guide-052315.pdf?sfvrsn=4	Provides design guidance for rural dynamic message signs, Remote Weather Information Systems (RWIS), and truck escape ramp detection and warning systems
ADOT Bicycle Safety Action Plan (2018)	The 2018 BSAP Update uses a data-driven approach to assess bicycle crashes on the State Highway System (SHS), and identify specific steps, actions, and potential countermeasures that, upon implementation and over time, will measurably reduce bicycle crashes, injuries, and fatalities on the SHS. http://www.azbikeped.org/downloads/ADOT-Bicyclist-Safety-Action-Plan.pdf	The northern terminus of this study (MP 250) is the start of a 2018 BSAP Priority Location 19, which is located between MP 250 (Green Valley Parkway) and MP 253.2 (Forest Drive). Engineering countermeasures suggested included: • Access Management Study - Conduct an access management study. Recommendations may include driveway consolidation and constructing a raised median. • Striped Paved Shoulder - Assess feasibility of striped paved shoulder on SR 87. Per record drawings, SR 87 typical width is 68'. A 4' striped shoulder (as measured from gutter seam to the center of the white stripe) could be installed on SR 87 in both directions. Striped shoulder may require one or more travel lanes to be reduced to 11'. A striped or paved shoulder should also be considered for remainder of SR 87 north through the Town of Payson. • Roadway Signing Improvements - Consider installing R4-11 BMUFL sign with R4-11aP Change Lanes to Pass plaque Education countermeasures suggested partnering with Central Arizona Governments (CAG) and local agencies to provide education, outreach, and training to increase bicyclist and motorist awareness and improved behaviors. Increasing level of traffic bicycling skills can help to make bicyclists more comfortable when riding in traffic, improve relations between bicyclists and motorists, and facilitate the smooth and orderly flow of traffic.
Regional Planning Studies		
SR 87/SR 260/SR 377 Corridor Profile Study, March 2017 (Final)	The SR 87/SR 260/SR 377 CPS defines solutions and improvements for the corridor that are evaluated and ranked to determine which investments offer the greatest benefit to the corridor in terms of enhancing performance. https://azdot.gov/docs/default-source/planning/Corridor-Studies/sr-87-final-report-noappendix-031717.pdf?sfvrsn=2	Bush Highway Area Safety and Freight Improvements (SR 87 MP 191-213) – Priority Rank 4 • Rehabilitate shoulders (NB/SB MP 194-205) • Install speed feedback signs (NB MP 206.5 and 207.7, NB/SB before curves and intersection with FR 68 [MP 209.6]) • Widen inside shoulders (SB MP 211-209) Sunflower Area Safety Improvements (SR 87 MP 213-235) – Priority Rank 5 • Install speed feedback signs and speed advisory warning signs with flashing beacons at curves (NB MP 213.2,214.0, 217.8, 220.5, 224.5, 232.5; SB MP 231.0, 229.3, 221.0, 219.6, 216.0, 214.3) • Rehabilitate shoulders • Widen inside shoulders (SB MP 228.5-226.0) • Install rock-fall mitigation (NB MP 214.2-214.6; SB MP 228.9-228.7, 228.5-228.0, 217.6-218.0)

STUDY	SUMMARY	RECOMMENDATIONS
		<u>Sunflower Area Freight Improvements (SR 87 MP 213-223) – Priority Rank 13</u> • Construct NB climbing lane, MP 213-215 and MP 219-223 • Widen Whiskey Springs Bridge, #2515 MP 220.32 • Widen Upper Kitty Joe Bridge, #2497 MP 221.39 <u>Slate Creek Pavement Improvements (SR 87 MP 224-226) – Priority Rank 14</u> • Replace Pavement <u>Rye Area Safety and Freight Improvements (SR 87 MP 235-241) – Priority Rank 1</u> • Install advisory sign about approaching area with intersections (Deer Creek Drive [MP 237.6], Gisela Road [MP239.5], two intersections in Rye [MP 240.5 and MP 240.9]) • Install reduced speed advisory sign on SR 87 (NB MP 240, SB MP 241) • Install speed feedback signs (NB MP 240, SB MP 241) • On SR 188 approaching SR 87 add flashing beacons to WB stop sign <u>Ox Bow Estates Area Safety Improvements (SR 87 MP 241-250) – Priority Rank 10</u> • Install speed feedback signs and speed advisory warning signs with flashing beacons at curves (SB MP 247, MP 245) • Implement variable speed limits MP 241-246 with new DMS and Closed Circuit Television (CCTV) SB at MP 247 and new DMS and CCTV NB at MP 240 • Install Road Weather Information System (RWIS) at MP 245 with dynamic weather warning beacons <u>Ox Bow Estates Area Freight Improvements (SR 87 MP 243-247) – Priority Rank 15</u> • Construct NB climbing lane • Install Intelligent Transportation System (ITS) conduit with all new infrastructure projects **<u>Other Corridor Recommendations</u>** • Implement a driving impaired and speeding safety education campaign along the corridor • Coordinate with Arizona Game and Fish Department (AGFD) to conduct a study on vehicle/wildlife conflicts on SR 87 between MP 233 and MP 241 **<u>General Policy Recommendations</u>** • Prepare strategic plans for CCTV camera and RWIS locations statewide • Leverage power and communication at existing weigh-in-motion (WIM), dynamic message signs (DMS), and call box locations to expand ITS applications across the state • Consider solar power for lighting and ITS where applicable • Investigate ice formation prediction technology where applicable • Conduct highway safety manual evaluation for all future programmed projects • Develop infrastructure maintenance and preservation plans (including schedule and funding) for all pavement and bridge infrastructure replacement or expansion projects • Develop standardized bridge maintenance procedures so districts can do routine maintenance work • Review historical ratings and level of previous investment during scoping of pavement and bridge projects. In pavement locations that warrant further investigation, conduct subsurface investigations during project scoping to determine if full replacement is warranted • For pavement rehabilitation projects, enhance the amount/level of geotechnical investigations to address issues specific to the varying conditions along the project • Expand programmed and future pavement projects as necessary to include shoulders

STUDY	SUMMARY	RECOMMENDATIONS
		• Expand median cable barrier guidelines to account for safety performance • Install CCTV cameras with all DMS • In locations with limited communications, use CCTV cameras to provide still images rather than streaming video • Develop statewide program for pavement replacement • Install additional continuous permanent count stations along strategic corridors to enhance traffic count data • When reconstruction or rehabilitation activities will affect existing bridge vertical clearance, the dimension of the new bridge vertical clearance should be a minimum of 16.25 feet where feasible • All new or reconstructed roadway/shoulder edges adjacent to an unpaved surface should be constructed with a Safety Edge • Collision data on tribal lands may be incomplete or inconsistent; additional coordination for data on tribal lands is required to ensure adequate reflection of safety issues • Expand data collection devices statewide to measure freight delay • Evaluate and accommodate potential changes in freight and goods movement trends that may result from improvements and expansions to the state roadway network
BQAZ 2010 Statewide Transportation Planning Framework Final Report (2010)	This project developed a long-term transportation vision for 2050, with 2030 as an intermediate planning horizon.	Widen / upgrade SR 87 to 6 lanes (MP 177 to MP 253)
Design Concept Reports, Project Assessments, and Scoping Documents		
SR 87, MP 224 to MP 226, Final Project Assessment (2012)	The Project Assessment was for a landslide mitigation project. The goal of the project was to reduce maintenance costs and provide an acceptable factor of safety for a landslide that became destabilized during the original construction between 1998 and 2001.	Construct landslide mitigation measures on SR 87 (MP 224-226)
SR 87 Slate Creek Slope Mitigation, MP 224 to MP 226, Draft Scoping Document (2016)	This was a scoping report for a slope management project	• Initiate a geotechnical investigation and evaluation to determine embankment soil properties, slope stability, and fissure information • Remediate the 12-foot diameter multi-plate pipe • Develop surface runoff design to protect moisture sensitive embankment soils • Evaluate the need for reconstruction of the existing pavement and surface drainage system • Evaluate the need for improved drainage for soil nail walls near MP 224

Appendix B: Project List

Proj. No.	Description	Project Limits	Packaged Project No.	Stand-Alone Project	Project Removed from Consideration
1	SB New DMS	191.2	Project No. 1. Central District ITS/Signage Improvements		
2	NB RT lane, SB RT lane, outside accel lane at Hiawatha Hood	191.8		X	
3	NB RT lane at Rodeo Rd	192.1		X	
4	Rehabilitate shoulders	SB 196-200 NB 201.3-202.1	Project No. 2. Central District Shoulder Improvements (MP 196-MP 211))		
5	Add northbound guardrail	194.0-194.9			X
6	Improve intersection geometrics on SB side at Burnt Water Trail	195.2		X	
7	Improve geometrics at Vista del Oro intersection	195.2			X
8	Reconstruct north approach at Goldfield Rd	196.1	Project No. 2. Central District Shoulder Improvements (MP 196-MP 211)		
9	Prevent OHV access (SB)	200.5			X
10	Prevent OHV access (NB)	201.4			X
11	Widen NB inside shoulder to 4’	202.1-202.6	Project No. 2. Central District Shoulder Improvements (MP 196-MP 211))		
12	Inside and outside accel lanes both directions - Four Peaks	203.9		X	
13	NB curve chevron signage	205.2-205.7	Project No. 1. Central District ITS/Signage Improvements		
14	Widen SB outside shoulder to 10’	205.2-207	Project No. 2. Central District Shoulder Improvements (MP 196-MP 211))		
15	NB speed feedback sign	206.2	Project No. 1. Central District ITS/Signage Improvements		
16	Speed feedback sign (NB)	207.7			X
17	Inside and outside accel lanes both directions - Mesquite OHV Area	207.8		X	
18	Widen SB inside shoulder to 4’	209.6-211	Project No. 2. Central District Shoulder Improvements (MP 196-MP 211)		
19	NB and SB speed feedback signs	NB 209.7 SB 209.6	Project No. 1. Central District ITS/Signage Improvements		
20	Add NB outside accel lane, SB inside accel lane - Ballantine Trailhead	210.4		X	
21	NB curve chevron signage	212.2-212.4	Project No. 1. Central District ITS/Signage Improvements		
22	Widen NB inside shoulder to 4’	212.5-213	Project No. 3 Northbound Improvements (MP 212-218)		
23	Left- and right-turn/deceleration lanes, inside and outside lanes in both directions at the Log Coral Wash intersection	212.7	Project No. 3 Northbound Improvements (MP 212-218)		
24	Construct new rest area	212.7		X	
25	Rehabilitate NB shoulders	223-226	Project No. 7. Northbound Improvements (MP 218.5-226)		
25	Rehabilitate NB shoulders	227.8-229	Project No. 8 Slate Creek Improvements		
26	Construct NB climbing lane	213-216.7	Project No. 3 Northbound Improvements (MP 212-218)		
27	Add guardrail on east side of roadway	213-213.4	Project No. 3 Northbound Improvements (MP 212-218)		
28	NB speed feedback sign	213	Project No. 1. Central District ITS/Signage Improvements		
29	NB both sides – re-slope to ¾:1, widen and deepen ditches	213.9	Project No. 4. Central District Rock-Fall Mitigation		
30	NB speed feedback sign	214	Project No. 1. Central District ITS/Signage Improvements		
31	NB left side – re-slope ¾:1 (1st stretch), ½:1 (2nd stretch, rock portions), and 1:1 (earth, saprolite); round crest in gravels; pinned	1 - 214.2-214.3 2 - 214.4-214.6	Project No. 4. Central District Rock-Fall Mitigation		

Proj. No.	Description	Project Limits	Packaged Project No.	Stand-Alone Project	Project Removed from Consideration
	netting in earthen materials; widen and deepen ditch; rock lined crown ditch				
32	SB speed feedback sign	213.6	Project No. 1. Central District ITS/Signage Improvements		
33	NB left side – scale, widen and deepen ditch	215-215.2	Project No. 4. Central District Rock-Fall Mitigation		
34	SB speed feedback sign	215	Project No. 1. Central District ITS/Signage Improvements		
35	Address drainage issue between SB and NB alignments	216	Project No. 3 Northbound Improvements (MP 212-218)		
36	SB left side – heavy scaling, bolts, local pinned mesh	216.1-216.2	Project No. 4. Central District Rock-Fall Mitigation		
37	NB left side – heavy scaling, bolts, dowels (1st stretch); heavy scaling, spot rock bolting, erosion control (2nd stretch)	1 - 216.4-216.6 2 - 216.7-216.9	Project No. 4. Central District Rock-Fall Mitigation		
38	SB left side – heavy scaling, pattern bolting, erosion control	217.3-217.6	Project No. 4. Central District Rock-Fall Mitigation		
39	Add NB left-turn and SB right-turn lane	217.5	Project No. 3 Northbound Improvements (MP 212-218)		
40	NB speed feedback sign	217.8	Project No. 1. Central District ITS/Signage Improvements		
41	Intersection warning signage	218	Project No. 1. Central District ITS/Signage Improvements		
42	NB and SB inside and outside accel lanes, fix SB shoulders both sides – Sunflower	218		X	
43	NB outside acceleration lane, SB inside acceleration lane at Bushnell Tanks intersection	218.5	Project No. 7. Northbound Improvements (MP 218.5-226)		
44	Widen inside shoulders to 4’ and outside shoulders to 10’	218.9-222.1	Project No. 7. Northbound Improvements (MP 218.5-226)		
45	Construct NB climbing lane	218.6-223	Project No. 7. Northbound Improvements (MP 218.5-226)		
46	SB speed feedback sign	219.6	Project No. 5. Northcentral District ITS/Signage Improvements		
47	Widen Whiskey Springs bridge	220.3	Project No. 7. Northbound Improvements (MP 218.5-226)		
48	Speed feedback sign (NB)	220.5			X
49	SB speed feedback sign	221	Project No. 5. Northcentral District ITS/Signage Improvements		
50	Widen Kitty Joe Creek bridge	221.4	Project No. 7. Northbound Improvements (MP 218.5-226)		
51	NB both sides – re-grade with rock-lined interceptor channels and crown ditch, gabions	222-222.6	Project No. 6. Northcentral Rock-Fall Mitigation		
52	Address erosion on east side of the road	222.8-222.9			X
53	Widen inside shoulders to 4’ and outside shoulders to 10’	NB: 226-227.8 SB: 226-228.5	Project No. 8 Slate Creek Improvements		
54	NB speed feedback sign	224.5	Project No. 5. Northcentral District ITS/Signage Improvements		
55	SB left side – pinned mesh in the narrow shoulder area, deepen ditch to 6’, rock fence on bench, grade slope and scale (1st stretch); crest erosion, protect with thrie beam barrier, pinned mesh in crown area gravels, scale (2nd stretch); pinned mesh in the crest, deepen ditch, protect with weathering thrie beam barrier (3rd stretch)	1 - 226-226.1 2 - 226.1-226.3 3 - 226.3-226.5	Project No. 6. Northcentral Rock-Fall Mitigation		
56	SB left side – deepen ditch by toe excavation, protect ditch cross slope with weathering thrie beam barrier	227.5-227.9	Project No. 6. Northcentral Rock-Fall Mitigation		
57	SB left side - spot and pattern rock bolting (crane basket), attenuators, local anchored mesh, heavy scaling, widen and deepen ditch and protect with weathering thrie beam or concrete barrier	228.2-228.5	Project No. 6. Northcentral Rock-Fall Mitigation		

Proj. No.	Description	Project Limits	Packaged Project No.	Stand-Alone Project	Project Removed from Consideration
58	SB left side – rock lined crown ditch, dress and revegetate slope, widen and deepen ditch and protect with weathering thrie beam barrier (1st stretch); SB right side - deepen ditch and protect with weathering thrie beam barrier	1 - 228.7-229 2 - 228.8-229	Project No. 6. Northcentral Rock-Fall Mitigation		
59	NB both sides – re-grade to eliminate remnant benches, use space to improve ditch configuration both sides	228.9-229	Project No. 6. Northcentral Rock-Fall Mitigation		
60	SB speed feedback sign	229.3	Project No. 5. Northcentral District ITS/Signage Improvements		
61	Reconstruct access ramp	229.5			X
62	Prevent OHV access to SB lanes	230.5		X	
63	Widen SB inside shoulders to 4’	230.8-230.9	Project No. 8 Slate Creek Improvements (MP 226-232)		
64	Address dip in NB roadway	230.5-230.6		X	
65	SB speed feedback sign	231	Project No. 5. Northcentral District ITS/Signage Improvements		
66	NB right side – re-grade with rock-lined interceptor channels and crown ditch, gabions (1st stretch); SB left side – in rock cut deepen ditch and protect with weathering thrie beam barrier, retain paved shoulders; in alluvium construct rock-lined crown and interceptor ditches, gabions as necessary (2nd stretch)	1 - 231.6-231.7 2 - 231.7-232.1	Project No. 6. Northcentral Rock-Fall Mitigation		
67	Widen inside shoulder to 4’ in both directions	231.5-232	Project No. 8 Slate Creek Improvements (MP 226-232)		
68	NB speed feedback sign	232.5	Project No. 5. Northcentral District ITS/Signage Improvements		
69	NB right side – re-grade with rock-lined interceptor channels and crown ditch, gabions	233.3-233.7	Project No. 6. Northcentral Rock-Fall Mitigation		
70/71	Wildlife fencing, signage, and crossing	235-235.9		X	
72	New NB DMS	235	Project No. 5. Northcentral District ITS/Signage Improvements		
73	WB stop sign beacon on SR 188	235.7	Project No. 5. Northcentral District ITS/Signage Improvements		
74	Extend NB acceleration lane to 1300' - SR 188, SB inside accel lane	235.7		X	
75	Evaluate grade separation - SR 188 (BOTH DIRECTIONS)	235.7		X	
76	Rehabilitate rest area	235.7		X	
77	Intersection warning signage – Deer Creek Dr	237.6	Project No. 5. Northcentral District ITS/Signage Improvements		
78	NB LT lane, SB RT lane - Deer Creek Dr	237.6		X	
79/80	Wildlife fencing, signage, and crossing	238-238.9		X	
81	Add SB left-turn lane and NB right-turn lane	239.2			X
82	Address rough bridge transitions	239.4			X
83	Intersection warning signage at Gisela Road	239.5	Project No. 5. Northcentral District ITS/Signage Improvements		
83	NB outside acceleration lane at Gisela Rd.	239.5	Project No. 9. Rye Improvements		
84	NB speed feedback sign	240	Project No. 5. Northcentral District ITS/Signage Improvements		
85	NB left-turn lane, SB right-turn lane, NB inside acceleration lane, and SB outside acceleration lane at Matlock Gas	240	Project No. 9. Rye Improvements		
86	Intersection warning signage at the S. Rye Crossover	240.5	Project No. 5. Northcentral District ITS/Signage Improvements		
87	Right- and left-turn lanes, inside and outside acceleration lanes in both directions at the S. Rye Crossover	240.5	Project No. 9. Rye Improvements		

Proj. No.	Description	Project Limits	Packaged Project No.	Stand-Alone Project	Project Removed from Consideration
88	Intersection warning signage at the N. Rye Crossover	240.9	Project No. 5. Northcentral District ITS/Signage Improvements		
89	SB right-turn lane, NB inside and outside acceleration lanes at the N Rye Crossover	240.9	Project No. 9. Rye Improvements		
90	Address curve superelevation, add concrete barrier	1 - 244.1-244.3 2 - 244.9-245.2	Project No. 11. Southbound Improvements (MP 244-250)		
91	Variable speed limits, with DMS on both ends	241-247	Project No. 5. Northcentral District ITS/Signage Improvements		
92	SB speed feedback sign	241	Project No. 5. Northcentral District ITS/Signage Improvements		
93	Widen NB outside shoulders to 10’	241.1-247.5	Project No. 10. Northbound Improvements (MP241-247.8)		
94	Construct NB climbing lane	244-247.8	Project No. 10. Northbound Improvements (MP241-247.8)		
95	NB and SB RWIS with dynamic warning beacons	244	Project No. 5. Northcentral District ITS/Signage Improvements		
96	SB speed feedback sign	245	Project No. 5. Northcentral District ITS/Signage Improvements		
97	Add superelevation to Corvair Curve, add concrete barrier.	245.8-246.2	Project No. 11. Southbound Improvements (MP 244-250)		
98	Widen SB inside and outside shoulders	246.2-250.9	Project No. 11. Southbound Improvements (MP 244-250)		
99/100	Install wildlife fencing and wildlife warning signage, and add a wildlife crossing overpass	247-249.9	Project No. 12. Roadway Improvements (MP 247-250)		
101	SB speed feedback sign	247	Project No. 5. Northcentral District ITS/Signage Improvements		
102	SB right-turn lane at FR 535	247.8	Project No. 11. Southbound Improvements (MP 244-250)		
103	SB outside acceleration lane at Oxbow Trail	248.4	Project No. 11. Southbound Improvements (MP 244-250)		
103	NB inside acceleration lane at Oxbow Trail	248.4	Project No. 12. Roadway Improvements (MP 247-250)		
104	Realign FR 375B	248.6	Project No. 12. Roadway Improvements (MP 247-250)		
105	Address intersection grade issues at FR 375B	231			X
106	NB right-turn lane at FR 375B	248.6	Project No. 11. Southbound Improvements (MP 244-250)		
107	Add SB guardrail, right side	249-249.9	Project No. 11. Southbound Improvements (MP 244-250)		
108	Realign SB left-turn lane at Gibson Ranch Road	249	Project No. 11. Southbound Improvements (MP 244-250)		
109	NB right-turn lane and outside acceleration lane at Gibson Ranch Road	249	Project No. 12. Roadway Improvements (MP 247-250)		
110	SB speed feedback sign	249.8	Project No. 5. Northcentral District ITS/Signage Improvements		
111	New SB DMS	251	Project No. 5. Northcentral District ITS/Signage Improvements		
112	SB left side – Move slope back 10 ft to widen and deepen ditch, revegetate earth slopes, R&R barrier with single-beam weathering type (1st stretch); SB left side – round crest & layback & widen ditch, protect deepened ditch with weathering single-beam barrier (2nd stretch)	1 - 242.5-244.5 2 - 246.4-246.6	Project No. 6. Northcentral Rock-Fall Mitigation		
113	NB and SB RWIS with dynamic warning beacons	246.3	Project No. 5. Northcentral District ITS/Signage Improvements		

Appendix C: TAC Meeting Notes

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SR 87 Corridor Development Study
Technical Advisory Committee Meeting No. 1 / Kick-off Meeting

Tuesday, September 25, 2018
1:00 pm – 2:00 pm
ADOT Engineering Building
205 S. 17th Avenue
Room 115, Gecko Conference Room
Phoenix, AZ 85007

Attendees

Asad Karim, *Arizona Department of Transportation*
Steve O'Brien, *Arizona Department of Transportation, Sr. Division Administrator, Project Management Group*
Jerry James, *Arizona Department of Transportation, Central District*
Raul Amavisca, *Arizona Department of Transportation, Central District*
Muhammad Saleque, *Arizona Department of Transportation, Traffic Design*
James J. Lemmon, *Arizona Department of Transportation, Geotechnical*
Heidi Yaqub, *Arizona Department of Transportation, Major Project Development*
Yudi Lei, *Arizona Department of Transportation, Transportation Systems Management and Operations*
Michelle Ogburn, *Arizona Department of Transportation, Environmental Planning Group*
Jerry McCoy, *Arizona Department of Transportation, Communications*
Brent Crowther, *Kimley-Horn*
Michael Grandy, *Kimley-Horn*
Allen Hathcock, *Kimley-Horn*
Chris Joannes, *Kimley-Horn*
Taylor Dunkle, *Kimley-Horn*
Yung Koprowski, *Y2K Engineering*
Robert Cummings, *Saguaro Geoservices*

Telephone:
Nate Reisner, *Arizona Department of Transportation, Northcentral District*
Joan Lovell, *Arizona Department of Transportation, Transportation Systems Management and Operations*
Scott Beck, *Arizona Department of Transportation, Transportation Systems Management and Operations*
Lydia Warnick, *Arizona Department of Transportation, Transportation Technology Group*

Meeting Notes

Introduction

Technical Advisory Committee (TAC) members and project team members provided brief introductions and detailed which organization they work for.

B. Crowther began the meeting by discussing the study purpose for the SR 87 Corridor Development Study (CDS).

He stated that the CDS will advance recommendations made in the SR 87 / SR 260 / SR 377 Corridor Profile Study (CPS) completed in March 2017. M. Grandy was the Kimley-Horn project manager for the CPS. While the CPS study area was 200 miles of corridor, the CDS will instead focus on approximately 60 miles of roadway between MP 191 and MP 250. The CDS is comprised of four study tasks as follows: Project

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Management, Initial Scoping Report and Public Meeting Summary Reports, Traffic Analysis, and Feasibility Report.

Group Discussion of Project Focus Areas

B. Crowther led the group through a PowerPoint (attached) and subsequent discussion of initial issues identified for each segment. The corridor is separated into 5 segments.

Segment 1 – Bush Highway Area (MP 191 – MP 213):

- J. Lovell mentioned existing plans for a southbound DMS sign on a butterfly structure at the same location as existing northbound DMS (between MP 191 and 192), but mentioned that the existing northbound structure could be replaced.
- B. Crowther suggested that the concept is for a DMS to be relocated in advance of Bush Highway.
- M. Grandy requested statewide masterplan for DMS; J. Lovell will look for the document.

Segment 2 – Sunflower Area (MP 213 – MP 229):

- R. Cummings stated that he was familiar with some of the cuts along this section. He suggested that the limits of the rock fall areas be expanded to address issues along the segment. Portions of the section between MP 216 and MP 218 were highlighted as an additional rockfall area. NB 214-214.6, MP 216.2-216.3 may need to be added for consideration. He stated that the old northbound alignment has narrow shoulders and rock fall issues.
- R. Cummings continued by suggesting the frequent occurrence of landslides in the area as a potential study issue to be addressed. He mentioned instances of pavement settling by as much as a foot in certain areas.
- J. Lemmon stated that the landslides are a known issue caused by varying rock types and poor soil along the corridor. MP 226.2 was identified as an area of concern due to gravel falling onto the roadway.
- R. Amavisca mentioned that a limited amount of funding for mitigating rock fall issues was to be allocated to the various districts.
- N. Reisner mentioned that efforts have been made between MP 222 and MP 226 to temporarily address rock fall and landslide concerns, but that more permanent intervention is necessary.
- J. Lemmon confirmed that ADOT took material from the Slate Creek area to flatten the slope at MP 224.
- R. Cummings suggested MP 224- MP 226 as a potential study focus area. There are traditional treatments available except for the landslide and this is a monster challenge. How much money will be considered for investment for this known problem?
- M. Grandy – if we focus too much on this aspect, we'll lose sight of the rest of the corridor. Bob and JL agrees. Discussion about whether to exclude this area from project.
- R. Amavisca agreed that the land slide and rock fall issues should be documented fully so that everyone is aware of the issues in this area, but the landslide mitigation will be too complex to mitigate as part of this project.
- N. Reisner – North Central District completed a project referred to as a temporary solution. Slide area is right over Slade Creek where pipe is moving.
- J. Lemmon – project is fix for Slade Creek embankment and slope was flattened.
- R. Amavisca mention that SR 188 has been used as a detour in the past.
- J. Lovell commented that the ADOT Permits Department now limits DMS to side mounts / butterfly only; overheard DMS is no longer allowed so as not to impede the roadway for over-size loads.

- R. Cummings stated the need to look at potential crossover locations as they are currently very limited. May be of concern for DPS as well and opportunities to add more.
- R. Cummings continued by mentioning that fixing shoulder widths in the Slate Creek area is very difficult due to existing site constraints.

Segment 3 – Safety Focus Area (MP 229 – MP 234):

- J. Lemmon – MP extents for segments is described as 229 and 230. Need to clarify extents so there is not a missing one mile.
- B. Crowther asked N. Reisner is he can locate the RSA report for Segment 3.
- N. Reisner stated he is unaware of an RSA in that area, only of an RSA at SR 188.
- R. Cummings stated that a portion of fill in the segment may be in old filler. He asked J. Lemmon if he could locate information on cuts in native or fill materials. J. Lemmon responded he will investigate.

Segment 4 – Rye Area (MP 234 – MP 241):

- B. Crowther commented on the previously identified issue of evaluating the need for a southbound acceleration lane at the SR 188 intersection and expanded that to include the need to extend the northbound acceleration lane.

Segment 5 – Ox Bow Estates/Mazatzal Area (MP 241 – MP 250):

- R. Cummings emphasized the need to address the southbound horizontal curves along the segment, referring to the previously identified issue of reviewing the horizontal curves and superelevation for this segment.
- R. Cummings - Transverse rumble strips and advisory truck roll over sign are suggested.
- A. Hathcock – if shoulders are widened then additional rockfall mitigation may be needed or the slopes cut further back.

B. Crowther transitioned the discussion to additional key stakeholders for the project. R. Amavisca stated that he invited the local maintenance supervisor to the October meeting. Additional stakeholders suggested by the team:

- Maricopa County
- Gila County
- Town of Fountain Hills
- Town of Payson
- Bureau of Land Management
- Salt River Project
- Tonto Apache Nation
- Unincorporated communities along the corridor
- Commercial recreation companies with knowledge of the corridor

J. Lemmon suggested that Arizona Game and Fish Department may have an interest due to the number of wildlife strikes in the study area. He stated there may be the potential for wildlife crossings.

R. Cummings noted that there are commercial four-wheeling companies in the area that may have insight of issues along the corridor.

R. Amavisca mentioned that there is a towing company in Sunflower that may have insight on turnaround locations.

J. McCoy stated that further discussion can be made into the best way to engage private companies and small communities along the route. Gila County may have contacts.

J. Lemmon suggested that casinos at either end of the corridor would be good places to hold public meetings. M. Ogburn suggested that the Gila County Fair in Payson would be a good location to engage the public as well.

J. McCoy stated that a combination of online and in-person engagement opportunities may be necessary.

M. Ogburn stated that she was available to assist with environmental work for the project; she emphasized the necessity of including environmental impacts in the study. Cultural resources and 4F properties would be identified in the Environmental Overview.

R. Cummings stated that past projects in the area have had to pipe water across great distances to avoid impacts to endangered species.

S. Beck noted that there are several recommendations for projects utilizing solar powered speed feedback signs. They have implemented these on I-18 and results have shown very limited impact (about a 1% benefit) compared to the cost of installation and maintenance. He mentioned that with no enforcement there was no impact, and limited shoulder widths along the corridor limit enforcement opportunities as there isn't room for DPS to pull people over.

B. Crowther ended the meeting by discussing the remainder of the project schedule.

The meeting was completed around 2:05 pm.

Next Steps

B. Crowther reviewed next steps. These include initiating contact with the additional stakeholders identified in the meeting and finalizing the Project Management Plan (PMP).

It is anticipated that stakeholder interviews and Public Meeting No. 1 will take place during October and November. TAC Meeting No. 2 will be held in December of 2018 or early 2019.

Attachments

- PowerPoint presentation
- Sign-in sheet

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SR 87 Corridor Development Study
Technical Advisory Committee Meeting No. 2

Wednesday, December 12, 2018
1:00 pm – 2:00 pm
ADOT Engineering Building
205 S. 17th Avenue
Room 117, Arizona Conference Room
Phoenix, AZ 85007

Attendees

Asad Karim, *Arizona Department of Transportation*
Michelle Ogburn, *Arizona Department of Transportation, Environmental Planning Group*
Lydia Warnick, *Arizona Department of Transportation, Transportation Technology Group*
John Wennes, *Arizona Department of Transportation, Multimodal Planning*
Jerry Turner, *Arizona Department of Transportation, Central Distr. Highway Operations Technician Supervisor*
Eunice Chan, *Federal Highway Administration, Project Delivery – Central*
Bob Hazlett, *Maricopa Association of Governments*
Brent Crowther, *Kimley-Horn*
Allen Hathcock, *Kimley-Horn*
Chris Joannes, *Kimley-Horn*
Yung Koprowski, *Y2K Engineering*
Robert Cummings, *Saguaro Geoservices*

Telephone:
Nate Reisner, *Arizona Department of Transportation, Northcentral District*
Raul Amavisca, *Arizona Department of Transportation, Central District*
Charla Glendening, *Arizona Department of Transportation, Multimodal Planning*
Michael Grandy, *Kimley-Horn*

Meeting Notes

Technical Advisory Committee (TAC) members and project team members provided brief introductions and detailed which organization they work for.

B. Crowther led the group through a PowerPoint (attached) and subsequent discussion about progress on the project to date, including the completion of the Initial Scoping Report and stakeholder outreach efforts. Additionally, R. Cummings led the group through a series of photographs documenting geotechnical and rock-fall issues he had identified along the corridor.

Y. Koprowski then led the group through the initial safety analysis she had performed. Discussion regarding the safety analysis included:

- R. Cummings asked if the southbound segment between MP 213 and 214 should be evaluated as a crash hot spot because it appears to have a concentration of crashes in the maps.
  - Y. Koprowski responded that she would evaluate adding that area as an additional hot spot.
- B. Hazlett asked if the team could overlay the crash hot spots with the geotechnical issues to see if there is a correlation between the two.

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  - Y. Koprowski responded that there were not many crashes in the data that indicated that debris in the roadway was the cause, but that further analysis could be performed to see if there was indeed a correlation.
  - J. Turner added that every time there is an appreciable amount of rain his team has to clear debris from the roadway in this segment.
- J. Turner stated that the southbound segment between MP 213 and 214 has a concentration of truck crashes and that he believes the addition of curve chevron signage would help address the safety issue.
  - Y. Koprowski asked if J. Turner could provide any data on the frequency of guardrail strikes in this segment.
    - J. Turner responded that he could provide that information to the team.
- B. Hazlett asked if in most of the motorcycle crashes the rider was wearing a helmet.
  - Y. Koprowski responded that the majority were, but that there were some sever crashes involving motorcycles where the rider was not wearing a helmet.

B. Crowther then took the TAC members through the listing of initial projects compiled by the team to address the identified deficiencies and safety issues. The following is discussion regarding the initial projects:

- A. Hathcock asked if wildlife-involved crashes were being evaluated as part of the safety analysis.
  - Y. Koprowski responded that they were included in the crash data from ADOT.
  - M. Ogburn asked if the team could pull crash data from the elk detection system on SR 260 east of Star Valley to see if it has been effective in reducing wildlife crashes.
    - Y. Koprowski responded that the team would look into that location.
- B. Crowther asked the group if there were additional types of projects that should be evaluated or avoided.
  - J. Turner stated that the deceleration/turn lanes along the corridor work well, but that additional acceleration lanes would be beneficial to reduce crashes.
- B. Crowther asked if there have been any realignment studies performed in the vicinity of Corvair Curve (southbound MP 246) to address the safety issues at that location.
  - N. Reisner stated that he is not aware of any studies, but that it would have been completed under the old Prescott District of ADOT. He added that there was a project assessment completed to evaluate adding concrete barriers to the outside of the curve, but that it never moved past the evaluation phase.
  - N. Reisner asked if anyone has performed a ball-bank test to determine if the appropriate superelevation is present through the curve.
    - B. Crowther stated that he was not aware of any such studies, but that it could be a test that the team performs as part of this study.
- B. Crowther asked if ADOT was able to pull 85th percentile speed statistics from the speed feedback signs on I-17 to determine their effectiveness.
  - ADOT staff was not sure if those statistics could be obtained or not.
- B. Hazlett suggested that locations with concentrations of crashes could be designated as "Safety Corridors".
  - M. Ogburn added that safety corridors have doubled fines for infractions and that there is a zero-tolerance policy for speeding.

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- B. Hazlett stated that adequate locations for enforcement would be needed to make this strategy effective.

B. Crowther ended the meeting by discussing the remainder of the project schedule. He asked the group to provide any additional comments on the Initial Scoping Report by January 4th, 2019.

The meeting was concluded around 2:00 pm.

Next Steps

- Produce the Final Scoping Report
- Complete the Draft Traffic Analysis Report
- The next TAC meeting is estimated to occur in mid-February, 2019

Attachments

- PowerPoint presentation

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SR 87 Corridor Development Study
Technical Advisory Committee Meeting No. 3

Wednesday, February 13, 2019
1:00 pm – 2:00 pm
ADOT Engineering Building
205 S. 17th Avenue
Room 117, Arizona Conference Room
Phoenix, AZ 85007

Attendees

Asad Karim, *Arizona Department of Transportation*
Michelle Ogburn, *Arizona Department of Transportation, Environmental Planning Group*
Jose Rojas, *Arizona Department of Transportation, Central District*
Marcos Espinosa, *Arizona Department of Transportation, Central District*
John Wennes, *Arizona Department of Transportation, Multimodal Planning*
Ali Zareh, *Arizona Department of Transportation, Pavement Design*
Brent Crowther, *Kimley-Horn*
Chris Joannes, *Kimley-Horn*
Yung Koprowski, *Y2K Engineering*
Robert Cummings, *Saguaro Geoservices*

Participating by Teleconference:
Lydia Warnick, *Arizona Department of Transportation, Transportation Technology Group*
Nate Reisner, *Arizona Department of Transportation, Northcentral District*
Steve Orosz, *Arizona Department of Transportation, TSMO - Northern Region Traffic*
Michael Grandy, *Kimley-Horn*
Jennifer Simpkins, *Kimley-Horn*

Meeting Notes

B. Crowther led the group through a PowerPoint (attached) and subsequent discussion about progress on the project to date, including the completion of the Traffic Analysis, Environmental Overview, and Initial Project Packaging document. The traffic analysis portion of the report was discussed first; topics included:

- M. Obgurn asked why the traffic counts collected by Field Data Services of Arizona (FDS) were conducted on a weekday in November.
  - B. Crowther responded that traffic counts are typically collected mid-week (Tuesdays, Wednesdays, and Thursdays). While the team would have preferred to collect counts during the summer, the project schedule dictated a count collection period late in the year.
- B. Cummings asked why the counts at MP 214 were lower than surrounding counts.
  - B. Crowther and C. Joannes responded that there is likely a seasonal influence on the counts collected in November. The counts from ADOT are annualized to account for typical seasonal fluctuations and a similar methodology could be used to annualize the counts collected by FDS.
- S. Orosz asked what growth rate was used to forecast future traffic volume.

- C. Joannes replied that the forecasts were developed based on trendlines from annual counts performed between 1990 and 2018, not a specific growth rate that was applied to the latest count data. However, the annual growth rate could be back-calculated and added to the report.

- Y. Koprowski suggested that the forecasted levels of service be based on weekend volumes rather than weekday volumes as there are higher volumes on weekends than weekdays.
  - B. Crowther responded that an analysis for forecasted weekend volumes can be added to the report.
- S. Orosz asked if a weekend factor could be applied to the counts.
  - B. Crowther responded that data from the continuous count station on the corridor could be used to establish a weekend factor that could be applied to the counts.
- L. Warnick asked if a directional split for Fridays and Sundays could be added to the report.
  - C. Joannes responded that the team had already calculated the directional split and that it could be easily added into the report.

J. Simpkins led the group through the Environmental Overview portion of the document; topics discussed included:

- J. Wennes stated that he believed the environmental portion of the document was very good, but he had some additional comments on future steps of the process:
  - Make sure to double-check vegetation quantities for areas where it comes right up to the edge of the roadway, because that has been an oversight on recent ADOT projects where the environmental impacts end up larger than originally anticipated.
  - ADOT is anticipated to be assuming NEPA approval responsibility for FHWA to streamline the environmental process for transportation projects. There is currently a memorandum of understanding available for public comment regarding this proposal.
  - The Army Corps of Engineers may also give up Section 404 approval responsibility to the Arizona Department of Environmental Quality, which is also intended to streamline the environmental approval process.

C. Joannes led the group through the initial project packaging portion of the document; topics discussed included:

- M. Ogburn asked if the crash analysis period was long enough to capture crash trends along the corridor.
  - Y. Koprowski stated that the five-year analysis period is longer than most crash analyses, so it is highly likely that any existing crash trends would be visible. However, she stated that she would like to back-check the crash concentrations to ensure that all crashes are being considered and not just fatal and serious injury crashes.
- M. Ogburn stated that she would like to see the projects grouped geographically, regardless of cost, rather than by intervention level as proposed by the project team.
  - C. Joannes stated that the projects can be grouped that way, but it may be difficult to define project package limits due to the high number of projects throughout the length of the corridor.
- S. Orosz stated to be careful about removing treatments at specific locations, using intersection warning signage as an example, to make sure that there are consistent treatments throughout the corridor.

- B. Crowther added that there may be some projects that can be treated programmatically across the corridor, such as signage and ITS improvements.

B. Crowther ended the meeting by discussing the remainder of the project schedule. He asked the group to provide any additional comments on the Traffic Analysis, Environmental Overview, and Initial Project Packaging document by February 27th, 2019. He stated that an additional TAC meeting may be added in March to review the changes to the document.

The meeting was concluded around 2:00 pm.

Next Steps

- Update the Traffic Analysis, Environmental Overview, and Initial Project Packaging document based on feedback from the TAC.
- Begin the feasibility analysis of the project packages.
- The next TAC meeting is estimated to occur in mid-March 2019

Attachments

- PowerPoint presentation

Kimley»Horn

SR 87 Corridor Development Study
Technical Advisory Committee Meeting No. 4

Thursday, May 2, 2019
1:00 pm – 2:00 pm
ADOT Engineering Building
205 S. 17th Avenue
Room 117, Arizona Conference Room
Phoenix, AZ 85007

Attendees

Asad Karim, *Arizona Department of Transportation*
Jose Rojas, *Arizona Department of Transportation, Central District*
Jerry James, *Arizona Department of Transportation, Central District*
Raul Amavisca, *Arizona Department of Transportation, Central District*
John Wennes, *Arizona Department of Transportation, Multimodal Planning*
Lydia Warnick, *Arizona Department of Transportation, Transportation Technology Group*
Don Sneed, *Arizona Department of Transportation, Tribal Coordination*
James Lemmon, *Arizona Department of Transportation, Geotechnical*
Brent Crowther, *Kimley-Horn*
Michael Grandy, *Kimley-Horn*
Allen Hathcock, *Kimley-Horn*
Taylor Dunkle, *Kimley-Horn*
Robert Cummings, *Saguaro Geoservices*

Participating by Teleconference:
Jason Bottjen, *Arizona Department of Transportation, Multimodal Planning*
Jennifer Simpkins, *Kimley-Horn*

Meeting Notes

B. Crowther led the group through a PowerPoint (attached) and subsequent discussion about progress on the project to date, including updates from the last TAC meeting, how various projects were packaged together, and the P2P scoring methodology that will be used to rank projects. Discussion topics included:

- B. Crowther summarized the field review of potential projects that took place on March 5, 2019. During the field review projects were evaluated for overall feasibility and potential impacts to cost estimates were determined.
- The geotechnical projects are still under review at the time of this meeting. The rockfall hazard rating system was recently acquired and R. Cummings is in the process rating the geotechnical-focused projects, determining appropriate countermeasures, and establishing planning-level costs.
- B. Crowther summarized how identified projects were grouped together. Seven focus areas, split by mile posts (MP), were identified based on geographic clustering of projects which were subsequently assembled to form larger, grouped projects. B. Crowther then went through each of the seven grouped projects and the following items were discussed:
    - Project 1: NB MP 212-217
        - The main component of this project is the northbound climbing lane.

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        - L. Warnick commented that ADOT Transportation Technology Group wants fiber/conduit included in all project packages.
        - B. Crowther mentioned that speed feedback signs were still included within the projects and inquired on opinion of the ADOT Transportation Technology Group wants on those as potential projects.
            - L. Warnick responded that Traffic Operations and Safety groups are better equipped to discuss the inclusion of speed feedback signs within the projects.
        - B. Cummings asked if the climbing lane cost is inclusive of addressing rockfall issues due to widening the roadway to accommodate the climbing lane. Rockfall mitigation would be grouped in with the climbing lane if a new slope needs to be cut.
            - B. Crowther suggested leaving rockfall mitigation as a separate component, in case that piece is chosen to move forward, and the climbing lane is not.
            - A. Hathcock suggested coordination moving forward, identifying a correct cost for rockfall mitigation and stating that the rockfall would be mitigated with the climbing lane component.
    - Project 2: NB MP 218.5-223
        - The major components of this project is a climbing lane and widening. The climbing lane component includes the widening of the two bridges, Whiskey Springs bridge and Kitty Joe Creek bridge.
        - It was mentioned that Whiskey Springs bridge needs foundation improvements regardless of widening.
    - Project 3: MP 224.5-229
        - The major component of this project is shoulder widening.
        - J. Lemmon noticed a typo in the project 3 exhibit. MP was incorrectly listed as 214.5-229, the correct MP is 224.5-229. B. Crowther responded that the typo would be corrected.
        - A. Hathcock commented that often there are barriers are on the inside of this segment, so cost is inclusive of widening the outside and shifting the striping as part of widening the inside shoulders.
        - B. Cummings asked if slope modification was included in the pricing of widening to the outside.
            - A. Hathcock responded that the widening estimate was determined by the site visit, he will go back and revisit the opinion of probable cost to confirm.
    - Project 4: MP 239-241
        - The major components of this project are the left and right turn lanes at Matlock Gas and S. Rye Crossover.
    - Project 5: MP 241-246
        - The main components of this project are addressing the superelevation on the southbound lanes and a northbound climbing lane.
    - Project 6: MP 246-251
        - The major component of this project is widening the southbound shoulders.
        - A question was asked if the estimated costs including right-of-way acquisition.

- B. Crowther and A. Hathcock responded that they were unaware of any right-of-way concerns in this area.

▪ J. Wennes commented that a tree removal project is scheduled for FY 2022 within the limits of this project. This project may coincide with the wildlife fencing, warning signage, and crossing included as part of this project.

o Project 7: Corvair Curve

▪ The purpose the realignment options identified for Corvair Curve was to address the crashes in the area.

▪ A. Hathcock highlighted the two main alternatives identified. The first alternative is straightening the southbound alignment between existing MP 244 and 248. The second alternative is to widen the northbound alignment so both north and southbound follow the same alignment.

- A. Hathcock described limitations of the alternative to straighten the alignment between MP 244 and 248. With the topography of the proposed alignment, and the fact that the second alternative would tie in at max 6% grade at both ends, the alignment would require tunneling, which was deemed infeasible.
- A. Hathcock then discussed the other alternative to realign the southbound lanes to parallel the northbound lanes. This would require 325,000 CY of borrow and would cost $30-40 million to construct.
  - o B. Cummings asked if widening would happen on one side or from the center.
  - o A. Hathcock responded that widening will occur primarily to the west.
  - o B. Cummings raised concerns from the type of cut material in this area, stating the closer to Payson the more rock there is.
  - o It was brought up that project 5 includes a northbound climbing lane that is separate from the cost of this project.
  - o B. Cummings asked who owns the land adjacent to this project.
  - o B. Crowther responded that USFS owns the land in this area.
  - o M. Grandy stated that project 5 includes improvements to the Corvair curve, which may not be necessary with realignment.
  - o A. Hathcock stated that the profile exhibit shown includes guardrail, which was assumed cheaper than more cut for a wider median.

▪ B. Crowther asked if the project team wanted to move forward with the option 2 (widening the northbound alignment) and agree that option 1 (straightening the southbound alignment) is infeasible.

- M. Grandy suggested making the Corvair curve improvements from project 5 as a second alternative, eliminating the current option 2.
- A. Hathcock suggests making a statement in the final report as to why option 2 was not feasible.

▪ B. Crowther inquired about past effectiveness of improvements in this area.

- R. Amavisca requested that proposed alternatives be compared with signage and rumble strips.

▪ R. Amavisca suggested concrete barrier to improve the suggested alternative.

▪ A. Hathcock suggested looking at the types of crashes to determine the need for the various proposed alignments.

▪ It was mentioned that snow plows operate in the area, which may be why there is no concrete barrier.

- B. Crowther transitioned the conversation to discussing the P2P scoring methodology; the current method being used to score projects statewide. He stated that the team is considering applying the technical score and safety score portion of the P2P scoring process to prioritize SR 87 projects. He highlighted that the P2P technical scoring groups methodology has been obtained for bridge and geohazard groups. Safety, rest area, pavement, and environmental methodology is still needed.
  - o The group suggested the following contacts to obtain the methodology:
    - ▪ Rest area – Robert Wheeler
    - ▪ Pavement – Yongki Li and Mafiz Mian
    - ▪ Safety – Kerry Wilcoxon
  - o J. Lemmon stated that scoring 100 projects is a lot of work and focus should be given to the 7 large projects identified.
  - o L. Warnick questioned if priorities were established in the Corridor Profile Study.
  - o B. Crowther clarified that Kimley-Horn would apply the P2P methodology and is seeking methodology from the groups, and not for them to score the projects in response to questions about ADOT's availability to score the SR 87 projects.
  - o R. Cummings wants to clarify if scoring is prioritizing projects within the project or statewide.
    - ▪ B. Crowther states that P2P scoring will accomplish both.
  - o A. Karim suggested listing projects by area and scoring larger area projects.
    - ▪ B. Crowther stated this would be scoring the 7 larger projects identified.
  - o R. Amavisca states that the methodology should be what Charla Glendening requires for ranking of projects, whether this be the Corridor Profile Study ranking or P2P scoring.
- A. Karim to coordinate a meeting to discuss prioritization methodology with D. Gabiou and C. Glendening.

The meeting was concluded around 2:00 pm.

Next Steps

- Meeting to finalize scoring methodology.
- Meeting with Northcentral District.
- Meeting with Central District.
- Refine and rank projects using scoring methodology identified.

Attachments

- PowerPoint presentation

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SR 87 Corridor Development Study
Technical Advisory Committee Meeting No. 5

Tuesday, August 27, 2019
1:00 pm – 2:00 pm
ADOT Engineering Building
205 S. 17th Avenue
Room 117, Arizona Conference Room
Phoenix, AZ 85007

Attendees

Asad Karim, *Arizona Department of Transportation*
Jose Rojas, *Arizona Department of Transportation, Central District*
John Wennes, *Arizona Department of Transportation, Multimodal Planning*
James Lemmon, *Arizona Department of Transportation, Geotechnical*
Eunice Chan, *Federal Highway Administration*
Brent Crowther, *Kimley-Horn*
Michael Grandy, *Kimley-Horn*
Chris Joannes, *Kimley-Horn*
Robert Cummings, *Saguaro GeoServices*
Yung Koprowski, *Y2K Engineering*

Participating by Teleconference:
Jennifer Simpkins, *Kimley-Horn*

Meeting Notes

B. Crowther led the group through a PowerPoint (attached) and subsequent discussion about progress on the project to date, including updates from the last TAC meeting, project packaging, and results from the project prioritization methodologies. Discussion topics included:

- J. Rojas asked if conduit costs were included in the project cost estimates.
  - B. Crowther and C. Joannes responded that conduit costs were not included with all projects because it was deemed infeasible to construct conduit with all projects.
- J. Lemmon stated that he had performed a relatively in-depth review of the rock-fall mitigation projects and that he generally agreed with the results and project packaging. He also stated that he noticed one of the project packages includes a wildlife overpass, but that ADOT has had limited success in identifying funding for such projects.
  - J. Wennes added that ADOT MPD would be coming out with an RFP in the near future which would address wildlife crashes statewide and identify funding opportunities for wildlife crossing enhancements. He stated that America's Transportation Infrastructure Act (ATIA) has identified approximately $250M in wildlife funding.
- J. Lemmon stated that the slopes around MP 226.1 has a high potential for debris to roll into the roadway. He also stated that it may be difficult to fund the larger rock-fall project packages at once because some locations are much more critical than others. He recommended an approach of securing funding for the high-priority rock-fall locations individually.
- R. Cummings noticed that Project #52 is already included within the milepost limits of Project #51 and should be removed.

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  - C. Joannes stated that the justification for removing Project #52 would be amended to state that.
- R. Cummings stated that the rankings are inconsistent between the Project Prioritization and Implementation sections.
  - C. Joannes stated that the order of the projects in the table in the Implementation section would be corrected.
- Y. Koprowski stated that MAG is implementing additional funding for ITS safety improvements, which could be added to the Implementation chapter of the report as an additional funding source for the Central District ITS/Signage Improvement project package.
- While discussing the proposed public engagement plan, Y. Koprowski suggested Nextdoor as another potential media outlet through which to promote the public survey.
- While discussing the preliminary roadway plans, R. Cummings asked if there was a way to include cut lines on the slopes to evaluate the level of earthwork required for roadway projects that will impact rock-fall mitigation locations.
  - B. Crowther responded that the budget and time allowed on this project could only support plan-view drawings; no survey has been completed so it is not possible to determine cut lines with any sort of accuracy.
- R. Cummings suggested reaching out to the National Parks Service to inquire about any rock-fall mitigation strategies that would not be acceptable to the Tonto National Forest for aesthetic reasons.
  - C. Joannes stated that he would reach out to NPS.
- A. Karim asked if the project packages are ready to be submitted into the P2P process during the next round of scoring.
  - B. Crowther stated that pre-scoping forms have been competed for all 12 packaged projects.

The meeting was concluded around 2:00 pm.

Next Steps

- Finalize the Feasibility Report based on the feedback from the TAC meeting and additional comments from the TAC upon further review of the draft report.

Attachments

- PowerPoint presentation

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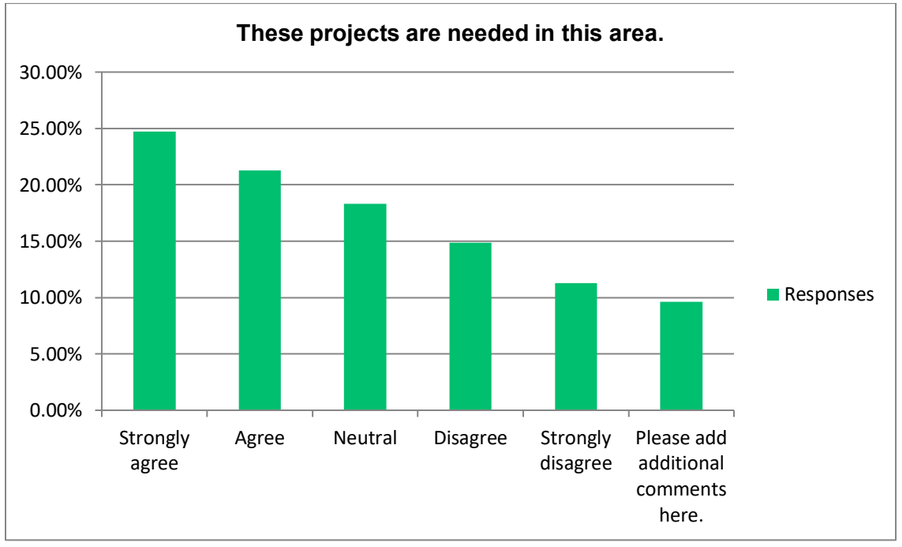
Appendix D: Public Survey Responses

Responses to Question 1 - Project Package 1: ADOT Central District Intelligent Transportation System and Signage Improvements from MP 191 (near Ft McDowell Road) to MP 218 (Sunflower)

These projects are needed in this area.

Answer Choices	Responses	
Strongly agree	25%	193
Agree	21%	166
Neutral	18%	143
Disagree	15%	116
Strongly disagree	11%	88
Please add additional comments here.	10%	75
	Answered	**781**
	Skipped	**33**



Additional Comments
Open rest stop!
People know how fast they're going. We don't need to spend thousands of dollars telling them how fast they are going.
This us waste of money
I drive this road frequently and find it quite safe as it is
Spend my money and your time coming up with a loop around Payson first! I've been driving 87 to 290 since 1987. You have ignored this problem and it is getting worse each year. You are strangling the economies of the White Mnts. Are you ignorant?
Most people don't reads sign so how is this supposed to make the road safer?
Hb
Speed feedback signs seem unnecessary
Put in a bypass around Payson connecting SR87 to SR260 w/o going thru Payson. Save lives.
Disagree - why is #2 $50K and #5 is $12K for the same thing?
MCDOWELL road intersection needs warning lights that when flashing the lights will be changing. The speed signs should be lower when approaching these intersections. Too many times we see semis blow through these intersections with no intention of slowing down as they approach. Turn arrows don't give you enough time to make a turn especially when pulling a camper.
Better roads and less signs.
Top priority should be to reopen rest area
Crossover to Blue Coyote on marker 197. Prohibited air brakes starting at private land on 87
All A Waste of Money. The Dynamic message sign is a waste of money for Southbound traffic. Period. Northbound around Shay to notify accidents between Shay and Payson would be more practical.
The roads need resurfacing
Yes, this must be widened and improved. Our population is growing fast in AZ.
The Beeline isn't used enough to spend 520k dollars. every time i go up to Payson I pass no more than 20 cars, weekends or weekdays
The dynamic feedback sign might be good depending on the location, and the information it displays, but I know the speed I am driving, I don't need a sign to tell me.
If people would drive the speed limit, many of the accidents happening on the 87 would be eliminated. It's not this stretch of road, it's the drivers.
Save our money for bypass 1p0th
Why doesn't DPS just enforce the speed laws? People are driving 90+ on that road with trailers ALL THE TIME. I am tired of being tailgated because I am riding (motorcycle) the speed limit. Even if they park a marked car near the roadway once in a while so it looks like there is an officer watching.
Instead of speed feedback signs, use money to hire more DPS officers and patrol the area.
This money should be spent on improving the roadway not the signage, the current signage is fine
I think the road should be main concern. It is getting pretty bad. It used to be a very smooth highway.
enforce speed limits.
Item 1 is needed. Items 2,5 & 11 may be helpful. Speed feedback signs are a waste. Drivers routinely ignore them.
Speed feedback signage is a waste of money.
Southbound Sundays need speed enforcement. Tailgaters doing 20 mph over are common
You don't need to spend money on survey this has been needed for years
Just the dynamic sign is needed.
This section has had more attention than some others through the years, concentrate elsewhere!
Hwy 64 Williams to Grand Canyon needs this money more
Overpasses are needed across the highway to enter and exit the Road to Roosevelt Lake. That is an awfully dangerous was to cross a major highway.
I am not sure of the value of speed feedback signs

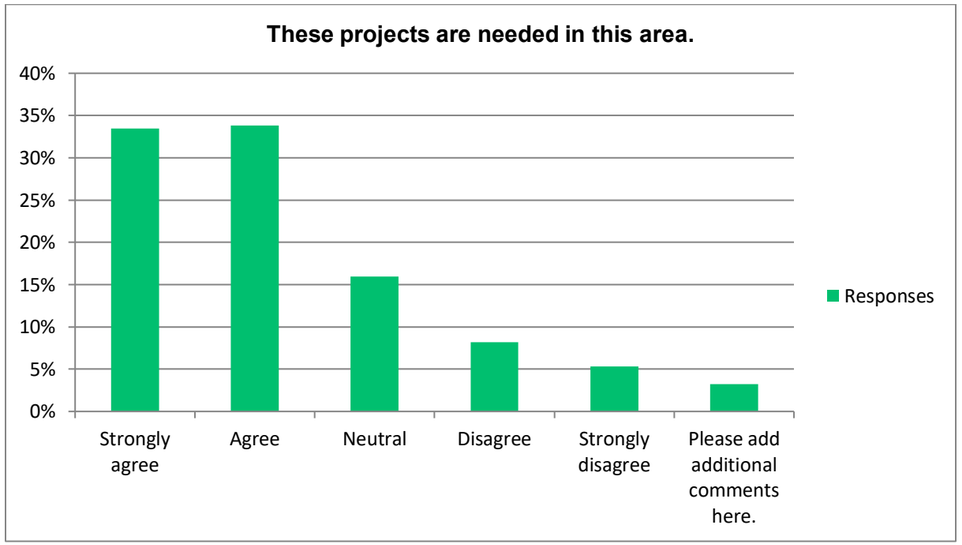
Additional Comments
make 87 bypass Payson and connect with 260 east of star valley.....
Over pass at ft McDowell
The traffic signal in fountain hills, last one heading north should be balanced to be Doreen more for the 87. Frequently red w minimums cross traffic.
Speed feedback signs are a colossal waste of taxpayer money.
You can't fix stupid! How about finishing Hwy 260! Lion Springs section it has been almost 20 years!
Money better spent on Sr-250 between Payson and Heber.
As a Native AZ who has been traveling this road to and from Heber (cabin) since back in the early 80s I don't see a bunch of speed feedback signs as the answer. All it seems to do is cause surges in traffic from people braking and speeding back up. Which enrages the people that just want to go by causing them to become more anxious and make more perilous maneuvers. The problem has always been separating the slower traffic from the faster. More signs with slower traffic keep right and actual enforcement or different speeds for each lane to differentiate?
Before funding these projects ADOT should add overpasses at the 87 interchanges with Shea, E Toh Vee Circle, and Fort McDowell Rd to allow north and southbound 87 traffic to flow without interruption and stop lights. Should be similar to 87 and Bush Highway interchange
Signage is ok, but does not fix road quality, blockages and traffic during emergencies or weather. Maybe signs are a good option AFTER roads are improved.
How about spending money fixing the roads in the rest of the state? AZ95 is in horrible shape from Bullhead City all the way down to Quartzite. Some of the cracks in the surface make driving dangerous.
Need a Payson bypass route
Use the $$$ on I-17 instead you idiots!
Add more Lane's
Unnecessary money should be spent elsewhere
Fix the negative camber on the road
Need a bypass of Payson from 87 to 260. Also pave the young road for a secondary way to high country.
Sounds like signage overkill. Agree with curve chevrons and DMS.
repave the road, install barriers and guard rails and lighting
Strongly agree, but place DMS after Bush Hwy on ramp to get full benefits of commuters going to Payson
I think a digital road hazard sign is the only thing need, SB.
Need more speed feedback signs.
Would like to see a Payson bypass to the East from 87 to 260 HWYs
Maintaining the roadway is a far better use of these funds than speed feedback signage. People can see how fast they're going by looking at their speedometer.
We need additional lanes, not expensive signs
Signage doesn't always impact the dangers and stupidity of other drivers.
Why have this great 4 lane Hwy to Payson & a GIANT BOTTLENECK when it hits the town?? All the planning effort & funds should be used to alleviate the absolutely horrible traffic jams south & east of Payson. It's no longer just holiday weekends. Now it's EVERY weekend. It's so disturbing for pass through traffic to the Rim AND local traffic. You should try it some weekend & see for yourselves. Traffic stopped below Oxbow Hill to the south (Friday's) & backed up to Star Valley on the east Sundays. PLEASE HELP US!
Disagree. I drive this route daily and never encounter problems in this area that would be mitigated by these measures.
ADOT should consult the Troopers who patrol this area. Identify the real problem areas.
Speed enforcement
Widen the road vs signs
Seems like a massive waste of money
This type of signage doesn't work

Additional Comments
it seems a free for all for drivers to go as fast as they possibly can on this road heading to phoenix probably more so than sunset point which gets all the attn. anything to slow down the traffic is good
You need to move slower vehicles out of the inside or left lane if you did that there would be no issues on Highway 87
repair / reopen the rest area!
Don't believe signage would help traffic flow or accidents
These projects will not solve the real problem which is a needed bypass of the Payson area connecting SR87 with SR260 via a town by-pass. Ignore all the Payson fast food companies that will complain.
Speed Feedback signs not needed
Above any improvements, I've noticed too many vehicles excessively speeding causing unsafe conditions for themselves and other motorist. Speed feedback signage may improve.
Is there evidence that feedback signs work in the long-run? They are an ugly distraction. Lighting may affect wildlife and detract from the lovely scenery. Let's keep the area as rural as possible. People who are going to speed will do so regardless of signs while the rest of us pay the price.

Responses to Question 2 - Project Package No. 2: ADOT Central District Shoulder Improvements (MP 196 -211)

These projects are needed in this area.

Answer Choices	Responses	
Strongly agree	33%	258
Agree	34%	261
Neutral	16%	123
Disagree	8%	63
Strongly disagree	5%	41
Please add additional comments here.	3%	25
	Answered	**771**
	Skipped	**43**

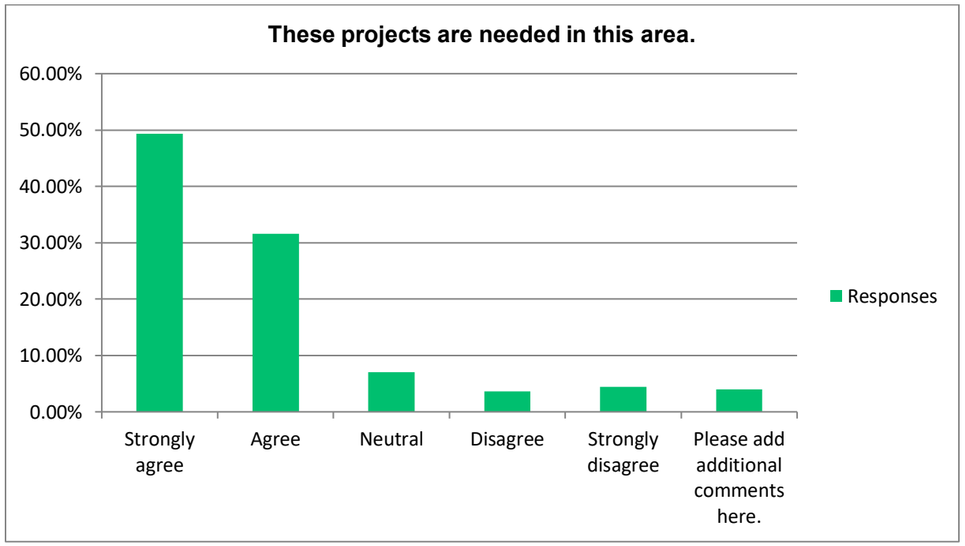


Additional Comments
Spend my money and your time coming up with a loop around Payson first! I've been driving 87 to 290 since 1987. You have ignored this problem and it is getting worse each year. You are strangling the economies of the White Mnts. Are you ignorant?
The drivability of the road seems adequate. If the improvements are needed for road preservation, I would be agreeable.
Crossover mile marker 197 to Blue Coyote Trail. P
I do not drive on the road past Bush HWY, so I don't know about #1,2. Not sure what you are trying to accomplish with #3 to 4. The road could use an additional lane from the Bush HWY to the Lake due to recreation traffic, but mearly widening is not going to accomplish much except giving people additional places to park along the road.
Save our money for 260 bypass.
I'm not in favor of widening any lanes on the road. It will take more away from the scenery
rooms for towing of trailers that overheat is needed on shoulders
Just do it
Hwy 64 Williams to Grand Canyon needs this money more
Lion Springs rd. can't even get a turn lane on a two lane road!
Again, as with the signs, shoulders are helpful and may assist in certain emergency situations but for the typical driver the actual usable areas of the roadway are key improvements. This road is CONSISTANTLY closed in winter due to road conditions that have little to do with signs or shoulders. Possibly if shoulders aid in snow removal area.
How about spending money fixing the roads in the rest of the state? AZ95 is in horrible shape from Bullhead City all the way down to Quartzite. Some of the cracks in the surface make driving dangerous.
Widen shoulders agree. Not as much on other items
Use the $$$ on I-17 instead you idiots!
Unwarranted money should be in town on
repave the road, install barriers and guard rails and lighting
I completely agree that maintaining the infrastructure is critical. Outside shoulders are currently sufficient
need lanes not better shoulders
You need to spend the money improving the narrow and dangerous road between Payson and Pine!
Speed enforcement
Other projects are more urgent.
Number five should be widen to over 8 feet.
repair / reopen the rest area!
These projects will not solve the real problem which is a needed bypass of the Payson area connecting SR87 with SR260 via a town by-pass. Ignore all the Payson fast food companies that will complain

Responses to Question 3 on Project Package 3: Northbound Improvements, MP 212-218

These projects are needed in this area

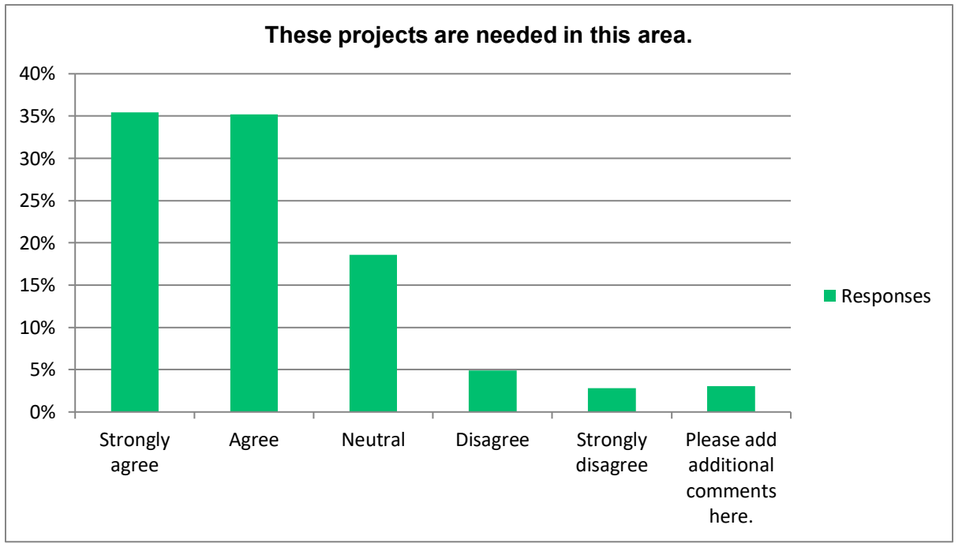
Answer Choices	Responses	
Strongly agree	49%	385
Agree	32%	247
Neutral	7%	55
Disagree	4%	28
Strongly disagree	4%	35
Please add additional comments here.	4%	31
	Answered	**781**
	Skipped	**33**



Additional Comments
Who the heck uses Log Coral Wash that we need to spend $2 million+ to give access to it?
This would improve safety
Spend my money and your time coming up with a loop around Payson first! I've been driving 87 to 290 since 1987. You have ignored this problem and it is getting worse each year. You are strangling the economies of the White Mnts. Are you ignorant?
I rarely go up at peak times and do not usually encounter traffic I cannot pass in the left lane. However, if peak volumes warrant I could see the benefit (plus there are tons of impatient drivers...)
Crossover to Blue Coyote Trail in mark
The climbing lane is very much needed. The turning lanes there isn't that much traffic. Maybe you have data that I don't see, but I have not had an issue except where the recreational traffic goes to parking lot.
Save our money for 260 bypass.
N/A
NB climbing lane is needed
Definitely needed!
Hwy 64 Williams to Grand Canyon needs this money more
Build an overpass
Climbing lane here would be very beneficial
How about spending money fixing the roads in the rest of the state? AZ95 is in horrible shape from Bullhead City all the way down to Quartzite. Some of the cracks in the surface make driving dangerous.
No need for a climbing lane. Other improvements maybe
Use the $$$ on I-17 instead you idiots!
Add more Lanes if it
repave the road, install barriers and guard rails and lighting
Climbing lanes are a great idea. The rest in not really needed.
As I like to call this section the "sling shot"... Anything that can be done to widen and straighten the route is appreciated.
There's no reason to add a turn lane it to 17 if there's one at 2:18 less than a mile away that's wasting our tax dollars when we can use it somewhere else that really needs it
again, nice not need
See comments above. Payson bottleneck is the worst! Semis cutting through on 87 & 260 to connect to the 40..driving 40-45 mph right through town!
I patrol this area every shift for DPS. It is in need of serious help.
Speed enforcement
Number one should be widen to over 8 feet.
repair / reopen the rest area!
These projects will not solve the real problem which is a needed bypass of the Payson area connecting SR87 with SR260 via a town by-pass. Ignore all the Payson fast food companies that will complain
Due to the large number of breakdowns climbing this mountain this is needed.

Responses to Question 4 on Project Package 4: ADOT Central District Rockfall Mitigation (MP 213-218)

These projects are needed in this area.		
Answer Choices	Responses	
Strongly agree	35%	276
Agree	35%	274
Neutral	19%	145
Disagree	5%	38
Strongly disagree	3%	22
Please add additional comments here.	3%	24
	Answered	**779**
	Skipped	**35**

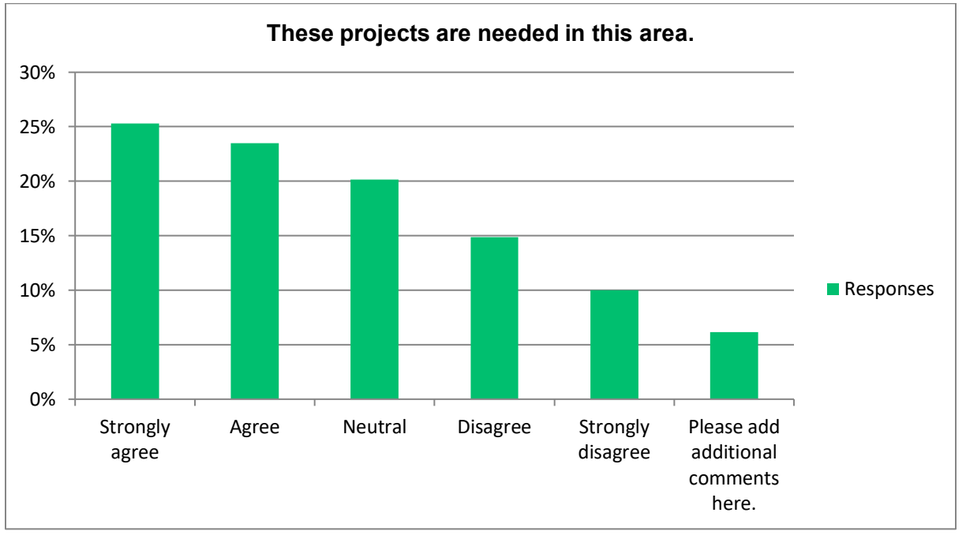


Additional comments
Spend my money and your time coming up with a loop around Payson first! I've been driving 87 to 290 since 1987. You have ignored this problem and it is getting worse each year. You are strangling the economies of the White Mnts. Are you ignorant?
No
Yes! I always see evidence of previous rockfalls lying on the shoulders every drive to and from Payson to Mesa.
I have not seen that rocks are a problem in this area.
Save our money for 260 bypass.
Hwy 64 Williams to Grand Canyon needs this money more
You need to widen or at least put guard rails between Payson and Strawberry for winter travelers
The danger from falling rocks, big and small, in this area is a real concern especially following wet weather, snow and heaving soil following freezing temperatures. I would put this at the top of my concern list. Signage about this hazard should also be considered.
They need to put an overpass.
Money better spent on SR/260 between Payson and Heber. I'm
Strongly agree. Rockfall is dangerous and consistently an issue on the 87.
How about spending money fixing the roads in the rest of the state? AZ95 is in horrible shape from Bullhead City all the way down to Quartzite. Some of the cracks in the surface make driving dangerous.
Try to straighten out the curves
I drive this road quite frequently and do not see any
Rockfall mitigation should be ongoing. Anytime its raining, someone should be out there looking for raveling, toe-heave, etc.
repave the road, install barriers and guard rails and lighting
Too costly - zero this one out.
Real bad during rain.
Speed enforcement
open the damn rest area we paid for
SB left side 215 to 216
repair / reopen the rest area!
These projects will not solve the real problem which is a needed bypass of the Payson area connecting SR87 with SR260 via a town by-pass. Ignore all the Payson fast food companies that will complain
If needed then it should be done. Public couldn't possibly know if needed

Responses to Question 5 on Project Package 5: ADOT Northcentral District Intelligent Transportation System / Signage Improvements (MP 218-251)

These projects are needed in this area.

Answer Choices	Responses	
Strongly agree	25%	197
Agree	23%	183
Neutral	20%	157
Disagree	15%	116
Strongly disagree	10%	78
Please add additional comments here.	6%	48
	Answered	**779**
	Skipped	**35**

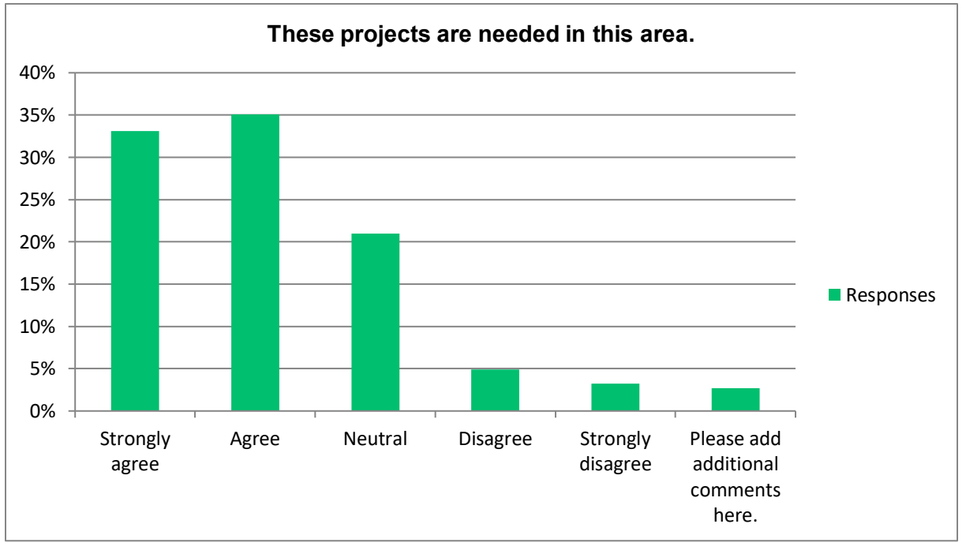


Additional Comments
Speed feedback signs are not needed and a waste of money. Allocation of those fund would be better assigned to other projects.
Thank you for not bothering to tell us what DMS means.
Turn lane at 240.9 to get on the Westside frontage road
Build bypass around Payson to SR 260 East bound.
Less signs just simple pavement improvements
All A Waste of Money
AZ's population is growing fast. We desperately need roads improvement.
The biggest problem in this section is accidents. The current procedure is to close either NB or SB traffic for fatalities without notification until you reach Payson. The next biggest is holiday traffic overcomes the capacity which this system would allow for notifications of if a person knew where to look.
I strongly agree. I would also like to see the additional signage at Gibson Ranch Road.
Save our money for 260 bypass.
Instead of speed feedback, hire more DPS officers and patrol area.
Some needed, not all
Repave 230 -213 right lane, very rough
I'm not sure the feedback signs are necessary.
better help the flow of traffic
No
A Grade separated interchange needs to be built at SR-188.
Weather signs and accident messaging are helpful. Speed feedback, especially so many of them are wasteful & generally ignored by motorists.
Gibson Ranch Road MM 249 needs deceleration & acceleration lane
Speed feedback signage is a waste of money.
Open existing rest area. This is the biggest need here. Trash everywhere, people use area around a restroom anyways.
Overall traffic has increased ten-fold in the years I've lived here - 30 yrs. We need a bypass around Payson desperately!
Please consider signs that enforce 28-721, driving on the right side of roadway. Not doing so (same speed in the left-hand lane) holds up traffic, especially during holiday weekends.
Hwy 64 Williams to Grand Canyon needs this money more
I am not sure of the value of speed feedback sighs
SB Speed Feedback Signs Seem Excessive
Bypass around Payson intersecting Hwy 260
Spend money in restore located in Sr-188 at SR-87.
Agree with the signage in Rye and to Gisela. But not with the speed feedback signs.
Signage is ok, but does not fix road quality, blockages and traffic during emergencies or weather. Maybe signs are a good option AFTER roads are improved.
How about spending money fixing the roads in the rest of the state? AZ95 is in horrible shape from Bullhead City all the way down to Quartzite. Some of the cracks in the surface make driving dangerous.
Straighten out the curves add more Lanes
It would be more reasonable to have officers randomly assigned here
Sign overkill. Agree with DMS
repave the road, install barriers and guard rails and lighting
too costly.
Agreed but people don't obey the limit anyway

Additional Comments
See above comments, please.
Disagree. This area does not experience problems that would be mitigated by these measures.
Speed limits are too high in some of these areas.
Speed enforcement
Fix the roads first
repair / reopen the rest area!
Many wildlife - vehicle conflicts in this area should be addressed through these and possible other projects
These projects will not solve the real problem which is a needed bypass of the Payson area connecting SR87 with SR260 via a town by-pass. Ignore all the Payson fast food companies that will complain
Again, larger speed limit signage and patrol would be good
Drivers not from the area do not understand the danger of the S curves.
If the wrong way signs are in Rye, then YES YES YES!!! I'm tired of the drunks leaving the bar and heading south on the NB side. Happens more often than reported because they figure it out and cross the median.

Responses to Question 6 on Project Package 6: ADOT Northcentral District Rock-Fall Mitigation (MP 222-247)

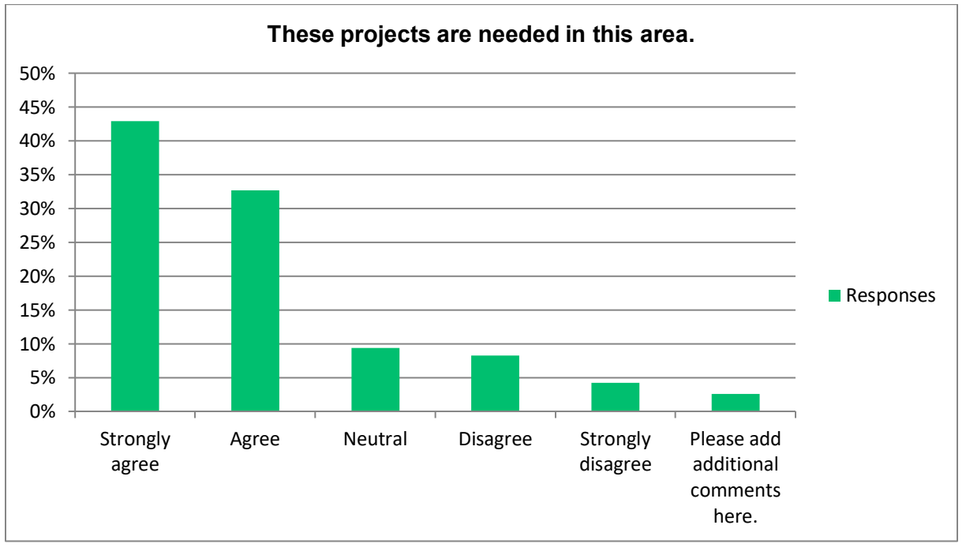
These projects are needed in this area.		
Answer Choices	Responses	
Strongly agree	33%	256
Agree	35%	271
Neutral	21%	162
Disagree	5%	38
Strongly disagree	3%	25
Please add additional comments here.	3%	21
	Answered	**773**
	Skipped	**41**



Additional Comments
This have been worked on for last 20 years
Who pays for this?
Spend my money and your time coming up with a loop around Payson first! I've been driving 87 to 290 since 1987. You have ignored this problem and it is getting worse each year. You are strangling the economies of the White Mnts. Are you ignorant?
I have not experienced problems with the road next to Payson, However Mt. Ord has had some work in the past, but still needs some more.
Save our money for 260 bypass.
Open rest stop @ SR188!! Add Electric Vehicle charging station.
Hwy 64 Williams to Grand Canyon needs this money more
Refer to previous rock fall comment.
Money would be better spent on SR-260 between Payson and Heber.
Strongly agree. Rockfall is consistently a dangerous issue on the 87.
How about spending money fixing the roads in the rest of the state? AZ95 is in horrible shape from Bullhead City all the way down to Quartzite. Some of the cracks in the surface make driving dangerous.
Unwarranted- I drive it often and don't see this as an issue
Should be ongoing.
repave the road, install barriers and guard rails and lighting
Way too much. Rather have climbing lanes and digital signage for weather and road conditions.
I'm always having to pull boulders from roadway during and after rain storms.
Speed enforcement
SB right side rockfall mitigation 229 to 225
repair / reopen the rest area!
These projects will not solve the real problem which is a needed bypass of the Payson area connecting SR87 with SR260 via a town by-pass. Ignore all the Payson fast food companies that will complain
falling rocks are not the major safety concern here. Save you money for the important stuff.

Responses to Question 7 on Project Package 7: Northbound Roadway Improvements (MP 218-226)

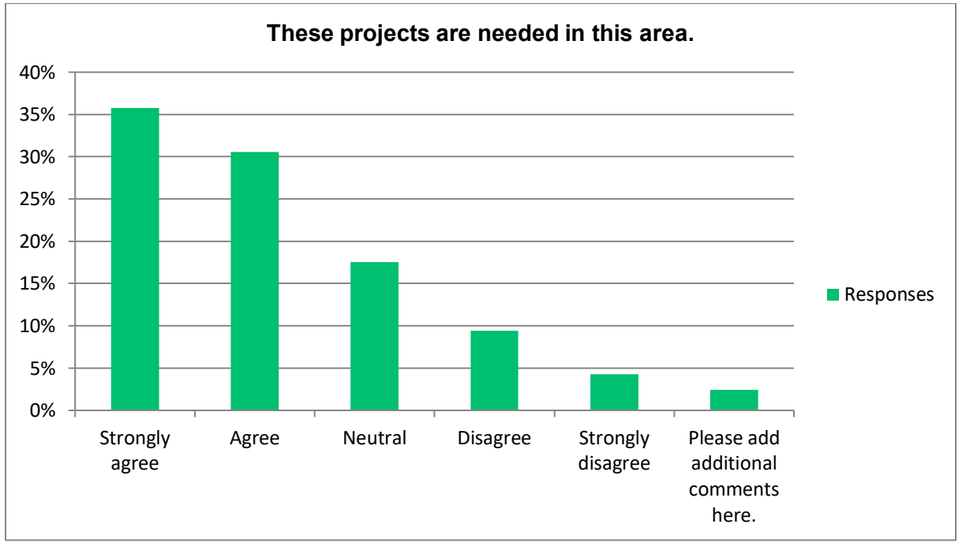
These projects are needed in this area.		
Answer Choices	Responses	
Strongly agree	43%	334
Agree	33%	254
Neutral	9%	73
Disagree	8%	64
Strongly disagree	4%	33
Please add additional comments here.	3%	20
	Answered	**778**
	Skipped	**36**



Additional comments
Spend my money and your time coming up with a loop around Payson first! I've been driving 87 to 290 since 1987. You have ignored this problem and it is getting worse each year. You are strangling the economies of the White Mnts. Are you ignorant?
Save our money for 260 bypass.
Waste of money. Way too costly for the benefit. There is no problem to solve
Some needed, not all
I wasn't aware that the bridges needed widening.
Bridge widening need is questionable
Hwy 64 Williams to Grand Canyon needs this money more
More people will come to the rim country and Hwy 260 will be even more dangerous in the Lion Springs section. Finish what you started!
Option #4 needed, options #5 & 6 unnecessary
How about spending money fixing the roads in the rest of the state? AZ95 is in horrible shape from Bullhead City all the way down to Quartzite. Some of the cracks in the surface make driving dangerous.
Widening does not need to occur- mi st should be spent elsewhere on the ADOT system
repave the road, install barriers and guard rails and lighting
I like the climbing lane. The rest really is not needed.
I strongly disagree. Fix the road between Payson and Pine. It is extremely dangerous!!!
Speed enforcement
Number three should be widen to over 8 feet for inside.
repair / reopen the rest area!
Not sure there's payback for #4. Big ticket items bring my vote down.
These projects will not solve the real problem which is a needed bypass of the Payson area connecting SR87 with SR260 via a town by-pass. Ignore all the Payson fast food companies that will complain

Responses to Question 8 on Project Package 8: Slate Creek Improvements (MP 226-232)

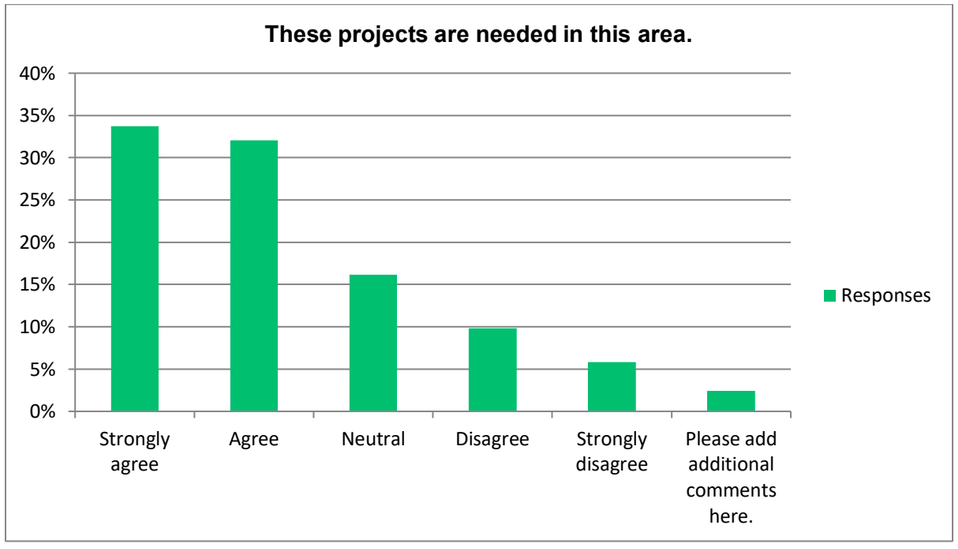
These projects are needed in this area.		
Answer Choices	Responses	
Strongly agree	36%	277
Agree	31%	237
Neutral	18%	136
Disagree	9%	73
Strongly disagree	4%	33
Please add additional comments here.	2%	19
	Answered	**775**
	Skipped	**39**



Additional Comments
Spend my money and your time coming up with a loop around Payson first! I've been driving 87 to 290 since 1987. You have ignored this problem and it is getting worse each year. You are strangling the economies of the White Mnts. Are you ignorant?
I strongly agree with these improvements and this should be the highest priority for rock fall mitigation on the entire corridor.
Not sure about this one, don't remember there being a problem with shoulders here.
Speed limit needs to be increased all thru this section
Save our money for 260 bypass.
That whole roadway is going to slide down into Slate Creek someday, and I hope I am not on it when it does. Nature is going to prevail.
This is a dangerous area of road!
Hwy 64 Williams to Grand Canyon needs this money more
Change speed limit to 65 for cars and 55 for trucks/trailers. We go 55 and people fly by and create dangerous driving conditions.
How about spending money fixing the roads in the rest of the state? AZ95 is in horrible shape from Bullhead City all the way down to Quartzite. Some of the cracks in the surface make driving dangerous.
There are no safety issues warranting these changes
repave the road, install barriers and guard rails and lighting
Other lane will just add to the back up. 3 lane into a 2 lane. Not a good idea for holiday traffic
I just got hit by car while parked on shoulder in this area.
Speed enforcement
Number two thru four should be widen to over 8 feet for inside.
repair / reopen the rest area!
Again, big ticket items bring my vote down.
These projects will not solve the real problem which is a needed bypass of the Payson area connecting SR87 with SR260 via a town by-pass. Ignore all the Payson fast food companies that will complain

Responses to Question 9 on Project Package 9: Rye Improvements (MP 239-241)

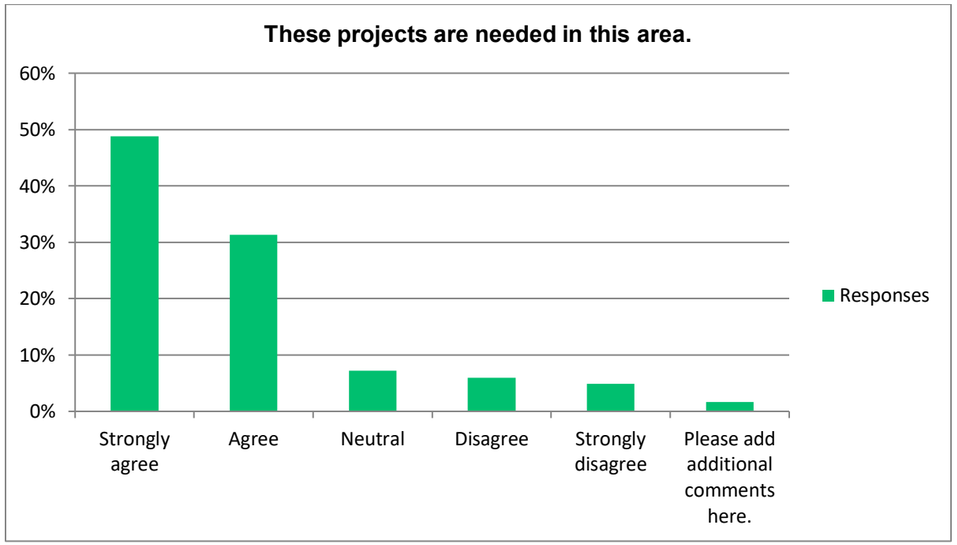
These projects are needed in this area.		
Answer Choices	Responses	
Strongly agree	34%	261
Agree	32%	248
Neutral	16%	125
Disagree	10%	76
Strongly disagree	6%	45
Please add additional comments here.	2%	19
	Answered	**774**
	Skipped	**40**



Additional Comments
Are you just looking to spend taxpayer dollars?
Spend my money and your time coming up with a loop around Payson first! I've been driving 87 to 290 since 1987. You have ignored this problem and it is getting worse each year. You are strangling the economies of the White Mnts. Are you ignorant?
Strong supporter of this, with all the traffic coming off the hill at a high rate of speed
Save our money for 260 bypass.
Please!
Hwy 64 Williams to Grand Canyon needs this money more
this is also an area that needs an overpass.
It is very scary having to try to find a turn and give yourself enough time to slow down without getting rear-ended by somebody else in this location
Traffic joining the beeline here needs to enter at speed of traffic.
How about spending money fixing the roads in the rest of the state? AZ95 is in horrible shape from Bullhead City all the way down to Quartzite. Some of the cracks in the surface make driving dangerous.
This is not a road improvement need - it is a problem with drivers. Or staying in the right lane when not passing
repave the road, install barriers and guard rails and lighting
Speed enforcement
repair / reopen the rest area!
#3 seems steep.
These projects will not solve the real problem which is a needed bypass of the Payson area connecting SR87 with SR260 via a town by-pass. Ignore all the Payson fast food companies that will complain
Signage needed to deter wrong-way drivers. Drunks come out of the bar late at night and head the wrong way. Numerous times over the years I've seen cars turn south on the NB side. I've learned to slow down and stay far to the right whenever I'm NB through Rye.

Responses to Question 10 on Project Package 10: Northbound Roadway Improvements (MP 241-248)

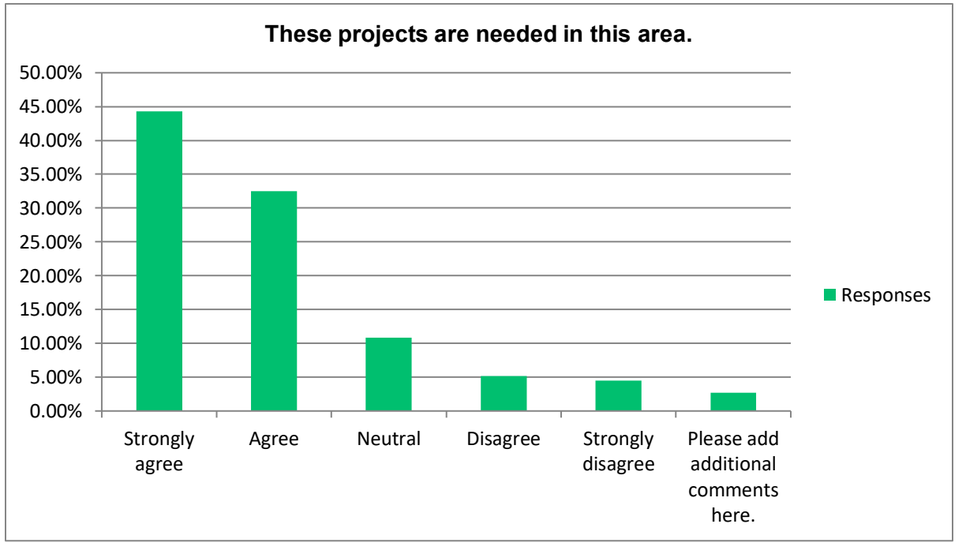
These projects are needed in this area		
Answer Choices	Responses	
Strongly agree	49%	377
Agree	31%	242
Neutral	7%	56
Disagree	6%	46
Strongly disagree	5%	38
Please add additional comments here.	2%	13
	Answered	**772**
	Skipped	**42**



Additional Comments
Spend my money and your time coming up with a loop around Payson first! I've been driving 87 to 290 since 1987. You have ignored this problem and it is getting worse each year. You are strangling the economies of the White Mnts. Are you ignorant?
Just Bypass Payson. Connect to Young Rd. then to SR260
Save our money for 260 bypass.
I come up this hill every morning from Tonto Basin to work. There are many times that I get stuck behind traffic that does not know traffic safety or correct lane travel.
Hwy 64 Williams to Grand Canyon needs this money more
Traffic can back up here due to impatience of drivers towards semis creeping up the inside lane. Not everyone can figure out how to fit into one lane nicely to go around.
How about spending money fixing the roads in the rest of the state? AZ95 is in horrible shape from Bullhead City all the way down to Quartzite. Some of the cracks in the surface make driving dangerous.
repave the road, install barriers and guard rails and lighting
Speed enforcement
Look at the inside shoulders for widening.
repair / reopen the rest area!
These projects will not solve the real problem which is a needed bypass of the Payson area connecting SR87 with SR260 via a town by-pass. Ignore all the Payson fast food companies that will complain

Responses to Question 11 on Project Package 11: Southbound Roadway Improvements (MP 244-250)

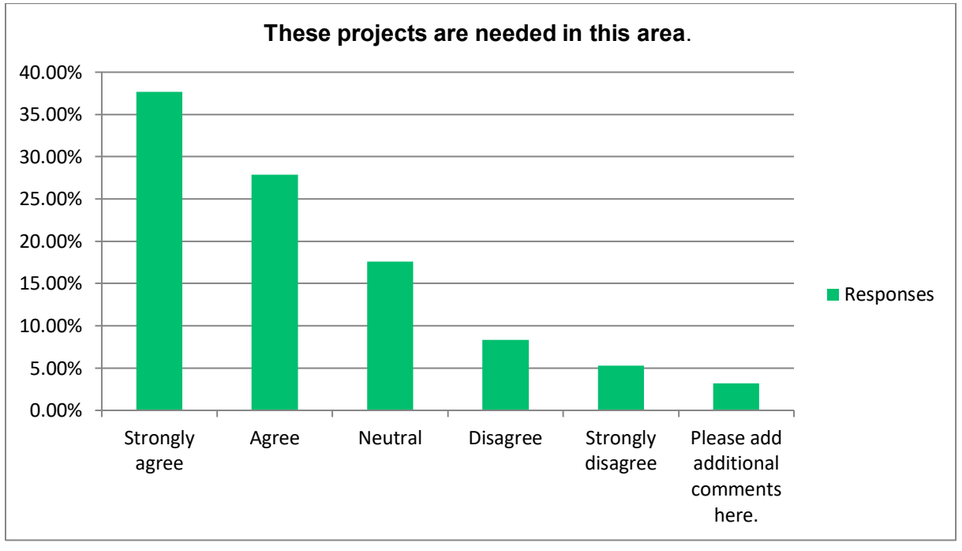
These projects are needed in this area		
Answer Choices	Responses	
Strongly agree	44%	343
Agree	33%	252
Neutral	11%	84
Disagree	5%	40
Strongly disagree	5%	35
Please add additional comments here.	3%	21
	Answered	**775**
	Skipped	**39**



Additional Comments
Pleas add southbound dynamic sign as to southbound road conditions. As there is at Ft McDowell northbound
Spend my money and your time coming up with a loop around Payson first! I've been driving 87 to 290 since 1987. You have ignored this problem and it is getting worse each year. You are strangling the economies of the White Mnts. Are you ignorant?
this should be developer costs
A lot of money to fix an area that doesn't seem to be problematic.
Save our money for 260 bypass.
The Corvair turn is responsible for so many accidents per year due to negligent drivers. It needs to be improved to save lives
Some needed, not all
Gibson Ranch Rd southbound has a turn lane currently
No
enforce the speed limits!
All of these should be high priority, especially the sb guardrail right side
Hwy 64 Williams to Grand Canyon needs this money more
Overpass at casino and rodeo ground intersection
You cannot fix stupid
I have always wondered why there is no concrete barricade at these locations and a couple others! Yes yes yes. People fly through there regardless of the speed warning bumps and signage.
How about spending money fixing the roads in the rest of the state? AZ95 is in horrible shape from Bullhead City all the way down to Quartzite. Some of the cracks in the surface make driving dangerous.
Fix the mile post errors there is not a mile between the markers 246 & 247
Speed enforcement
repair / reopen the rest area!
These projects will not solve the real problem which is a needed bypass of the Payson area connecting SR87 with SR260 via a town by-pass. Ignore all the Payson fast food companies that will complain

Responses to Question 12 on Project Package 12: Northbound Roadway Improvements (MP 247-250)

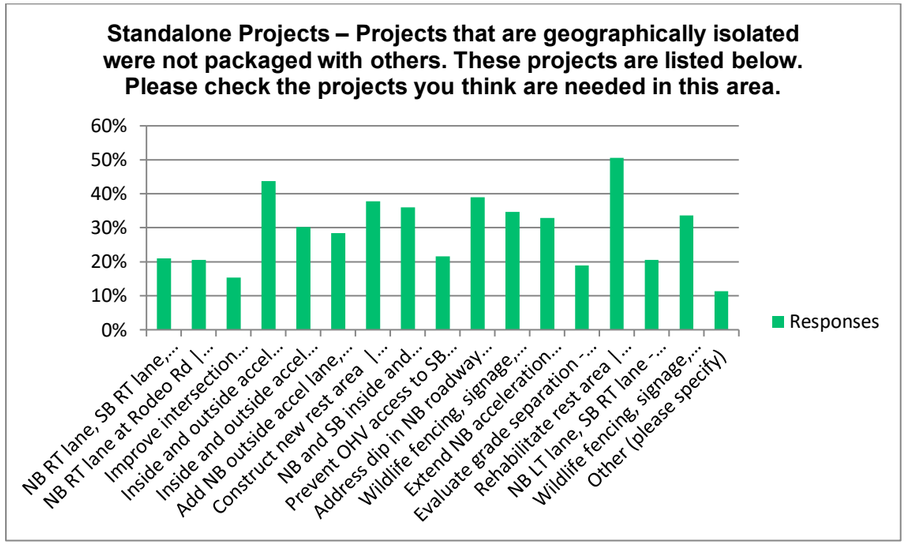
These projects are needed in this area.		
Answer Choices	Responses	
Strongly agree	38%	293
Agree	28%	217
Neutral	18%	137
Disagree	8%	65
Strongly disagree	5%	41
Please add additional comments here.	3%	25
	Answered	**778**
	Skipped	**36**



Additional Comments
Agree
Spend my money and your time coming up with a loop around Payson first! I've been driving 87 to 290 since 1987. You have ignored this problem and it is getting worse each year. You are strangling the economies of the White Mnts. Are you ignorant?
NB on 87 and turning onto Gibson Ranch Rd is the most dangerous part of Hwy 87. Hundreds of people reside in Round Valley and when we are turning in the traffic behind you assume that you will pull off before they get there. With no turning lane we are required to slow down to 5 mph to make the turn and they are traveling at a speed of 70+ and lots are pulling trailers.
We do not need a wildlife overpass. Waste of money
SB inside acceleration lane at Gibson Ranch Road is also needed, as well as tree clearing to the north and west for visibility from/to southbound traffic, which is accelerating downhill at that point!
Not sure this one is great either. I imagine that the Roosevelt turnoff needs some attention, but the rest?
Save our money for 260 bypass.
Some needed, not all
I live off Gibson we need a turn lane have almost been rear ended multiple times.
Payson needs a bypass. Our town is being held hostage for the sake of a couple of hamburger restaurants.
Don't know if expensive wildlife mitigation is needed. What is the incidence of wildlife strikes in this area?
The road improvements, yes. A bridge for wildlife, no. Animals can't read signs and go wherever they want.
Yes
Hwy 64 Williams to Grand Canyon needs this money more
please add overpasses for vehicles as well all along the beeline highway.
Have never seen a dead animal on SR87
I'd like to see the wildlife fencing and overpass.
How about spending money fixing the roads in the rest of the state? AZ95 is in horrible shape from Bullhead City all the way down to Quartzite. Some of the cracks in the surface make driving dangerous.
repave the road, install barriers and guard rails and lighting
Please address intersection and light at Mazatal Casino, timing causes delays even on non-holidays
Fix it
Speed enforcement
repair / reopen the rest area!
These projects will not solve the real problem which is a needed bypass of the Payson area connecting SR87 with SR260 via a town by-pass. Ignore all the Payson fast food companies that will complain
Do not further ruin the view when entering Payson. the casino is bad enough.

Responses to Question 13 on Standalone Projects

Answer Choices	Responses	
NB RT lane, SB RT lane, outside accel lane at Hiawatha Hood | Milepost: 191.8 | Cost: $701,800	21%	129
NB RT lane at Rodeo Rd | Milepost: 192.1 | $184,900	21%	126
Improve intersection geometrics on SB side at Burnt Water Trail | Milepost: 195.2 | Cost: $357,600	15%	94
Inside and outside accel lanes both directions - Four Peaks | Milepost: 203.9 | Cost: $1,624,200	44%	269
Inside and outside accel lanes both directions - Mesquite OHV Area | Milepost: 207.8 | Cost: $1,448,700	30%	186
Add NB outside accel lane, SB inside accel lane - Ballantine Trailhead | Milepost: 210.4 | Cost: $1,373,300	29%	175
Construct new rest area | Milepost: 212.7 | Cost: $8,300,000	38%	232
NB and SB inside and outside accel lanes, fix SB shoulders both sides – Sunflower | Milepost: 218 | Cost: $1,928,300	36%	221
Prevent OHV access to SB lanes | Milepost: 230.5 | Cost: $34,000	22%	133
Address dip in NB roadway | Milepost: 230.5-230.6 | Cost: $712,600	39%	239
Wildlife fencing, signage, and crossing | Milepost: 235-235.9 | Cost: $3,486,000	35%	213
Extend NB acceleration lane to 1300' - SR 188, SB inside accel lane | Milepost: 235.7 | Cost: $911,200	33%	202
Evaluate grade separation - SR 188 (both directions) | Milepost: 235.7 | Cost: $35,910,000	19%	116
Rehabilitate rest area | Milepost: 235.7 | Cost: $4,150,000	51%	311
NB LT lane, SB RT lane - Deer Creek Dr | Milepost: 237.6 | Cost: $619,500	21%	126
Wildlife fencing, signage, and crossing | Milepost: 238-238.9 | Cost: $3,486,000	34%	207
Other (please specify)	11%	70
	Answered	**614**
	Skipped	**200**



Additional Comments
Major traffic backup at the Payson casino stop light
Rest stop
Cut through the Carefree Hwy to Hwy 87 for traffic relief through Scottsdale & Fountain Hills.
Sign this road as a scenic byway
Lions Springs corridor to finish widening both lanes for safety issues on HWY 260.
Make road from/to Star Valley and start of little green valley 2 lanes
Bypass Payson, 87 to 260
Spend my money and your time coming up with a loop around Payson first! I've been driving 87 to 290 since 1987. You have ignored this problem and it is getting worse each year. You are strangling the economies of the White Mnts. Are you ignorant?
Design a traffic loop around Payson to Pine and one around Payson to Star Valley to alleviate traffic in Payson for local residents.
Bypass south of Payson to east of Star Valley
Hwy 260 east star valley to preacher canyon. This is more important than any other project that was mentioned.
Open rest area
Pave from the highway to goldfield road off mile marker 196
Reopen rest area at junction of 188 and 87
Pull off viewing area of 4Peaks, Weavers Needle & Superstitions
Bypass road for Payson, 87 to 260 to decrease gridlock
Revamp and open the rest area at Hwys 188 and 87
A NO ENGINE BRAKING SIGN is needed at milepost 195, 196, 197 and 198. There is a large community of homes in Goldfield Ranch off these exits that is bombarded with the engine braking noise. PLEASE PUT THESE UP. I would be happy to record the noises if needed. Also, deacceleration and crossover lane is needed at milepost 197. Thank you for soliciting advice.
Add Payson bypass, creating a business loop similar to Christopher Creek.
Lighting N/B and S/B my order area

Additional Comments
Remaining standalone projects not checked are important as well.
Payson bypass loop between 87 and East side of Star Valley at the 260.
Please, reopen the rest area at the 88 intersection.
Bypass Payson which slows traffic
We need more lanes in both directions along this entire stretch of roadway
Overpass at 188 for traffic coming off and on to 87 like is at Bush HWY
Southbound acceleration entry ramp from Gibson's Ranch Rd. is needed.
At MP 250 or where ADOT takes ownership, southbound SR87, PLEASE install an overhead message sign for roadway status. With the recent fires, left Payson drove 30 miles to find out SR87 was closed @ SR188 and had to turnaround and drive 30 miles back to Payson!
NB 87 ft McDowell to Payson Rest Area's Please
Just repave the dam road.
wildlife barriers and serious signage is desperately needed. The Elk take visitors aback all the time. It is a travesty to both cars and Elk that there are so many deaths and injuries. This is the most important safety thing you can do. Thanks for the survey.
By pass for Payson. Should be the highest priority
really could use a bypass around Payson and Star Valley; traffic is very congested dangerous to get through as people become impatient.
SB turning land into Round Valley (impossible with a trailer)
Rebuild the rest area at SR-188.
open current rest stop or sell to private party
Only construct the rest area if the state will maintain it. The state needs to reopen the rest area south of Payson. It is desperately needed and was heavily used when open.
Do not have enough information or map to show the areas you are talking about.
Consider different traffic light programs within Payson that allow better SR87 flow at heavy times. Back-up on holiday weekends NB at Mazatzal Casino, at the the traffic light, can reach to Rye. Also, possible SR87 Payson by-pass altogether.
Bypass around Payson & Star Valley to connect with 260
Hwy 64 Williams to Grand Canyon needs this money more
I would love to see widening and or at least guard rails between Payson and Strawberry. This is been needed for years because of snow travel to keep people safe traveling that road in the winter
No projects needed!
Again, these improvements will bring more people to the rim country where the highways can't handle the traffic now. Hwy 260, Lion Springs section!
By pass at mile post 249 to east 260 so traffic does not have to enter Payson
open up old rest area at RT188
Why is a new rest area necessary when the one at SR 87 intersection with SR 188 is closed?
Grade separated at Fountain Hills & Casino
I drive this road between Mesa and Payson every day. This is not important projects and will not add much value to the commute. What you need is to address the route of 87 where it meets 260 inside Payson. Horrible traffic jams inside Payson, especially during Weekends.
How about spending money fixing the roads in the rest of the state? AZ95 is in horrible shape from Bullhead City all the way down to Quartzite. Some of the cracks in the surface make driving dangerous.
Bell Road widening
Make a Payson bypass route
Payson bypass road. More OVH vehicle trails and trailheads.
repave the road, install barriers and guard rails and lighting
north and south bound lanes just north of Mt. Ord/Sycamore Ck intersection are in need of major improvements, specifically widening and resurfacing. All the rest of this list is minor compared to the improvements needed on that portion of the road.

Additional Comments
More passing lanes.
Increase speed limit and add third lanes to eb 260 and every 260 between Payson and Heber/Overgaard
Bypass Payson a 6 hour drive on holiday weekends is unacceptable. Highway 260 from the top of the rim to Show Low needs worked on more than Highway 87. Along with an extension of Bush Highway meeting Highway 17.
add lanes not shoulders & signage.
Have increased DPS presence. Way too many speeders
Payson by-pass milepost 249 connect to SR-260 East with going into Payson.
Over passes at Round Valley, oxbow and deer creek turn offs
More signs slower traffic right lane or use left lane to pass or move over stupid you have 15 cars behind you.
A bypass for traffic to not go through Payson if they just want to pass by. The traffic is insane during weekdays and worse in weekends and holidays.
New dynamic message sign SB at MP250 and MP235 and NB at MP212 in case of road closures due to adverse weather conditions
Adding a climbing lane in sections that has upgrades.
Widen southbound shoulders just south of Payson (Oxbow Hill area)
Non-stop traffic bypass around Payson from 87 to 260
repair / reopen the rest area!
These projects will not solve the real problem which is a needed bypass of the Payson area connecting SR87 with SR260 via a town by-pass. Ignore all the Payson fast food companies that will complain

Responses to Question 14 - "Do you have any additional comments on the study or needed projects in the area?"

Answered	**202**
Skipped	**612**

Responses
Widen Hwy 260 East of Star Valley. That is a scary dangerous section of road!! Gila County has already thrown in money towards it years ago and it still hasn't been started.
The stop light at the Payson casino needlessly adds hours of time and miles of backed up traffic during holidays or heavy traffic days or times.
While not included in the study, the intersection of 260 and 87 in Payson is horrendous. We need to speed this up and get this fixed. Delays of several minutes to an hour plus from each direction are outlandish. Please add this to your project list.
Some ideas are good.... Do we really have to spend 10's of millions of dollars on 10 foot shoulders?
Need the rest stop fix on 87
I'm not familiar with some the Project Package 13 Standalone projects to choose them.
God how I wish there was some sort of by-pass around Payson! Not everybody wants to travel through town. Business might suffer but if I lived in that town, I would NEVER venture out on weekends!
State Route 87 is a mess and a nightmare to drive especially when there are tourists.
Please give us some good, clean, and well maintained rest stops.
Very strongly to open back up the rest area
Ensure limit line and yellow line reflectors are maintained. These are a help in dark and rain to see if animals are entering the roadway (the reflectors will seem to disappear if an animal gets in front of them) long before you can see the animals themselves. I would also like to see those on the 260 between Payson and Show Low.
We REALLY need the rest area!!!
Rest Areas are really needed!
A bypass of Payson, 87 to 260 is needed. It is time.
Rest areas are great for our tourists and truck drivers, it would be helpful to them considering there's nowhere other than Walmart for truck drivers to sleep. The only downfall to the Rest Area would be homeless population. The dips and poor grading in the roads are extremely dangerous, definitely when the sun goes down. It took how long to repair the South Bound lane climbing the hill, with the concrete barrier. Truesdell Corporation is a very fast and friendly road company that works with ADOT so maybe keep them in mind when it comes to our roads!
Please fix up or replace the rest area. It's an eyesore and has so much potential. We used to use it frequently, but now it's another 20 min to a rest room and it makes it tough.
Fix rest area on 87 and 188
Spend my money and your time coming up with a loop around Payson first! I've been driving 87 to 290 since 1987. You have ignored this problem and it is getting worse each year. You are strangling the economies of the White Mnts. Are you ignorant?
Road construction is a pain in the ass and it seems like every time I drive the Beeline you guys are doing something which makes the trip awful. There are plenty of areas where the road is so rough it's not even funny. Instead of spending millions and millions of dollars why not just smooth out what you already have. Stop making the drive to and from Phoenix so awful!! Oh, and you've already spent millions on the rest area that's been closed for years. Fix it rather than building a new one. So stupid to even consider building new but it seems politicians and anything or anyone to do with government comes up with the most stupid things they can just to spend tax dollars.
Get rid of all the sudden drop offs, many people, including me are afraid of heights. Put up blinders or something so that we don't see of know we are next to drop-offs.
Funnel these funds to complete 260 Lion Springs widening, ASAP
Create a bypass in both directions from Rye and connect to 260 above Star Valley thereby going around Payson and Star Valley altogether.
Thank you!

Responses
Can ADOT put a sign sb 87 leaving Payson of all ADOT announcements?
I believe that you should consider studying the current roadways in Payson Arizona. Highway 87 and Highway 260 become so congested during times of high traffic that locals cannot even drive the highways. It is a safety hazard, as well as a significant inconvenience. There are multiple motor vehicle accidents on Highway 260 outside of Star Valley. There are also multiple motor vehicle accidents North on Highway 87 outside of pine Arizona. I believe that there is a significant need here. The highway area that you have chosen to focus on, was very recently improved. I used to drive from Payson when it was a 2-lane highway. Our roadways here need help. I hope you will consider looking at Highway 260 and Highway 87 out of Payson.
Fix the roads going through PAYSON.
Thanks for an opportunity to provide input on the construction/improvement projects on our Beeline Highway. In addition to the projects outlined, the entire Beeline-from AZ-202 through Payson to Clint's Well, requires re-paving. Not oil spray - new pavement. It's in brutal shape.
Continuous wide shoulders are needed along the entire corridor.
Why waste Money on SR87 to Payson. Huge traffic backups in Payson are getting worse. Nobody stops in Payson. Bypass Payson to Sr260 East bound with a possible link to Young Rd. through Rye or Gisela. Save travel time and wrecks.
Hwy 260 east star valley to preacher canyon. 4 lanes needed, the elk alert system.
Fix the cross over at 197
SR 188 and 260 need more work and attention than SR 87! Don't fix something that isn't broke and stop trying to find problems to fix when there are other highways that need the funds and attention more.
Are there any plans for a bypass of Payson from SR87 to SR260? There are sometimes hours long backups to get through Payson.
This is a dangerous drive regardless of the direction. The roads need to be widened and more secure to allow for the safety of travel in both directions. Especially during monsoon and winter seasons. Maybe you can forgo the construction of resting spots. The drive between Payson and Phoenix isn't that long where it could use a rest stop.
Get off your dead ass and reopen the rest stop at 87 & 188. Plus fire the ADOT director
The most necessary improvement is to open rest area
Pave exit off mike marker 196 where it means Goldfield Road. Create acceleration lane SB off Goldfield Road onto highway
I frequently drive from the area in which I live just off AZ 97 Milepost 305 to Chandler and other east Valley locations. You are proposing a tremendous amount of money for, in my opinion, marginal gains in the flow and safety of traffic. I certainly remember when it was only two lanes in the area you now have considered. The improvements to date are excellent compared to almost no improvements from Payson to my residence. It can be a dangerous journey with cars passing on solid lines, speeding etc. which would be somewhat alleviated by passing lanes, 4 lanes etc. I have responded to fatal and serious injury accidents that may have been prevented by improved AZ87 here. Don't spend the funds on this project until you fix the area north of Payson.
This stuff costs way too much money. But who cares, it's not really the government's money anyway, right? The private sector would negotiate these costs without sacrificing quality. Most of this stuff isn't even needed on that highway. I travel it several times a month. I'd like to enjoy the scenery rather than miles of signs. Don't bring the ugliness of the city to that highway. And keep the rest stops the way they are.
Please consider widening SR-87 north of Payson, adding rockfall mitigation in tight corridors next to bluffs, and an additional NB passing lane(s). North of Strawberry (around the 260 interchange) widen/add a shoulder on both NB and SB lanes to keep better visual of wild animals (i.e. Elk) and allows a pull out for emergencies.
All Freeway entrances in Arizona and anywhere two lanes merge should have a "Zipper Effect" sign to teach people how to merge every other car.
It would be nice to eliminate the backup getting INTO Payson somehow...I'm sure trying to go around the town would be astronomically expensive, but just thought I'd mention it. That is one of the biggest areas of slowdown on your way north.
Cost to rehab rest area MP 235.7 is too high. Rebuild elsewhere.
If any work is needed around the Payson area, it would be the roads to the East and North to take care of the traffic issues in the summer.
North bound 87 at Mile marker north of 230 right lane rough road, before the Gisela turn the road on bridge need repair it is big dip in right lane. South bound 87 mile marker 229 to 226 rough road. Mile marker 215 rough road, 213 south of rough road. At 211 really rough road, southbound of 210 bottom of hill really rough road. Resurface all the above areas.
Our population in Arizona is growing fast. We need significant road improvements to Paulson and to Show Low.

Responses
Need advance warning for traffic closures or when holiday traffic overcomes capacity at Heber, Show Low, Bush Hwy, and Beeline at Fountain Hills. Minutes to Payson/Mesa/Heber/Show Low.
Traffic light synchronization in Payson MUST be addressed. It is dangerous to require unexpected, immediate stopping at the first stoplight into Payson northbound. Southbound lights as well needlessly back up weekend traffic into the town.
Somehow, someway, the bottleneck of weekend traffic traveling north at the outskirts of Payson needs addressing more than almost everything else. We residents along the 87 corridor South of Payson try not to do any traveling on Fridays after 11 a.m. because of the difficulty getting into town. It would also be helpful to have PSA's on Valley TV stations teaching people how to drive!! At some point the traffic gets so heavy both right and left lanes are going to be full but most of the time people who insist on driving in the left lane block faster traffic. You might also point out that it is permissible to speed up to pass a car and then go back to the normal speed.
If you need more info on Goldfield Ranch, my name is Tracy Banning and my phone number is 480-244-2528. Thanks
Eight MILLION dollars for a rest area? Make the vending machine guys pay for it, SRP can supply free solar lighting in exchange for ads ... so many things we can do to mitigate these insane fees.
Payson ADOT Maintenance crew should be acknowledged for the incredible work they do.
Adjust light at Payson entrance Casino on holiday weekend
A Payson Bypass would be the most beneficial to alleviate traffic congestion from the Valley population driving thru Payson.
Yes, the reason for all the wrecks is that the assholes from Phoenix all drive too fast. The part of the road that is falling apart is from s Strawberry to Clints Well. Roughly MP260 thru MP290.
1) When traveling south on Highway 87, we need a right turn lane onto McDowell Road. If you want to slow down to make that turn from 87 onto McDowell Road, it is difficult to do with traffic going at a high speed coming up behind you. A designated right turn lane would allow cars turning right to do so safely. Right now, people have been ticketed if they drive along the shoulder at that intersection in order to slow down to make their turn onto McDowell Road. Please consider a designated right turn lane. 2) A median crossover is needed at mm 197, to allow traffic traveling north on 87 to be able to turn onto Blue Coyote Trail at 197. Besides being convenient for residents in the area, it would allow emergency vehicles a quicker access to the homes on Meridian and on Blue Coyote Trail. Please consider this suggestion. Thank you. (**Note**: name and email not shown in this public version of report)
Need to resurface to fix potholes on 87 N of Payson, between 260 turnoff and Clint's Well.
Bypass Payson route for those wanting to take 260. The traffic backup starts usually 17 miles outside Payson. The backup usually consists of campers wanting to take the 260 North. Save our money for this project.
Please re-pave the entire stretch Don't waste money on signage and blocking OHV access
No need to create new rest area when one is already available to rehabilitate at half the cost.
A by-pass is needed in Payson for SR 87 and SR 260. The mile marker 225 northbound SR 87 is missing. Mile marker goes from 224 to 226. No mile marker 225 in sight. This was never corrected after construction.
Although this is not in the study area, it would be better to not do any of these projects and use the funds to make the Lion Springs 4 mile 2 lane area into regular 4 lane 260 highway.
The Beeline is a wonderful road. It's usually in great shape. The projects I marked would improve it even more. I wish people would slow down, though.
This beautiful rest area has been shut down for too many years as it does provide a highway safety rest area, stretch our legs as it was designed for initially. Top priority.
Anything to widen area coming down from Mt Hood towards Payson as well as fixing the bottleneck at the stoplight in town at the casino. For busy weekends this should be adjusted for more green.
I appreciate ADOT's forward thinking, however most of these projects are nice to haves, not must haves which is why I disagree with most of the improvements. Again the 4 mile stretch N from Star Valley along 260 where it is just 2 lanes is a bottleneck which needs expanding now.
I like 87 for the scenic rural type drive it is, it should be left alone unless absolutely necessary
No project is worth the effort if the Rest Area is not up and running.
I believe all the recent accidents on the Fort McDowell and highway 87 crossing are human error, I feel no matter how many roads one widens and new signs put up do not correct another's eyesight. More lights blinking means more distractions. From the Verde river going west to Phoenix along highway 87 to the Fort McDowell crossing all foliage should be cleared several feet from the road and intersection. That is my own opinion on the matter. Clear the area to increase visibility, not add more junk to look at to take away from being able to see other drivers approaching the intersection.

Responses
Was looking for the proposed Payson bypass plans, mentioned on KMOG. Is this available elsewhere? Thanks
What is really needed is an alternative path that bypasses Payson and perhaps Star Valley. These cities create a massive traffic bottleneck, which increases urge to speed by some drivers, which causes accidents and deaths.
Idea for a study: Draw a rough line from 87/Cline Cabin Rd, to 188/Rd 647. A 4 lane paved road to provide a shortcut to Roosevelt Lake would be awesome instead of going all the way north up to 87/188 and essentially turning around and heading south back down the 188. Excellent economic corridor development opportunity, as well as provides an alternate route in case of road closure/accidents on the 87 instead of having to go all the way down 188 to Globe or Apache Jct via the Apache Trail.
I drive this route twice a month and have no real complaints about the current road...other than driving at night with the wildlife is a threat to the animals and drivers.
We miss the Mazatzal Rest Area at the intersection of highways 87 and 188 and would like to see it reopened. (Note about the survey form: If the bullet for "additional comments" is selected, the rating on the SA-SDA scale is removed. This appears to be a bug, since IMO a respondent should be able to rate a project AND provide a comment.)
Please add lanes!
I drive from Mesa to Pine at least monthly and sometimes more frequently. 87 is better now than it used to be, for sure, but a lot of these improvements are starting to look due with the traffic volume and wear-tear on the current route. 87 from Payson to Pine isn't part of this survey but it's truly awful and is way overdue to be widened to 2 lanes each way. Thank you
Let's not get too carried away here. The Beeline is a wonderful highway as it is. I often see no other cars in either direction. I know there is a lot of freight traffic and believe much of it travels at night. (I worked for over 5 years at the Majestic Mountain in on Hwy. 260 in Payson and often conducted informal counts of the number of semi's passing on their way to SB Beeline--lots and lots.) Recreational travel will increase and there will always be back-ups on holiday weekends.
Build a bypass to avoid Payson. Signs aren't going to help the way these crazy people drive. Drive this on a weekend in the summer and you will see how crazy it is. If you put up flashing speed signs and they are then given a ticket automatically upon two or three violations, people would hopefully slow down on this racetrack. I prefer going up and down the Beeline in the mornings during the week. ...it's safer except for the semi's
Honestly, US 60 from Globe to Show Low needs more attention and passing zones a lot more than 87 needs work. 87 is in pretty great shape.
I travel this road several times each week for work. It is overall among the best highways I have traveled. Apart from occasional weekend traffic, the flow is great. Additional lanes in the longer, steeper climbs I think would help the most for heavy traffic times. That one curve on the northbound climb between sycamore creek and sunflower is the only point that sticks out to me. Most traffic really slows down there and many vehicles remain slow to the uphill climb. That always seems to result in a few very frustrated drivers that put everyone in danger.
Hwy 260 between star valley and lion springs. 4 lanes so no more bottle neck. Lots of accidents happen in that area.
Bypass around Payson linking 260 to 87
At MP 250 or where ADOT takes ownership, for southbound SR87, PLEASE install an overhead message sign for roadway status. With the recent fires, left Payson drove 30 miles to find out SR87 was closed @ SR188 and had to turnaround and drive 30 miles back to Payson! If there was an overhead message sign coming out of Payson I and many others would not had to drive 60+ miles.
Traffic gets backed up insanely bad throughout town in Payson every single weekend. It is incredibly frustrating for those that live here. A bypass would be amazing!
How about a spur highway between the North Pima Freeway (101 loop) and MP 211-212 area? Similar to the Bush highway connecting the east valley to the Beeline?
You need to put some focus on Hwy 260 between Payson and Star Valley also 260 mile post 280 into Heber
Hey 87 and 188 rest area restored!!
Glad to see the study being conducted and public input. Every project will help but some more than others will provide for more efficient and safe driving especially improving the shoulders and adding a climbing lane. I have almost had an accident with slow vehicles going up hills.
I think the 87 is just fine. It's a road that demands the driver pay attention. There is nothing wrong with that. Why spend millions of dollars to make it easier for those who choose to drive distracted.
SR87 is fine as is overall. Maybe a climbing lane as approaching Payson, but overall, this roadway works just fine when driven by competent drivers.
Rest areas need to come first.
Wildlife barriers from Payson to Pine
It seems the road is in more need of extensive roadway pavement rehabilitation than anything. Many areas are really showing their age.

Responses
The area north of Star Valley and the four lane road at Little Green Valley is a bottle neck every extended weekend, adding 2 - 3 hours to the commute to/from the area. That area really needs to have an added lane in each direction for safety and traffic flow.
How about a Payson bypass please?!
A bypass around Payson and Star Valley is immediately needed. The backups during the holidays makes it extremely dangerous as well as hours of inconvenience. The stop light obstruction through Payson, makes it almost impossible to navigate. Traffic backs up on Fridays North Bound to SR188, and on Sundays a backup on 260 past Khole's Ranch.
Highway from Payson to Show Low needs to be 4 lanes all the way
None
Payson needs a bypass. It's ridiculous the increased traffic that ties up our town completely. If travelers from Phoenix want to stop for a taco they and come through town but otherwise everyone's just passing through tying up ALL intersections in town in increasingly dangerous ways.
Open the rest stop @ SR188 and add Electric Vehicle charging stations. Private contract it out if necessary. I live in Mesa & have cabin in Pine. I drive SR 87 a lot. #1 safety solution is to enforce the speed limits!!!!!!
I know this wasn't really in the plan but a plan needs to be in place to build a fully controlled access freeway from SR-202 to outside of Fountain Hills.
It's about time ADOT addressed the rest area at MP 235. It has never worked properly and represents a waste of taxpayer dollars that hopefully were recovered from the contractor. A working rest area at this intersection would be a valuable traveler resource. Especially for boaters! Be sure to design a parking area that will accommodate vehicles towing trailers.
SR 260 East of Star Valley needs to be widened to Preachers Canyon
I see all the requests for signage to be a wasted chuck of money. Even IF there is a sign telling me of delays, there are no other options to take. Once you're on 87, that's it till you get to Payson. A better option...make a Hwy 17 connector to give Phoenicians options when they travel to Payson...Right not. There is only 1 realistic way to get there. Sad
Highway 87 between milepost 268 and 269 between Anasazi Road and Cypress there is daily elk crossing in the morning and elk grazing on both sides of the road both morning and night, often in the shoulder areas creating a hitting hazard/and a hazard to oncoming traffic if there is a need to swerve. This occurs in a 55 mph zone. Please add signage indicating elk crossing and consider reducing speed limit to 35-40 mph to avoid hitting of elk. Thanks!! (Resident of Cypress Street)
Any way to provide better long range sight or warning of slow moving trucks/vehicles when coming around a curve would be helpful.
We need a bypass around Payson.
all of SR87 needs to be repaved, when is that going to happen
Thank you for asking for my opinion. I've traveled the Bee-Line for >40 years. I live in Fountain Hills and Forest Lakes.
Both 87 and 17 need expansion due to high volume of traffic and increased accidents over the years.
Solar powered phone booth on side of roadway in areas, phones don't work. Like area where the runaway truck ramp is located.
Route 260/87 congestion through Payson
Hwy 64 Williams to Grand Canyon needs this money more
These look like nice to have items, but shouldn't completing the section of SR 260 east of Star Valley have priority?
We frequently travel SR 87 and strongly concur with proposals and projects to improve the roadway, especially through the hills. Climbing lanes are vital to accommodate commercial vehicles, RVs, and passenger vehicles on this well-traveled route. Press ahead, please!
I would love to see widening and or at least guard rails between Payson and Strawberry. This is been needed for years because of snow travel to keep people safe traveling that road in the winter
Extremely important: widening 87 between Payson & Pine.
The intersection with Fort McDowell Road is dangerous and is my highest priority.
I travel this stretch of sr87 a lot. I would love to see any and all improvement
Put a freeway between the 101 in north Scottsdale and connect with 87 east of the reservation. Make 87 bypass Payson and connect with the 260 east of Star Valley.
There are too many people coming to our small towns creating major problems for residents already!

Responses
Bypass around Payson from 87 to 260 Overpass in Payson at casino, major backups on weekend Because of signal light
Why don't you reopen the rest area at 87 and 188? Or at least put portable toilets there. So many people stop and use the side of the road as their "rest area". I live off of 188 and see it all the time.
We would like to say that we go to Payson and prefer this over Prescott or flagstaff with specifically because the drive is very peaceful compared to I-17. While it's understood project and repairs are necessary we have zero complaints on our travel on this route to Payson; we quite love it and would be very bummed for it to be under constant construction. You've got a great thing going so treat it well. :)
We desperately need rest areas on Beeline. If it was to come to a vote I'm sure rest areas would be at the top of the list to where money is spent. Thanks
SR 87 north of Payson all the way to milepost 305 is in bad shape and needs improvement. Also, some areas north of that all the way to Winslow need repairs.
Wildlife fencing, signage, and crossings, if actually needed, might be worth the expense. Perhaps falling rock areas as well. Otherwise, the drive to Payson (and beyond) is quite pleasant - never been a problem. Re the rest area: Not really sure of the location - there is one existing (mile marker 235) and closed near Payson, but so close to Payson there was never any rational reason to have put it there. But I last saw it a couple months ago and if rehabilitated (per above), it couldn't possibly cost $4m - it's in fairly decent shape. If a new one were to be built, only makes sense (if at all) half way between Fountain Hills and Payson. Any rest area within a half hour of a town seems a waste. The sums of money set forth for the projects could be better spent on road maintenance. And what "speed feedback" sign could possible justify an expense of $25k each? Assume nobody trusts travelers to observe their speedometers any more. And what is a RWIS? Please don't use acronyms unless they are defined somewhere (I didn't see anything). Thanks.
Widen Route 260 north of Payson
Thank you for doing this. Too many lives lost
Have you thought about creating a whole new access to 87 via Bartlett Dam? If that were possible, the traffic on 87 starting at Fountain Hills would be greatly diminished and you most likely could eliminate some of these projects.
Wrong way signage/other assistance is desperately needed, as it becomes available, in the MP 247-250 section. Multiple fatalities there through the years because of wrong way drivers.
We need a Payson bypass!!!
bike lanes
You do all these improvements and what about all the traffic backed-up trying to get into Payson? You make all these improvements, but truly have made no ground as you have no by-pass to take advantage of all the improvements you are making as we are stuck in traffic. This has got to be on someone's radar as it is only getting worse and fell this is where the funding needs to go.
Please keep the Rest Area in mind with needed projects. I forgot that the Rest Area exists along SR 87.
Before funding these projects ADOT should add overpasses at the SR 87 interchanges with Shea, and both Fort McDowell Reservations' E Toh Vee Circle and Fort McDowell Rd to allow north and southbound 87 traffic to flow without interruption and stop lights. Should be similar to SR 87 and Bush Highway interchange
The traffic on this road flows nicely. I drive this road weekly and on the weekends and rarely have an issue that these proposed improvements will assist in making the flow improved.
Grade separated at Fountain Hills & Casino
I travel the 87 REGULARLY in the winter and monsoon months. The biggest issues facing the roadway is limited lane space, limited shoulder space, rockslides and poor reflective paint. IT BECOMES EXTREMELY difficult to see the roadway lines when there is weather. IDK why it is different on the 87, but it feels scary at times. WEATHER SERIOUSLY IMPEDES movement on the 87. Improperly channeled runoff water, snow piling and rock slides are a serious concern when driving 87. 87 (or portions of it) is critically closed more than many other roadways, especially in winter. Signage is great, but that doesn't open roadways. The best improvements are proper shoulders, areas for channeling and clearing water or snow and rocks and the prevention of rockslides. Doing this effectively will keep the 87 open and safe. You wouldn't need as much signage if the roadways were widened and safe. In the meantime, speed control is key. It feels like the speed limits are high considering the narrow roads and shoulders. Because of this many drivers push the current speed and do well over 100mph on the 87.
Most of these proposed projects are waste of taxpayer's money. This road is just fine. We have too many other state highways that need more attention. Your history of dragging road projects for long time and the disruption in commute makes these project nit very good return in our tax money. Concentrate on bottlenecks instead we're you could solve major traffic issues. Your past erosion project on 87 took forever and disrupted our commute for a long time. We don't need more of that on 87.

Responses
How about spending money fixing the roads in the rest of the state? AZ95 is in horrible shape from Bullhead City all the way down to Quartzite. Some of the cracks in the surface make driving dangerous. AZ72 is in even worse shape.
We need all of the roads fixed!
Stop wasting money on those stupid dynamic message signs.
Too many automobiles.
Payson bypass route
Try to straighten out the road and add more Lanes
All $$$ need to go to fix I-17 problems first. It is getting worse by the year. The plans you are using for I-17 will not help the problems we have going to and from the valley. Lived her 30 years and it is a disgrace it has not been fixed.
I Drive this road on a regular basis and don't observe any of these fixes that would insinuate there is a problem
Paving in both directions continues to deteriorate/delaminate. Suggest traffic counts be taken at least every two years at peak travel times both directions for further road tax appropriation. Also work with traffic control lights in Payson (and just south by the M. Casino) to incorporate weekend and holiday traffic light adjustments as backups are 30min plus at times (better fuel savings and time for travelers).
best money is on Payson bypass. Won't need as much lane improvement getting there. The bottleneck is in Payson, but you already know that.
Payson bypass road northbound 87 to eastbound 260 and westbound 260 to southbound 87. More OVH vehicle trails and trailheads.
The intersection at SR87 and US 260 needs improvement, that is major bottleneck on holiday weekends. Perhaps a NB double right turn lane? Even widening the SR87 to 3 lanes NB before US260 would be helpful even if you could only do it for 1/2 mile or 1/4 mile before.
your estimated costs seem excessive
Always a backup where it merges down to one lane going into Star Valley from Show Low on the 260. Hours of delays especially on holidays weekends. This is really the only backup I see when we travel from Show Low thru Payson.
Thank you for having us road users review the development study, as well as being able to comment on it.
Not sure we are advertising a new rest area, when there is already one not being used on 87. The rest area was hardly used and then shut down. Waste of money, really.
It would be nice to have a road that bypassing Payson
Reopen the Rest Area or build a new one, more DPS patrols.
create outer look around Payson connecting 87 to 260 without traffic congestion in Payson
Would like to see highway 260 East of Payson to Show Low widened to 2 lanes each way and a Payson bypass to alleviate traffic congestion in Payson.
There needs to be a Payson bypass. Backups down past Rye are unacceptable and very dangerous.
Thank you for allowing input into these projects. Most of the major issues I face are being addressed here. #1 Rock fall mitigation. #2 climbing lanes for slower traffic. The most difficult issue and of course the most expensive would be to straighten areas of NB MP 212-218. At SB MP 221.5 Just north of the bridge and SB MP 220.3 North of that bridge there are 2 spots, each, where ground water seems to seep through the concrete during colder months those spots can freeze and cause unexpected ice patches. I would like to see the drainage improved there.
Re-engineer Intersection and light at Mazatal Casino MP 253-254 many delays even with non-holiday travel
the most needed is to prevent the backups in Payson during the summer months. One hour to go 11 miles is outrageous. There should be a bypass to 260 going into Payson to reduce the backups.
Extend Bush Highway to meet Highway 17. We need to get to the North & West Valley without having to deal with the congestion of Shea Blvd. Bypass Payson, traffic on the weekends is already unbearable, with the new college going in, traffic will ruin tourism in the White Mountains. My family won't come up to the White Mountains on a holiday weekend because of the traffic.
Add lanes and not shoulders & signs, otherwise do a downtown Payson bypass.
The majority of the projects recommended will most assuredly improve safety and mobility and I commend the effort! However, there is one matter not addressed and that is the choke point in Payson. With the improvements you propose, vehicles will arrive in Payson quicker and safer, but will then be met by a 35 mph stretch of city streets with multiple traffic signals. This is why traffic backs up so badly. What we need is a Payson Bypass!

Responses
Widening of the road near Mt. Ord.
Eliminating the traffic lights along the corridor would be very helpful. I request making grade separations at Fort McDowell Rd, Tohvee Rd, Shea Blvd, Gilbert Rd, Mesa Dr, McDowell Rd. I also request a flyover connection to the 202 freeway in Mesa so there would be direct access from downtown Phoenix to Payson.
We don't need any damn accel lanes! I live in sunflower and I hate the weekends especially people fly past you, ride your bumper etc. all we want to do is get home safely and these idiots don't need any more room to be buttholes
PLEASE DO IT SOON!
Please make wildlife crossings a priority.
All designs and improvements need to keep the mountain in mountain roads.
We travel up and down 5-8 times a week at all times of the day. From Tempe to Star Valley. One more OPEN rest area with rest rooms would be a plus. We feel many of these improvements are not needed. With the exception of northbound Friday and southbound Sunday this road is near perfect. The truckers and RVs are in the right lane but grandma and grandpa are in the left lane doing 51 and oblivious to the line of traffic behind them. Then you get the guys who get mad and pass the slow poke on the left or tailgate them for miles. That is where we experience the biggest problem as we go up and down the mountain. We're 64 years old and we don't drive slow or fast and content to pass on the left and drive on the right. More signs slow traffic move over would be a good idea.
This roadway is a vital link that could use every improvement possible. The next project to think about as well is a bypass around Payson, in the summer on the weekends there are long waits for Southern traffic to get North.
Please focus on traffic issues around the town of Payson. Truck route for semi-trucks!
Encourage Payson to solve the back-ups into and out of the city on weekends.
The main focus for safety is a bypass. People try to rush to their camp ground, and they have to go through Payson's stop lights and narrow roads. The traffic light outside of the Mazatzal casino is the worst! It stops the traffic flow and creates long lines of traffic outside of Payson. The bypass can provide an option for people not wanting to stop in Payson to go directly to the Rim. It'll be nice to see a bypass from 188 or somewhere nearby to connect to 260.
WOW! These are definitely government prices. Four million to "rehab a rest area"?? There is so much work that needs to be done on the very dangerous road between Payson and Pine. Your money is better spent making safety improvements to that section of HWY 87.
Trooper Vacca 7066, feel free to contact me. Wrong way drivers are out of control on Beeline.
Please repave and smooth the traveling lanes in both directions on the entire SR 87 between Payson & fountain hills. The road is in poor condition and needs serious repaving.
An acceleration lane SB at 188. On weekends it gets a lot of boat and trailer traffic and there is a limited line of sight NB at the intersection
Start enforcing the laws. This drive is a suicide run!
N/a
We desperately need a bypass road from Rye Hill to the 260 to ease the massive traffic congestion in Payson. The backup of 10-15 miles on holiday weekends is dangerous and leads to road rage. Anybody wanting to head north thru Payson or into Payson can still do so but the backup is horrific.
no
Open the damn rest area that us taxpayers paid to build.
Thanks for asking....
Reducing speed in dangerous areas.
It's difficult to look at specific packages with multiple projects and then be forced to choose the solution for the package instead of the project within the package. Climbing lanes are less important than consistent roadway amenities throughout the corridor. Shoulder widths should be consistent; installing guard rails should be based upon a consistent curvature arc or negative roadway cross slopes throughout the corridor; emergency cross over lanes should be added to mitigate potential road closures to allow for two way traffic in emergencies; informal crossovers should be eliminated (caused by recreational ATV users); emphasis on rock slide management should be high; open the rest area at SR180; consider reduced speed limits within 5 miles of Payson both north and southbound (those are dangerous crossing intersections throughout that corridor.
Highway 260 from Star Valley eastward for 4 miles needs to be widened to 4 lanes
This all looks like a waste of money proposed by a construction company and not well planned. Very smart that you are querying the people that use this road first. I'd recommend looking at google traffic information and accident reports over the last

Responses
few years to further educate your decision. I think money would be better spend resurfacing the road. 2 lanes each way seems sufficient for the amount of traffic on the road, even on busy holiday weekends.
Anywhere you can straighten out this highway the better...Thank you for asking for opinions
Biggest problem with the beeline is not by-passing PAYSON. Short term would be changing the timing for the north bound traffic light on Fridays
Overpass at SR188. Lots of trailers crossing/entering SR87 heading to and from Lake.
isn't there already a rest area at the turn off for Lake Roosevelt that should be renovated vs. a new one at 212.7
A bypass is REALLY needed south of Payson to bypass Payson and join up to the 260 heading east. This would relieve a great amount of congestion for people traveling on up the rim towards Heber and Show Low. Any event in Payson, holiday travel, etc. causing huge backups on 87.
Speed feedback signs do not seem to have the desired effect of slowing drivers down. This is based on my observation of speed feedback signs on I-17 north of Phoenix enroute to Sunset Point rest area. Conversely, DPS speed limit enforcement seems to have an immediate and hopefully, a lasting impression on drivers that speed limits will be enforced.
Please please please prioritize updating the rest area. It seems like a waste to have this perfect spot unused.
These projects will not solve the real problem which is a needed bypass of the Payson area connecting SR87 with SR260 via a town by-pass. Ignore all the Payson fast food companies that will complain
If only the drivers would slow down and use caution with their vehicles and obey the traffic laws already in place Beeline would be a much safer journey.
DPS needs to find more and better radar spots along this entire road. They use the same two all the time, before Rye and southbound near Fort McDowell. The main cause of deaths long this road is speeding. Do not spend money on creating a better road to speed on. It will only increase the number of serious accidents. Create some no tolerance zones and enforce them. I have driven this road twice a week for 10 years, Fountain Hills to Payson.

Additional Comments Received by Mail or Email
Although I did complete the survey, I wanted to reach out to you with an item not on the survey. At MP 250 or as close to the south end of Payson where ADOT takes ownership for southbound SR87, PLEASE consider installing an overhead highway message sign for roadway status. With the recent fires, we left Payson drove 30 miles only to find out SR87 was closed at SR188 and had to turn around to drive the same 30 miles back to Payson! With the growth in the area, and the transient traffic going thru Payson, the cost of the signage would be a good investment for many reasons.
I am all for widening and straighten out 87 west of Sunflower on way to Payson. I don't drive much in bad weather but did on Monday Sept 23rd. Fog, wind and heavy rain with no way to do anything but keep going and hope for the best. I was a accident waiting to happen, a danger to myself and everyone behind me. Could not see to pull over. That part of the old 87 needs to be made safer. Narrow and to many curves.
SR 87 improvements are so easy. Make as much of it 2 lanes each way and that's it.
I am a resident of Goldfield Ranch (Fort McDowell) just off the Beeline between Mile Marker 194-197. I would like to suggest signs to prevent engine breaking from Shea Blvd north to just past Bush Highway. I would also like to suggest a road overpass at MP197 for easier access to the homes on the NW side of the Beeline.
I saw on my phone about trying to do something on SR-87. All that was written about the roadway was right on. But I would like to see more signs about slower traffic keep to the right. You've been around for a while so you know what I mean. That goes for any freeway in Arizona. No one seems to know the rules of the road. Also, is there a chance of opening up the rest area at SR 87 & 188. It was so important on our trips in that direction. I've been in Phoenix. Since August 1953. My husband, kids, grandkids and great grandkids all born in Phoenix. So we have been all over Arizona. But I did want to say something about this issue. We just moved almost a year ago

Appendix E: Pre-Scoping Forms

PACKAGE PROJECT 1 –

CENTRAL DISTRICT ITS/SIGNAGE IMPROVEMENTS

(MP 191-218)

ADOT SR 87 Corridor Development Study

PRELIMINARY SCOPING REPORT

GENERAL PROJECT INFORMATION	
Date: 8/20/2019	**ADOT Project Manager:**
Project Name: Central District ITS/Signage Improvements	
City/Town: N/A	**County:** Maricopa
COG/MPO: MAG	**ADOT District:** Central
Primary Route/Street: SR 87	
Beginning Limit: 191	
End Limit: 218	
Project Length: 27 miles	
Right of Way Ownership(s) (where proposed project would occur): *(check all that apply)* ☐City/Town ☐County ☒ADOT ☐Private ☐Federal ☐Tribal ☐Other	
Adjacent Land Ownership(s): *(Check all that apply)* ☐City/Town ☒County ☐ADOT ☐Private ☒Federal ☒Tribal ☐Other	

PROJECT NEED
SR 87 Corridor from Milepost 191 through 218 is prone to motor vehicle accidents. Between 2013 and 2017, there were 373 crashes, 31 of which included a fatality or serious injury.

PROJECT PURPOSE			
What is the Primary Purpose of the Project?	☐Preservation	☒Modernization	☐Expansion
Improve safety in corridor by implementing improved signage and intelligent transportation system infrastructure.			

PROJECT RISKS	
Check any risks identified that may impact the project's scope, schedule, or budget:	
☐Access/Traffic Control/Detour Issues	☐Right-of-Way
☐Constructability/Construction Window Issues	☐Environmental
☐Stakeholder Issues	☐Utilities
☐Structures & Geotech	☐Other:
Risk Description: *(if a box is checked above, briefly explain the risk)* There should be minimal project risks since this exhibit is comprised primarily of signage work.	

POTENTIAL FUNDING SOURCE(S)

Anticipated Project Design/Construction Funding Type: *(Check all that applied)*	☐STBG	☐TAP	☒HSIP	☒State
	☐Local	☐Private	☐Tribal	☐Other

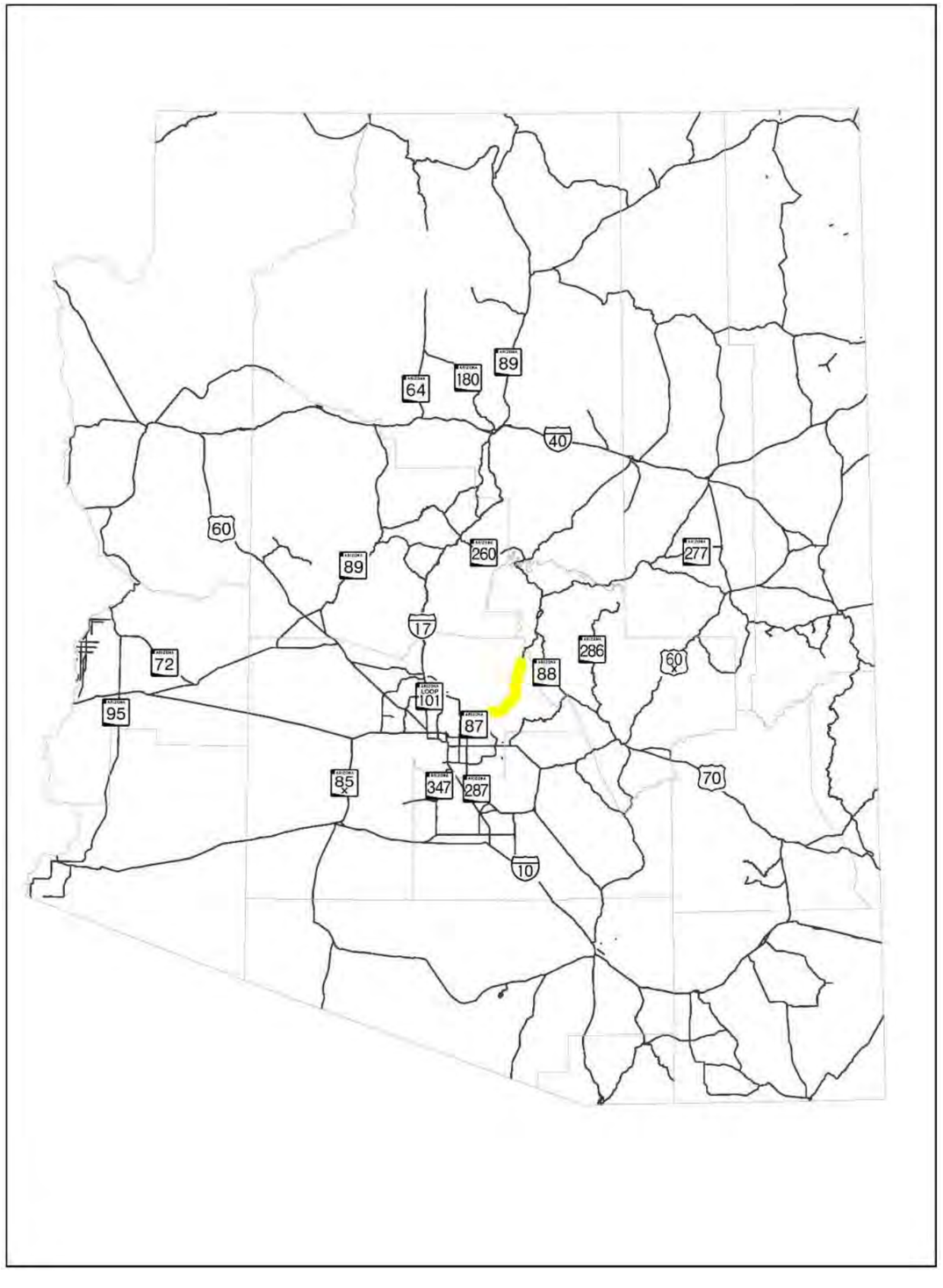
COST ESTIMATE			
Design	Right-of-Way	Construction	Total
$49,250.00	$0.00	$443,250.00	$492,500.00

RECOMMENDED PROJECT DELIVERY
Delivery: ☐Design-Bid-Build ☐Design-Build ☒Other:
Design Program Year: Click or tap here to enter text.
Construction Program Year: Click or tap here to enter text.

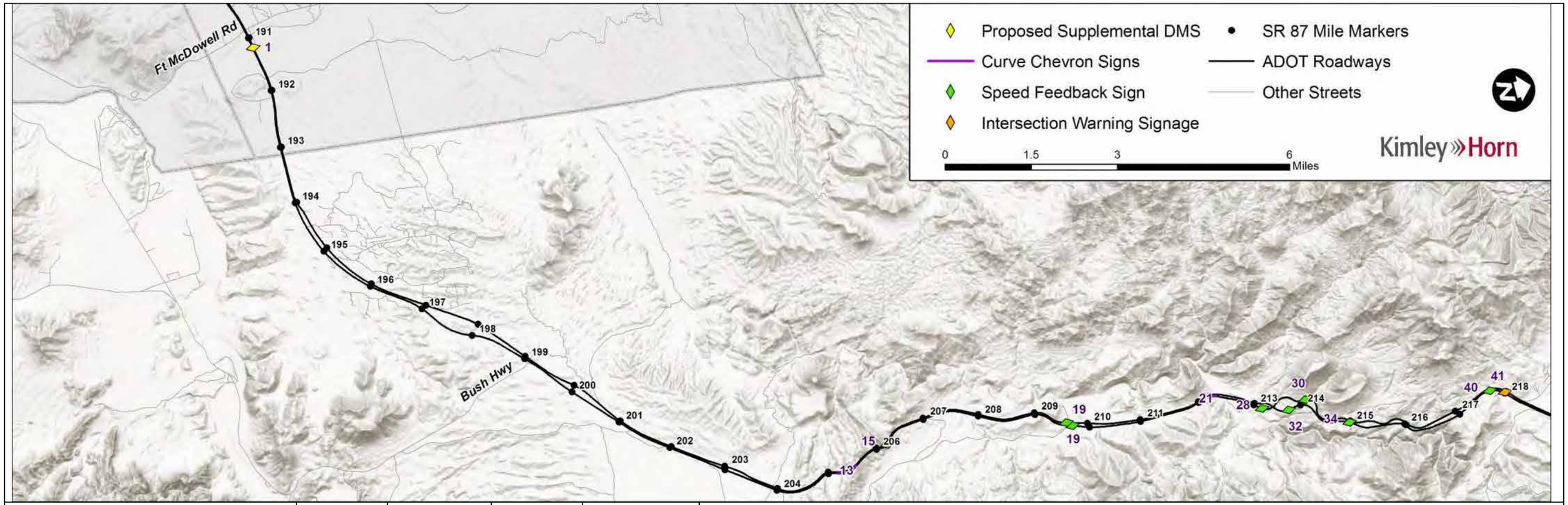
ATTACHMENTS
1. **Project Scope of Work**
2. **State Location Map**
3. **Project Vicinity Map**
4. **Itemized Cost Estimate**
5. **Conceptual Design Plans**

ATTACHMENT 1: SCOPE OF WORK
(Provide a detailed breakdown of the project's scope of work using bullet form)
• Southbound dynamic message sign (MP 191.2)
• Northbound curve chevron signage (MP 205.2-205.7)
• Northbound speed feedback sign (MP 206.2)
• Northbound and southbound speed feedback signs (NB MP 209.7, SB MP 209.6)
• Northbound curve chevron signage (MP 212.2-212.4)
• Northbound speed feedback sign (MP 213)
• Southbound speed feedback sign (MP 213.6)
• Northbound speed feedback sign (MP 214)
• Southbound speed feedback sign (MP 215)
• Northbound speed feedback sign (MP 217.8)
• Intersection warning signage – Sunflower (MP 218)

ATTACHMENT 2: STATE LOCATION MAP



ATTACHMENT 3: PROJECT VICINITY MAP



Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. SB New DMS	1	191.2	191.2	$250,000	Provides the ability to direct SB traffic to different routes (SR 87 vs. Shea Blvd.) in response to incidents further south on the corridor.
2. NB curve chevron signage	13	205.2	205.7	$50,000	Demonstrated crash history with a high percentage of run off the road crashes.
3. NB speed feedback sign	15	206.2	206.2	$25,000	Demonstrated crash history with 26% of crashes resulting from drivers traveling too fast for conditions.
4. NB and SB speed feedback signs	19	NB 209.7 SB 209.6	NB 209.7 SB 209.6	$50,000	Speeding is an issue at this location; the nearby speed analysis at MP 205 showed an 85th percentile speed of 74 mph.
5. NB curve chevron signage	21	212.2	212.4	$12,500	The downhill grade in combination with a curve increases the risk of run off the road crashes in this area.
6. NB speed feedback sign	28	213	213	$25,000	Six crashes occurred on the curve in this section where the vehicle ran off the road to the right and the vehicle overturned
7. SB speed feedback sign	32	213.6	213.6	$25,000	One fatal and three serious injury crashes occurred on the curve in this section
8. NB speed feedback sign	30	214	214	$25,000	This location is within an identified crash hot spot where 50% of crashes involved speeding.
9. SB speed feedback sign	34	215	215	$25,000	Speeding is an issue at this location, a speed study at MP 214 showed an 85th percentile speed of 72 mph.
10. NB speed feedback sign	40	217.8	217.8	$25,000	Demonstrated crash history at curves north of the proposed feedback sign location.
11. Intersection warning signage	41	218	218	$5,000	Relatively inexpensive treatment to increase awareness of the Sunflower intersection.
			Total:	**$517,500**	

ATTACHMENT 4: ITEMIZED COST ESTIMATE

Itemized cost estimates were not developed for the ITS/Signage projects.

ATTACHMENT 5: PRELIMINARY PLANS

Preliminary (15%) plans were not developed for the ITS/Signage projects.

PACKAGE PROJECT 2 –

CENTRAL DISTRICT SHOULDER IMPROVEMENTS

(MP 196-211)

ADOT SR 87 Corridor Development Study

PRELIMINARY SCOPING REPORT

GENERAL PROJECT INFORMATION	
Date: 8/20/2019	**ADOT Project Manager:**
Project Name: Central District Shoulder Improvements (MP 196-211)	
City/Town: N/A	**County:** Maricopa
COG/MPO: MAG	**ADOT District:** Central
Primary Route/Street: SR 87	
Beginning Limit: 196	
End Limit: 211	
Project Length: 15 Miles	
Right of Way Ownership(s) (where proposed project would occur): *(check all that apply)* ☐City/Town ☐County ☒ADOT ☐Private ☐Federal ☐Tribal ☐Other	
Adjacent Land Ownership(s): *(Check all that apply)* ☐City/Town ☒County ☐ADOT ☒Private ☒Federal ☐Tribal ☐Other	

PROJECT NEED
Shoulders at several locations are of substandard widths, other locations are in need of reconstruction. The north approach of the intersection of SR 87 and Goldfield Road is in poor condition.

PROJECT PURPOSE			
What is the Primary Purpose of the Project?	☐Preservation	☒Modernization	☐Expansion
Widen shoulders to current standards, where needed, and rehabilitate shoulders in select locations to crate a consistent recovery area and improve emergency response.			

PROJECT RISKS	
Check any risks identified that may impact the project's scope, schedule, or budget:	
☐Access/Traffic Control/Detour Issues	☐Right-of-Way
☐Constructability/Construction Window Issues	☐Environmental
☐Stakeholder Issues	☐Utilities
☐Structures & Geotech	☐Other:
Risk Description: *(if a box is checked above, briefly explain the risk)*	

Click or tap here to enter text.

POTENTIAL FUNDING SOURCE(S)				
Anticipated Project Design/Construction Funding Type: *(Check all that applied)*	☐STBG	☐TAP	☒HSIP	☒State
	☐Local	☐Private	☐Tribal	☐Other

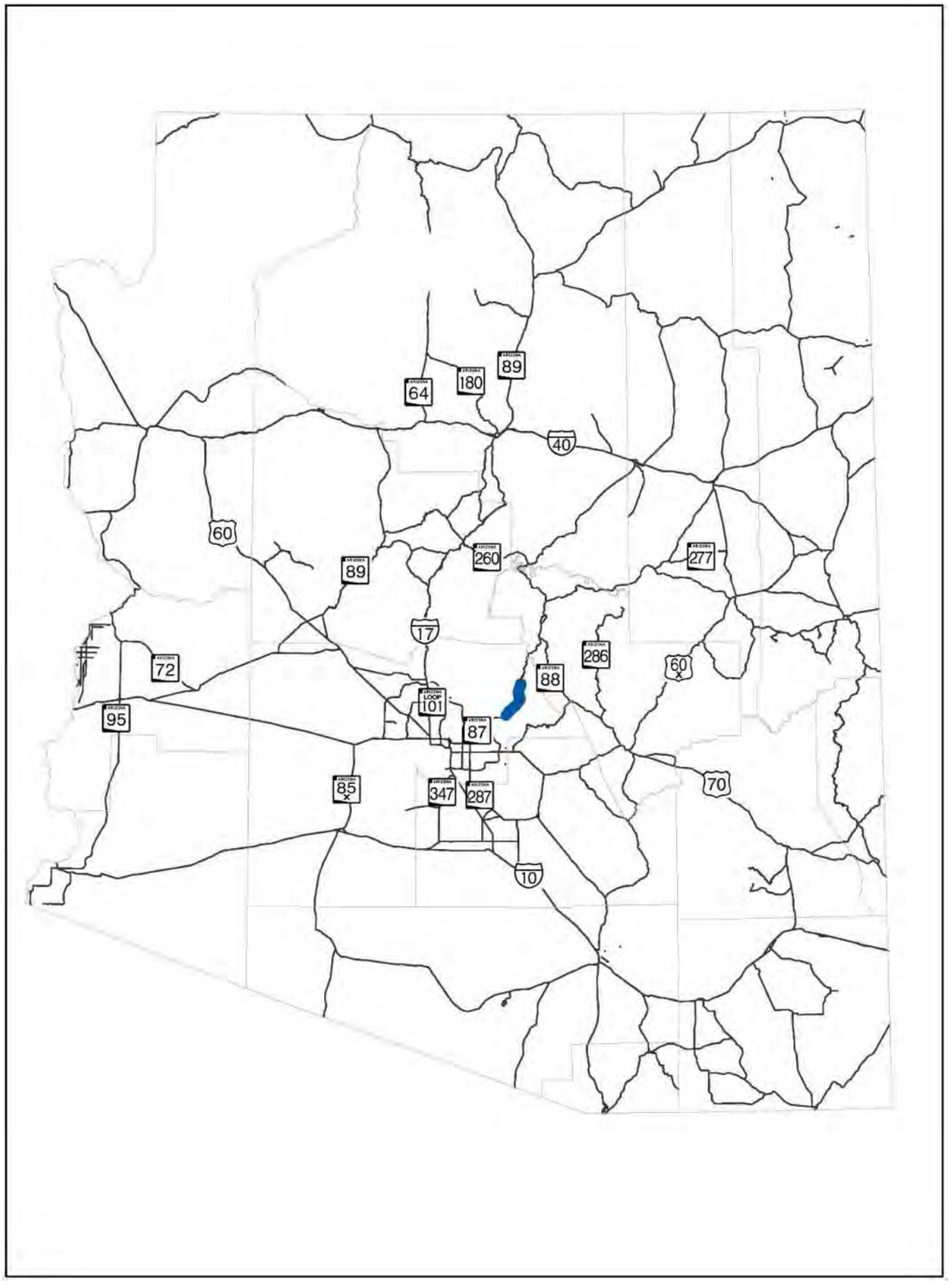
COST ESTIMATE			
Design $548,600.00	Right-of-Way $0.00	Construction $7,133,100.00	Total $7,681,700.00

RECOMMENDED PROJECT DELIVERY
Delivery: ☐Design-Bid-Build ☐Design-Build ☒Other:
Design Program Year: Click or tap here to enter text.
Construction Program Year: Click or tap here to enter text.

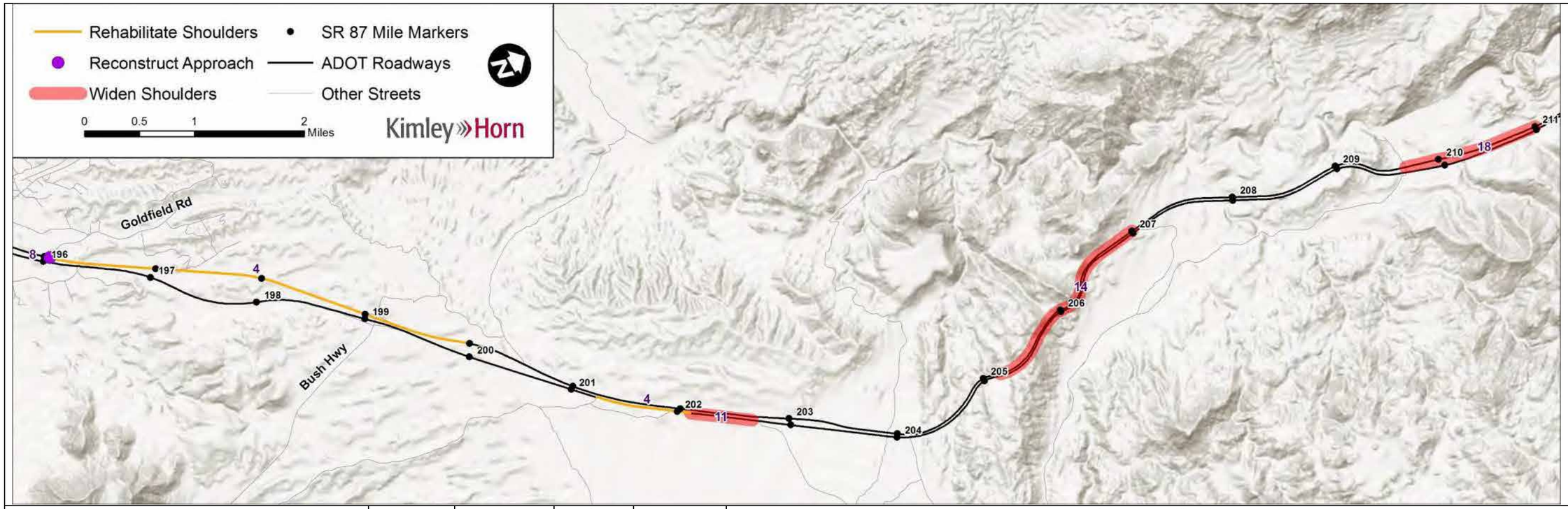
ATTACHMENTS
1. **Project Scope of Work**
2. **State Location Map**
3. **Project Vicinity Map**
4. **Itemized Cost Estimate**
5. **Conceptual Design Plans**

ATTACHMENT 1: SCOPE OF WORK
(Provide a detailed breakdown of the project's scope of work using bullet form)
• Rehabilitate shoulders (Southbound: MP 196-200, Northbound: MP 201.3-202.1)
• Reconstruct north approach at Goldfield Rd (MP 196.1)
• Widen northbound inside shoulder to four feet (MP 202.1-202.6)
• Widen southbound outside shoulder to ten feet (MP 205.2-207)
• Widen southbound inside shoulder to four feet (MP 209.6-211)

ATTACHMENT 2: STATE LOCATION MAP



ATTACHMENT 3: PROJECT VICINITY MAP



Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. Rehabilitate shoulders	4	SB :196 NB:201.3	SB:200 NB:202.1	$2,560,400	Current shoulders are in poor condition.
2. Reconstruct north approach at Goldfield Rd	8	196.1	196.1	$76,800	Current approach is in poor condition and in need of reconstruction.
3. Widen NB inside shoulder to 4’	11	202.1	202.6	$552,700	The current shoulders are of insufficient widths per current safety standards and for effective emergency response.
4. Widen SB outside shoulder to 10’	14	205.2	207	$3,247,500	The current shoulders are of insufficient widths per current safety standards and for effective emergency response.
5. Widen SB inside shoulder to 4’	18	209.6	211	$1,244,300	The current shoulders are of insufficient widths per current safety standards and for effective emergency response.
			Total:	**$7,681,700**	

ATTACHMENT 4: ITEMIZED COST ESTIMATE

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

4. Rehabilitate northbound shoulders (MP 201.3-202.1)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2020053	REMOVE (GR TERMINAL)	EACH	2	$400.00	$800
2020071	REMOVE GUARD RAIL	L.FT.	1,038	$5.00	$5,190
2020085	REMOVE BITUMINOUS PAVEMENT (MILLING) (3")	SQ.YD.	6,456	$3.00	$19,368
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	1,182	$120.00	$141,840
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	191	$100.00	$19,100
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$4,150.00	$4,150
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	1,038	$30.00	$31,140
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	1	$2,500.00	$2,500
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	1	$800.00	$800
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	8,300	$0.75	$6,225
			Roadway Construction Subtotal		**$241,113**
	Unidentified Item Allowance (15%)			$	36,167
				Subtotal	**$277,280**
	Water Supply/Dust Palliative (3%)			$	8,319
	Maintenance And Protection Of Traffic (15%)			$	41,592
	Erosion Control (1%)			$	2,773
	Contractor Quality Control (2%)			$	5,546
	Construction Surveying And Layout (2%)			$	5,546
				Other Item Subtotal	**$341,056**
	Mobilization (12%)			$	40,927
				Construction Subtotal	**$ 381,983**
	Engineering Design (10%)			$	38,199
	Construction Engineering and Contingencies (20%)			$	76,397
	Indirect Cost Allocation (10.02%)			$	38,275
				Construction Total	**$ 534,854**

Kimley»Horn

SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

4. Rehabilitate southbound shoulders (MP 196 - 200)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2020053	REMOVE (GR TERMINAL)	EACH	4	$400.00	$1,600
2020071	REMOVE GUARD RAIL	L.FT.	5,223	$5.00	$26,115
2020085	REMOVE BITUMINOUS PAVEMENT (MILLING) (3")	SQ.YD.	32,499	$3.00	$97,497
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	5,951	$80.00	$476,080
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	959	$90.00	$86,310
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$20,892.00	$20,892
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	5,223	$30.00	$156,690
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	2	$2,500.00	$5,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	2	$800.00	$1,600
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	41,784	$0.75	$31,338
			Roadway Construction Subtotal		**$913,122**
	Unidentified Item Allowance (15%)			$	136,969
				Subtotal	**$1,050,091**
	Water Supply/Dust Palliative (3%)			$	31,503
	Maintenance And Protection Of Traffic (15%)			$	157,514
	Erosion Control (1%)			$	10,501
	Contractor Quality Control (2%)			$	21,002
	Construction Surveying And Layout (2%)			$	21,002
				Other Item Subtotal	**$1,291,613**
	Mobilization (12%)			$	154,994
				Construction Subtotal	**$ 1,446,607**
	Engineering Design (10%)			$	144,661
	Construction Engineering and Contingencies (20%)			$	289,322
	Indirect Cost Allocation (10.02%)			$	144,951
				Construction Total	**$ 2,025,541**

TOTAL SR87 Corridor Development Study COST **$ 2,025,541**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

8. Reconstruct north approach at Goldfield Rd (MP 196.1)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	139	$35.00	$4,865
2030301	ROADWAY EXCAVATION	CU.YD.	80	$10.00	$800
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	58	$120.00	$6,960
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	49	$160.00	$7,840
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	5	$120.00	$600
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$50.00	$50
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
				Roadway Construction Subtotal	**$34,615**
	Unidentified Item Allowance (15%)				$ 5,193
				Subtotal	**$39,808**
	Water Supply/Dust Palliative (3%)				$ 1,195
	Maintenance And Protection Of Traffic (15%)				$ 5,972
	Erosion Control (1%)				$ 399
	Contractor Quality Control (2%)				$ 797
	Construction Surveying And Layout (2%)				$ 797
				Other Item Subtotal	**$48,968**
	Mobilization (12%)				$ 5,877
				Construction Subtotal	**$ 54,845**
	Engineering Design (10%)				$ 5,485
	Construction Engineering and Contingencies (20%)				$ 10,969
	Indirect Cost Allocation (10.02%)				$ 5,496
				Construction Total	**$ 76,795**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

11. Widen northbound inside shoulder to 4' (MP 202.1 to 202.6)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	294	$20.00	$5,880
2020201	SAW CUTTING	L.FT.	2,640	$2.50	$6,600
2030301	ROADWAY EXCAVATION	CU.YD.	5,870	$8.00	$46,960
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	1,076	$60.00	$64,560
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	631	$160.00	$100,960
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	44	$120.00	$5,280
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$2,640.00	$2,640
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	1	$800.00	$800
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	2,640	$0.75	$1,980
				Roadway Construction Subtotal	**$249,160**
	Unidentified Item Allowance (15%)				$ 37,374
				Subtotal	**$286,534**
	Water Supply/Dust Palliative (3%)				$ 8,597
	Maintenance And Protection Of Traffic (15%)				$ 42,981
	Erosion Control (1%)				$ 2,866
	Contractor Quality Control (2%)				$ 5,731
	Construction Surveying And Layout (2%)				$ 5,731
				Other Item Subtotal	**$352,440**
	Mobilization (12%)				$ 42,293
				Construction Subtotal	**$ 394,733**
	Engineering Design (10%)				$ 39,474
	Construction Engineering and Contingencies (20%)				$ 78,947
	Indirect Cost Allocation (10.02%)				$ 39,553
				Construction Total	**$ 552,707**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

14. Widen southbound outside shoulder to 10' (MP MP205.2 - 207)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	8	$5,000.00	$40,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	1,220	$20.00	$24,400
2020053	REMOVE (GR TERMINAL)	EACH	4	$400.00	$1,600
2020071	REMOVE GUARD RAIL	L.FT.	2,745	$5.00	$13,725
2020201	SAW CUTTING	L.FT.	10,978	$2.50	$27,445
2030301	ROADWAY EXCAVATION	CU.YD.	97,590	$7.00	$683,130
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	4,066	$60.00	$243,960
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	2,219	$120.00	$266,280
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	144	$120.00	$17,280
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$10,978.00	$10,978
8050003	SEEDING (CLASS II)	ACRE	8	$3,500.00	$28,000
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	2,745	$30.00	$82,350
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	2	$2,500.00	$5,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	2	$800.00	$1,600
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	10,978	$0.75	$8,234
			Roadway Construction Subtotal		**$1,463,982**
	Unidentified Item Allowance (15%)				$ 219,598
				Subtotal	**$1,683,580**
	Water Supply/Dust Palliative (3%)				$ 50,508
	Maintenance And Protection Of Traffic (15%)				$ 252,537
	Erosion Control (1%)				$ 16,836
	Contractor Quality Control (2%)				$ 33,672
	Construction Surveying And Layout (2%)				$ 33,672
				Other Item Subtotal	**$2,070,805**
	Mobilization (12%)				$ 248,497
				Construction Subtotal	**$ 2,319,302**
	Engineering Design (10%)				$ 231,931
	Construction Engineering and Contingencies (20%)				$ 463,861
	Indirect Cost Allocation (10.02%)				$ 232,395
				Construction Total	**$ 3,247,489**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

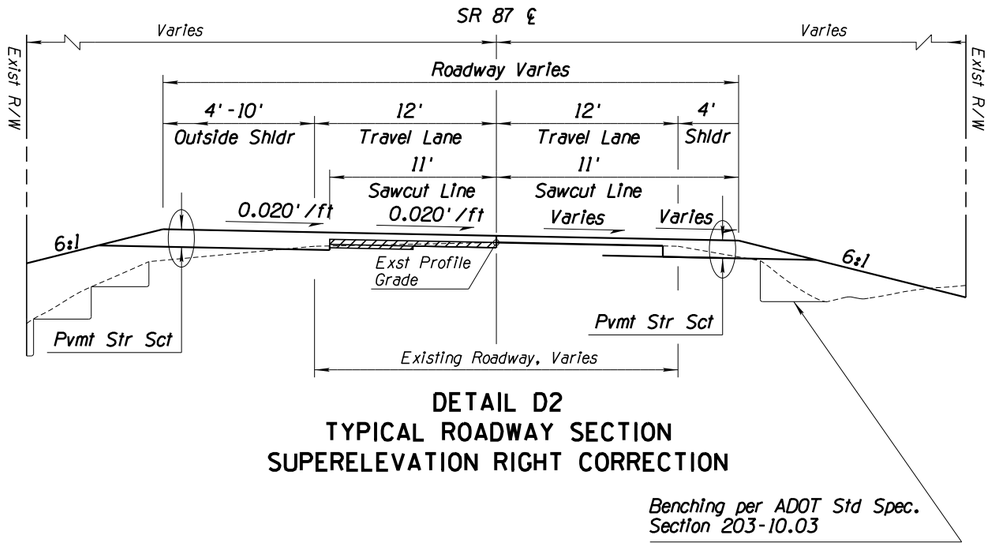
18. Widen southbound inside shoulder to 4' (MP 209.6 - 211)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	2	$5,000.00	$10,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	779	$20.00	$15,580
2020053	REMOVE (GR TERMINAL)	EACH	2	$400.00	$800
2020071	REMOVE GUARD RAIL	L.FT.	400	$5.00	$2,000
2020201	SAW CUTTING	L.FT.	7,009	$2.50	$17,523
2030301	ROADWAY EXCAVATION	CU.YD.	10,390	$8.00	$83,120
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	2,596	$60.00	$155,760
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	1,417	$120.00	$170,040
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	92	$120.00	$11,040
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$7,009.00	$7,009
8050003	SEEDING (CLASS II)	ACRE	2	$3,500.00	$7,000
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	1,753	$30.00	$52,590
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	4	$2,500.00	$10,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	4	$800.00	$3,200
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	7,009	$0.75	$5,257
			Roadway Construction Subtotal		**$560,918**
	Unidentified Item Allowance (15%)				$ 84,138
				Subtotal	**$645,056**
	Water Supply/Dust Palliative (3%)				$ 19,352
	Maintenance And Protection Of Traffic (15%)				$ 96,759
	Erosion Control (1%)				$ 6,451
	Contractor Quality Control (2%)				$ 12,902
	Construction Surveying And Layout (2%)				$ 12,902
				Other Item Subtotal	**$793,422**
	Mobilization (12%)				$ 95,211
				Construction Subtotal	**$ 888,633**
	Engineering Design (10%)				$ 88,864
	Construction Engineering and Contingencies (20%)				$ 177,727
	Indirect Cost Allocation (10.02%)				$ 89,042
				Construction Total	**$ 1,244,267**

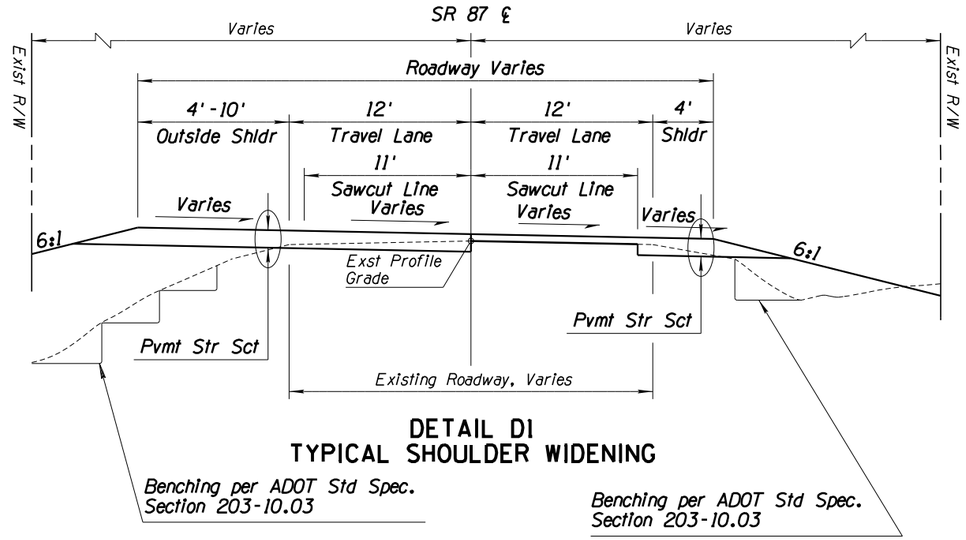
ATTACHMENT 5: PRELIMINARY PLANS

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

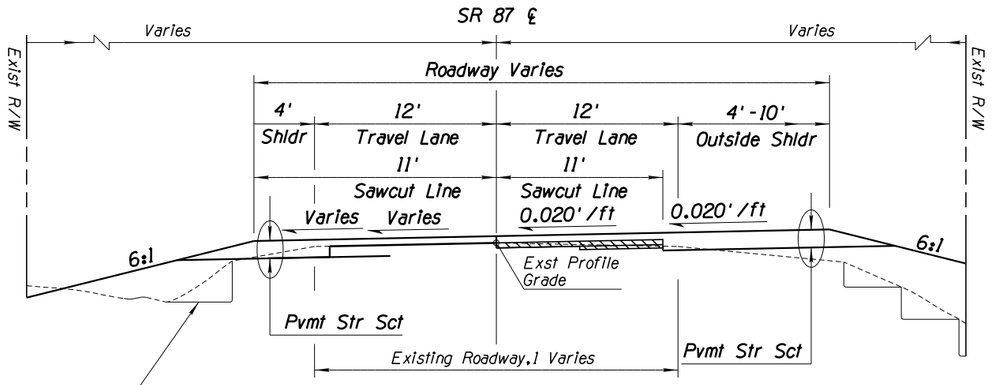
SR 87 MILE POST STATION			
MP NB	STATION	MP SB	STATION
196	101+73	196	101+18
197	155+53	197	154+02
198	207+69	198	207+94
199	261+02	199	259+13
200	314+21	200	311+72
201	367+73	201	364+06
202	419+18	202	417+81
203	471+36	203	470+65
204	526+28	204	523+10
205	577+70	205	575+84
206	630+73	206	628+30
207	682+81	207	680+28
208	736+47	208	734+12
209	788+55	209	786+62
210	842+08	210	839+50
211	894+91	211	890+40
212	942+20	212	939+42
213	998+65	213	995+55
214	1051+86	214	1050+06
215	1105+38	215	1095+77
216	1158+68	216	1147+95
217	1213+92	217	1199+48
218	1268+31	218	1250+20
219	1318+19	219	1304+12
220	1374+67	220	1359+76
221	1427+95	221	1412+99
222	1480+60	222	1465+84
223	1533+97	223	1518+89
224	1584+61	224	1570+72
225	1639+50	225	1625+29
226	1689+86	226	1676+32
227	1740+23	227	1726+14
228	1792+50	228	1778+04
229	1845+24	229	1831+98
230	1898+50	230	1884+70
231	1949+61	231	1933+71
232	1999+33	232	1985+29
233	2047+74	233	2033+06
234	2101+13	234	2085+05
235	2154+59	235	2137+29
236	2207+09	236	2189+44
237	2259+88	237	2240+86
238	2311+66	238	2293+85
239	2364+28	239	2344+91
240	2416+01	240	2397+41
241	2467+79	241	2448+96
242	2518+51	242	2496+68
243	2571+26	243	2549+70
244	2620+38	244	2601+82
245	2677+47	245	2655+01
246	2729+53	246	2703+04
247	2741+30	247	2747+68
248	2794+18	248	2801+15
249	2847+25	249	2854+41
250	2899+69	250	2906+58



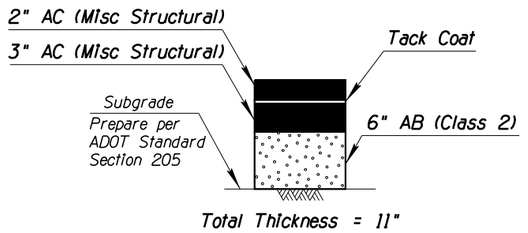
DETAIL D2
TYPICAL ROADWAY SECTION SUPERELEVATION RIGHT CORRECTION



DETAIL D1
TYPICAL SHOULDER WIDENING



DETAIL D3
TYPICAL ROADWAY SECTION SUPERELEVATION LEFT CORRECTION



Total Thickness = 11"

PAVEMENT STRUCTURAL SECTION

	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

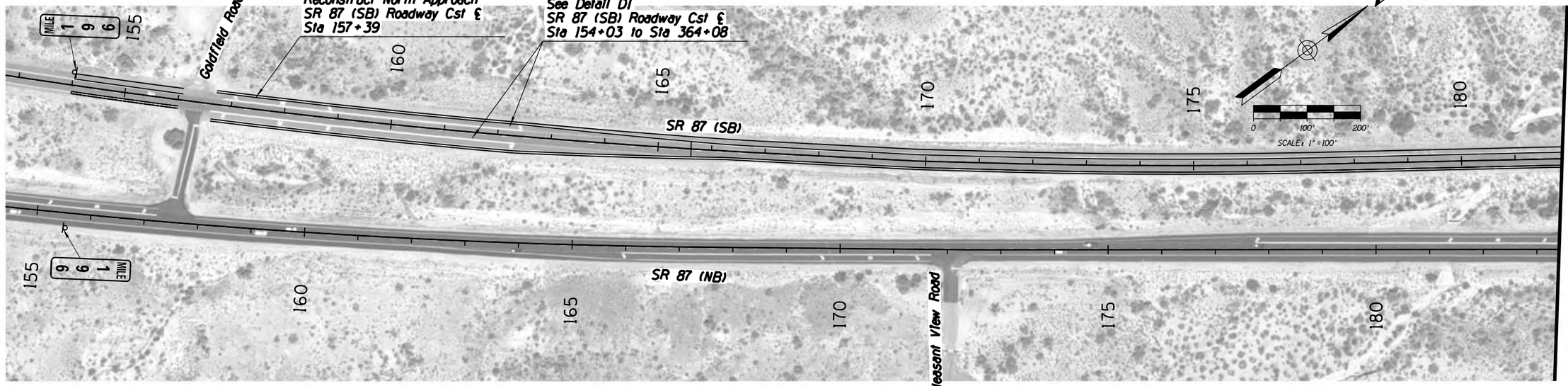
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

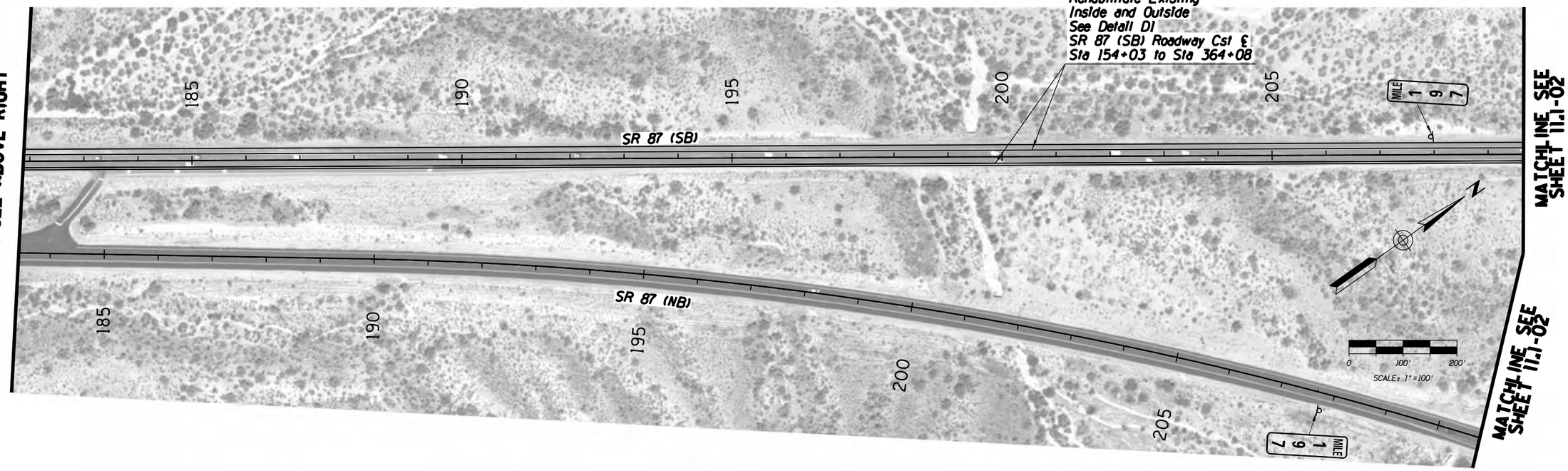
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	___ OF ___

TRACS NO. XXXXX XXX | XXX-X(XXX)X

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

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT #2 CENTRAL DISTRICT
SHOULDER IMPROVEMENT
MP 196 TO 211

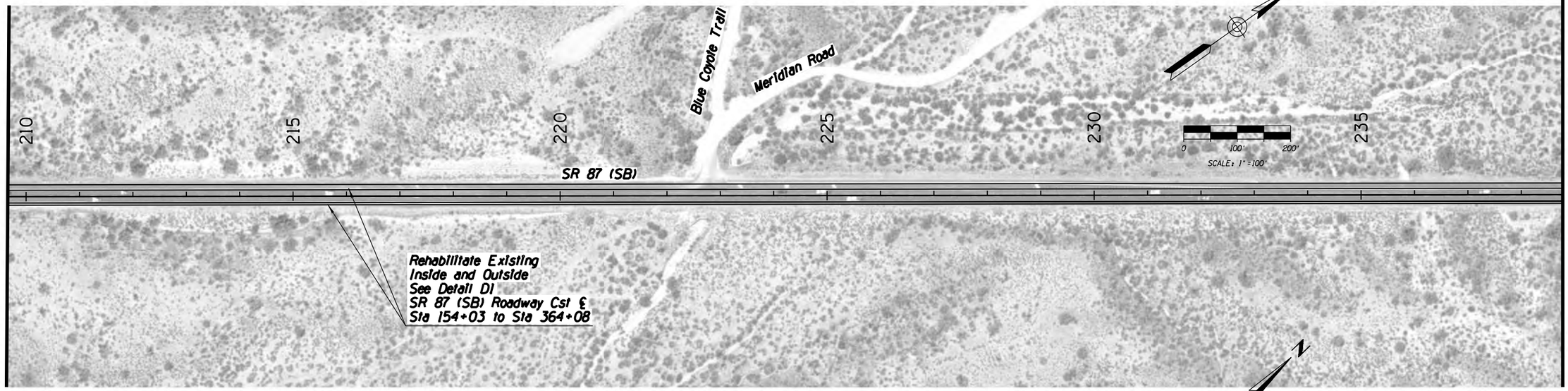
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

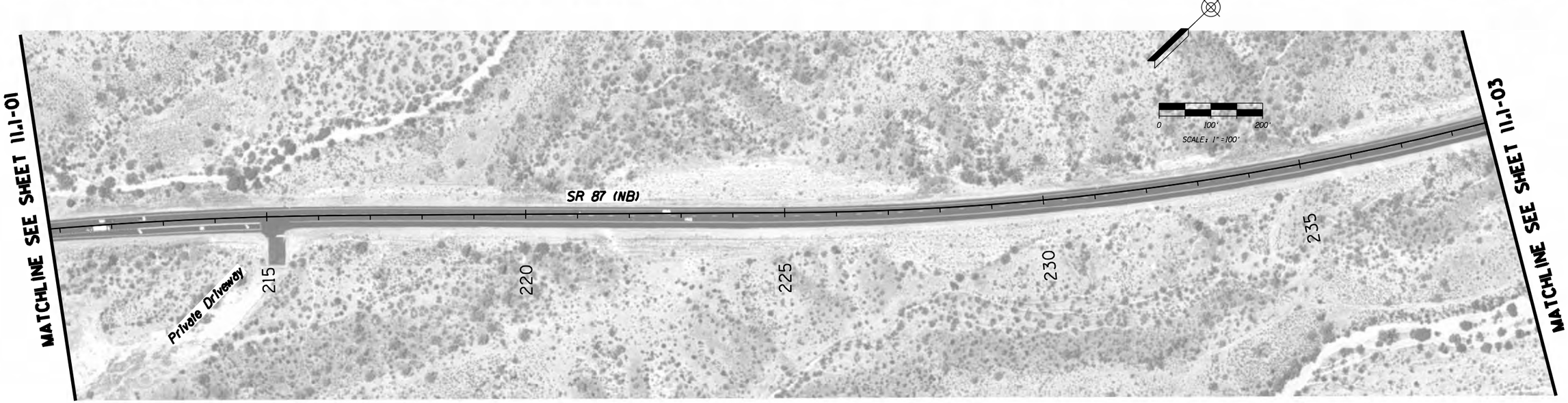
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	11.1-01
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT #2 CENTRAL DISTRICT
SHOULDER IMPROVEMENTS
MP 196 TO 211

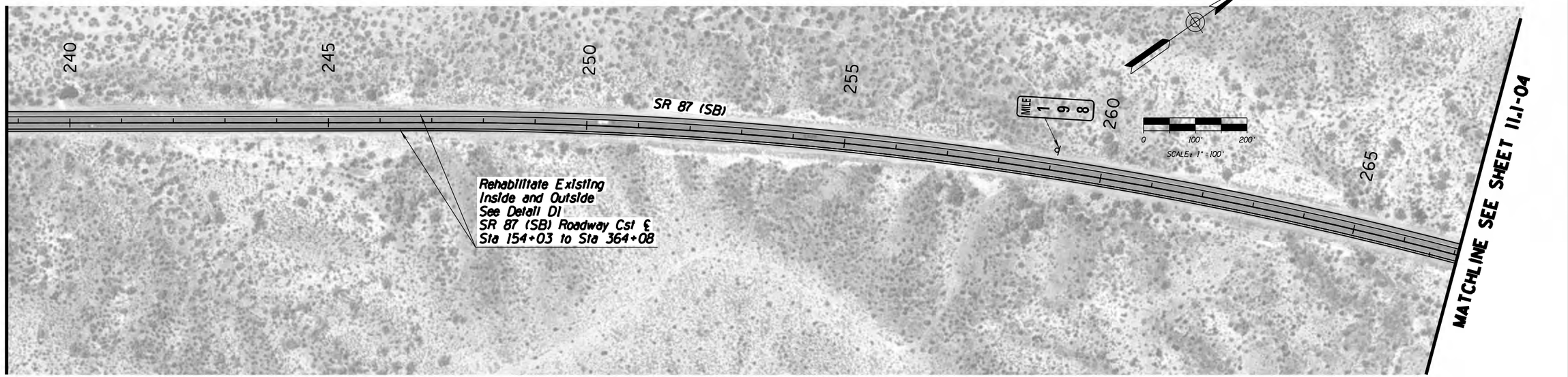
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

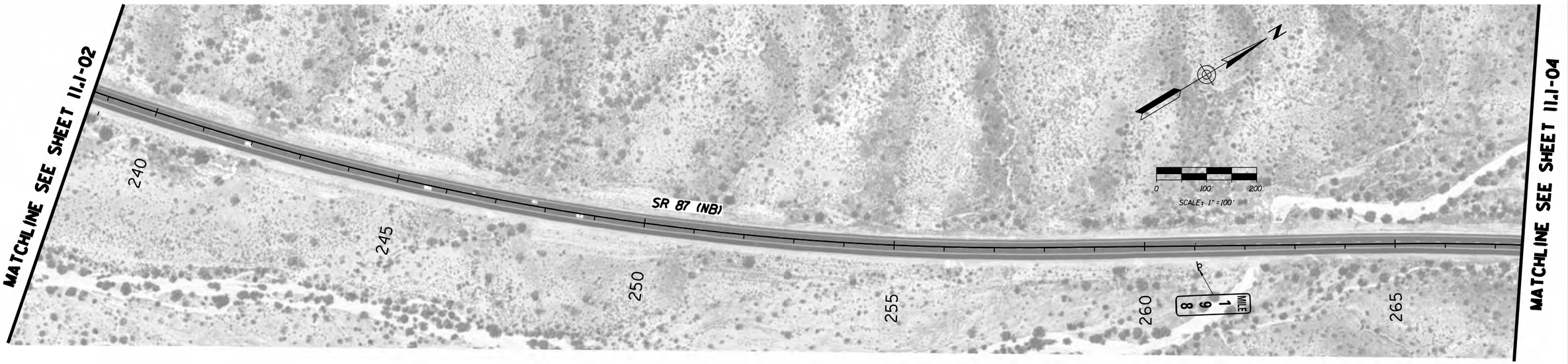
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	11.1-02
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT #2 CENTRAL DISTRICT
SHOULDER IMPROVEMENT
MP 196 TO 211

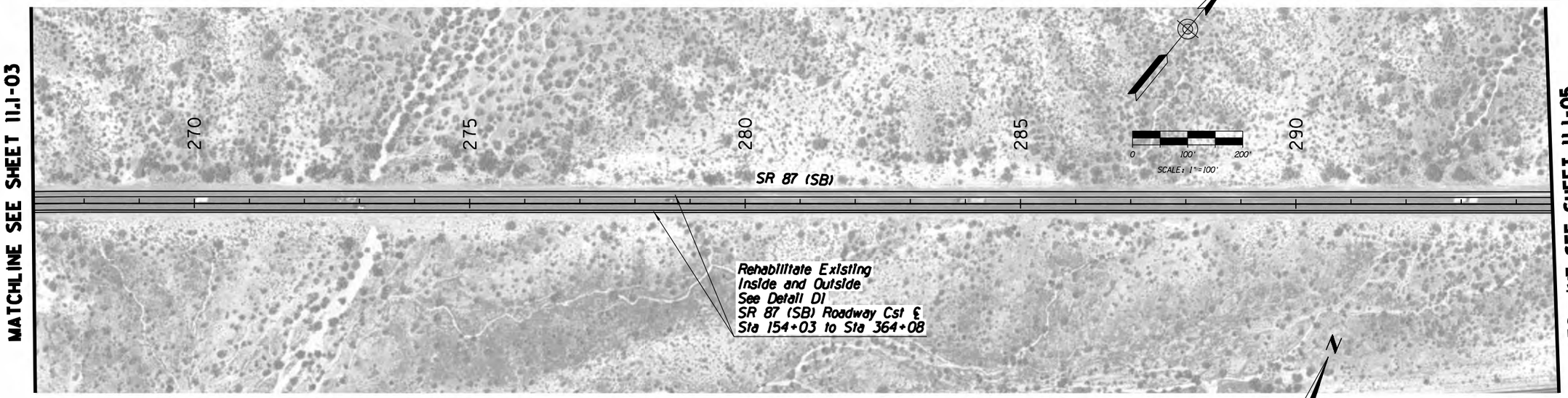
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

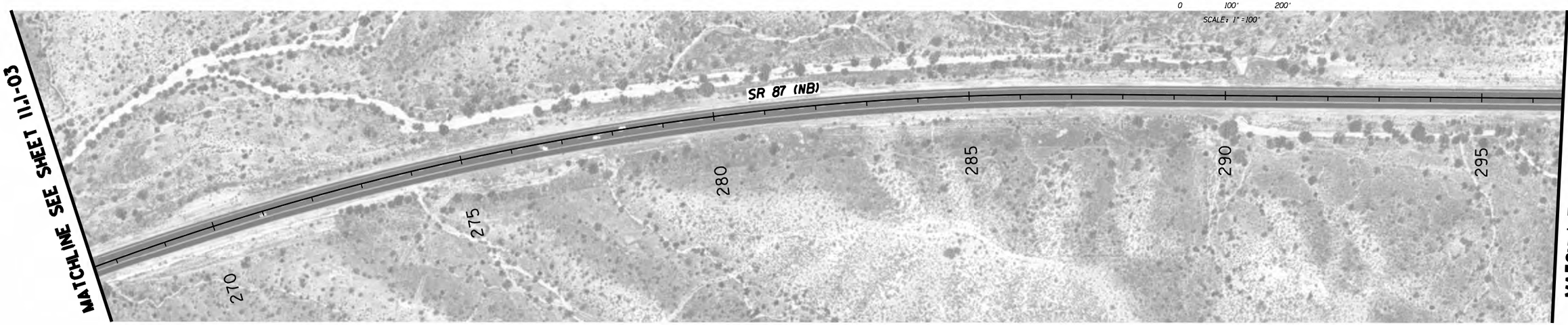
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	11.1-03
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT #2 CENTRAL DISTRICT
SHOULDER IMPROVEMENT
MP 196 TO 211

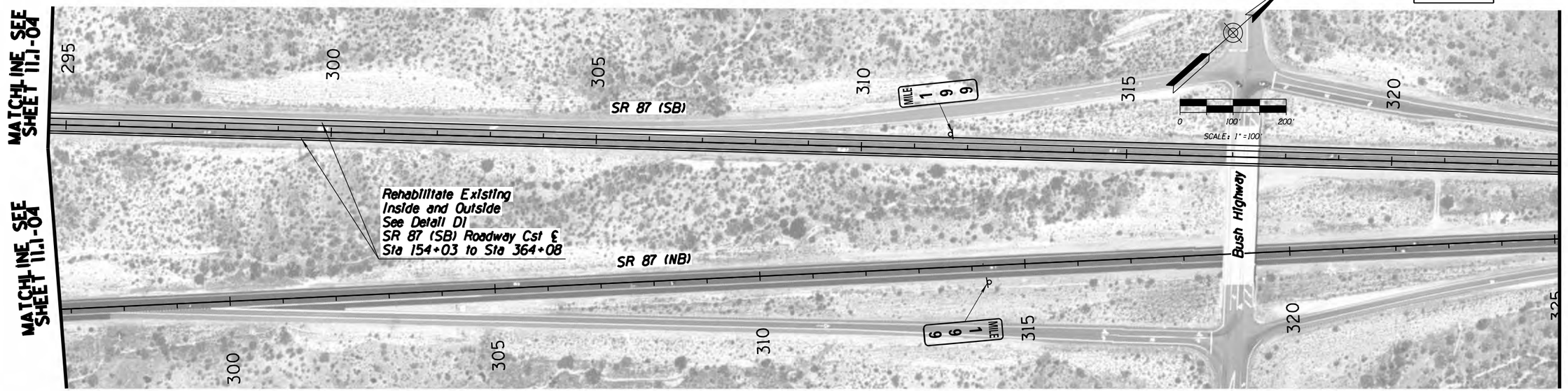
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

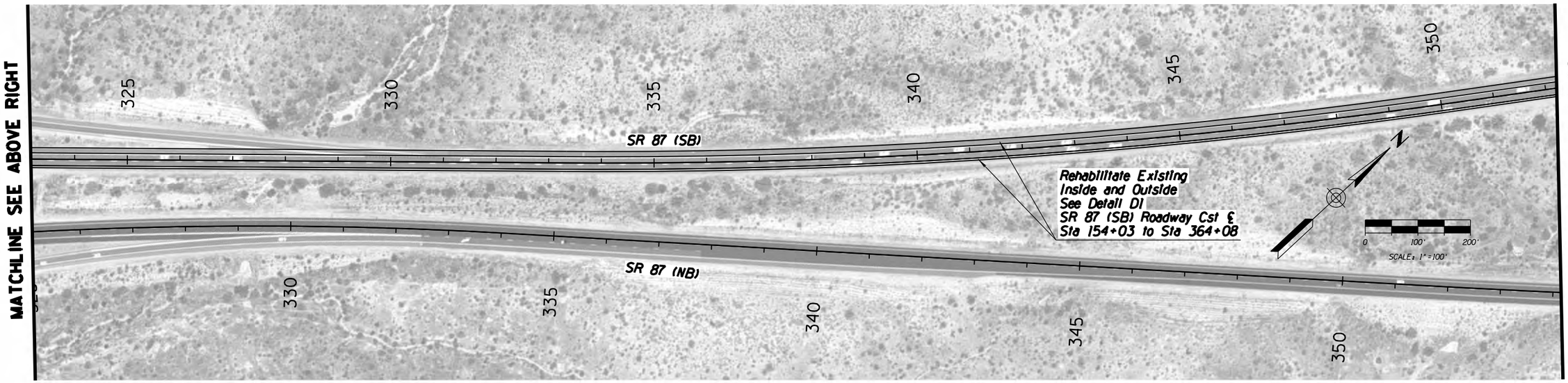
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	11.1-04
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT #2 CENTRAL DISTRICT
SHOULDER IMPROVEMENTS
MP 196 TO 211

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

TRACS NO. XXXXX XXX | XXX-X(XXX)X

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

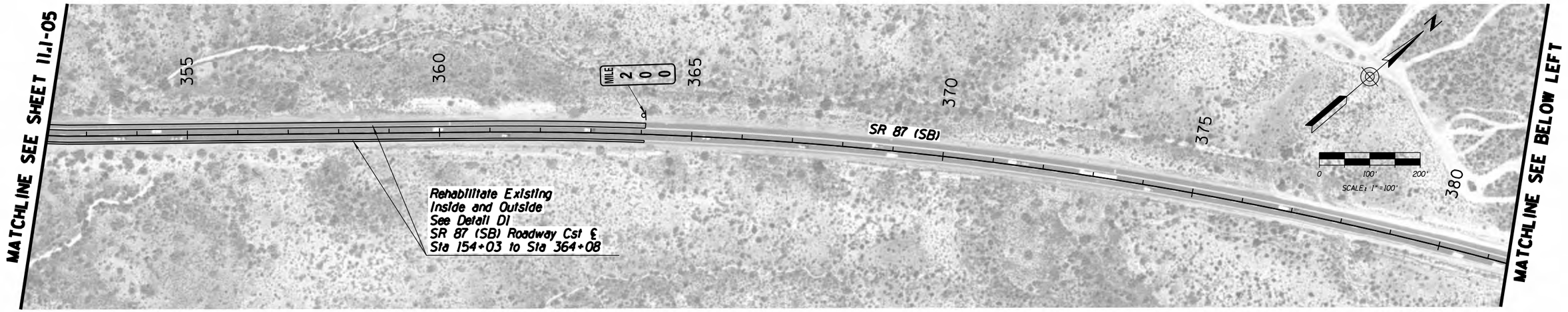
DWG NO. 11.1-05

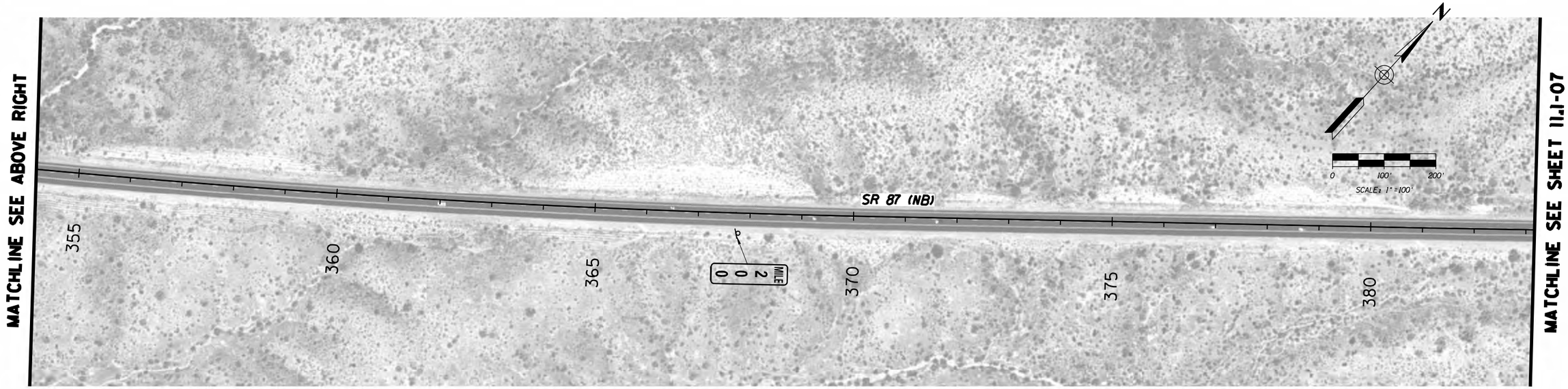
___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "2 CENTRAL DISTRICT
SHOULDER IMPROVEMENTS
MP 196 TO 211

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

TRACS NO. XXXXX XXX | XXX-X(XXX)X

PRELIMINARY
STAGE I
Review
NOT FOR
CONSTRUCTION
OR RECORDING

DWG NO. 11.1-06

___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

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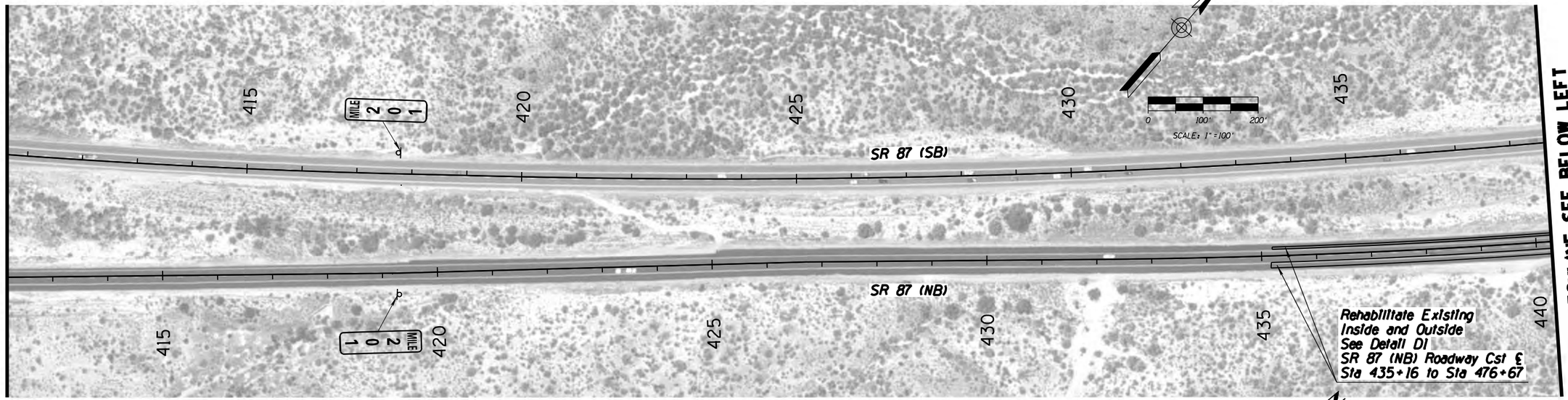
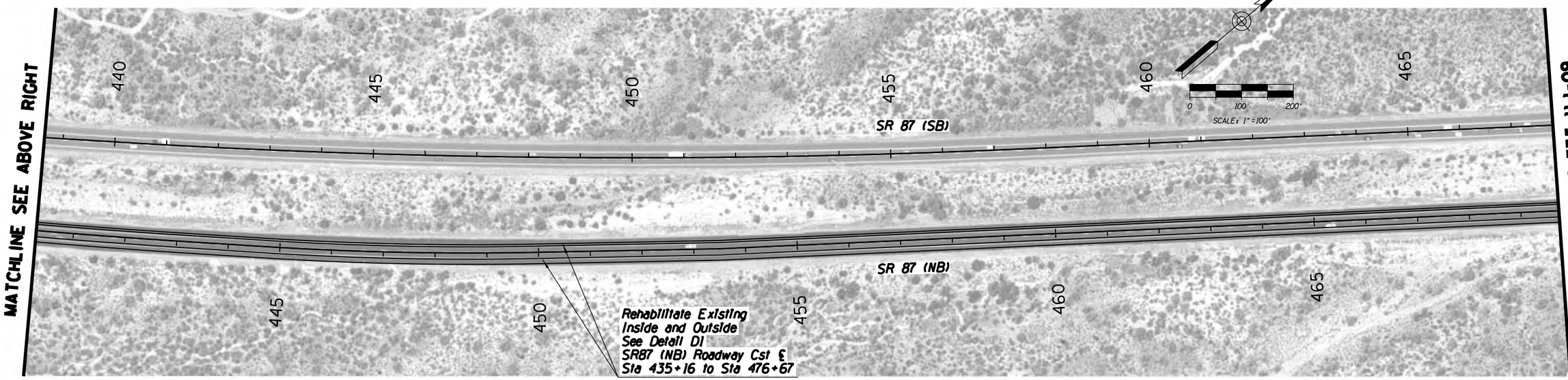
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "2 CENTRAL DISTRICT
SHOULDER IMPROVEMENTS
MP 196 TO 211

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

TRACS NO. XXXXX XXX | XXX-X(XXX)X

PRELIMINARY
STAGE I
Review
NOT FOR
CONSTRUCTION
OR RECORDING

DWG NO. 11.1-08

___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
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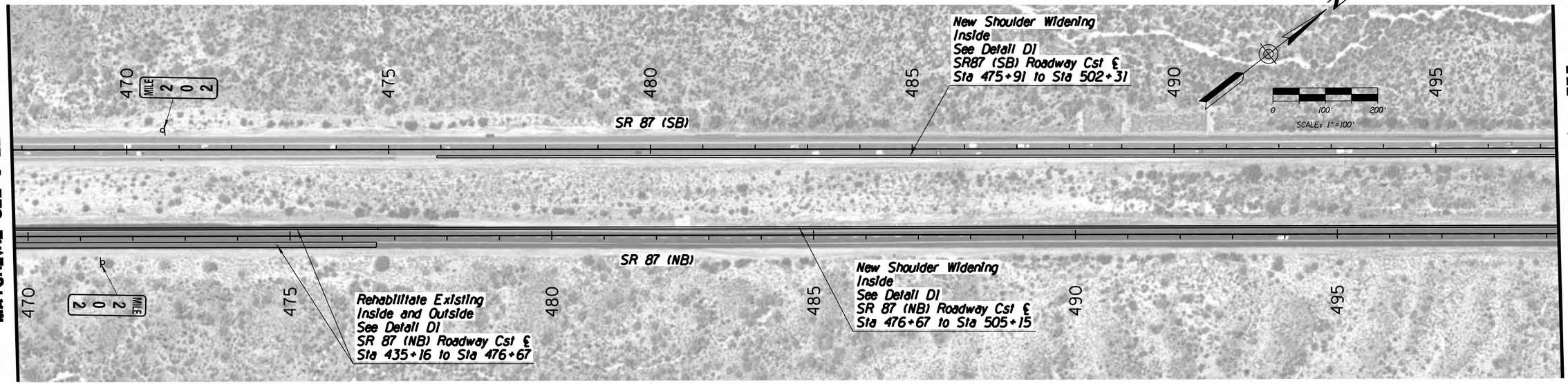
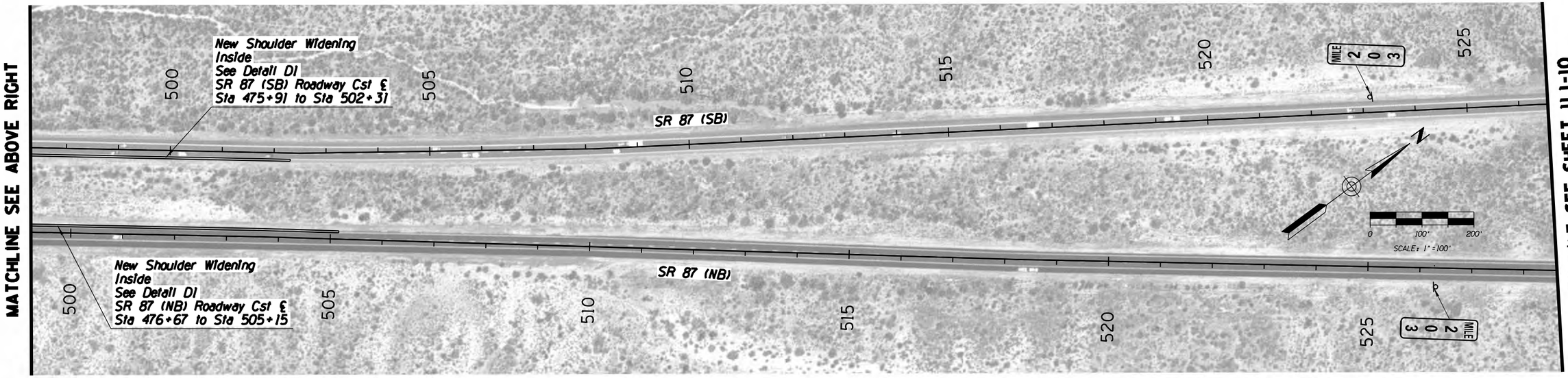
		-			





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CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT #2 CENTRAL DISTRICT SHOULDER IMPROVEMENTS MP 196 TO 211

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

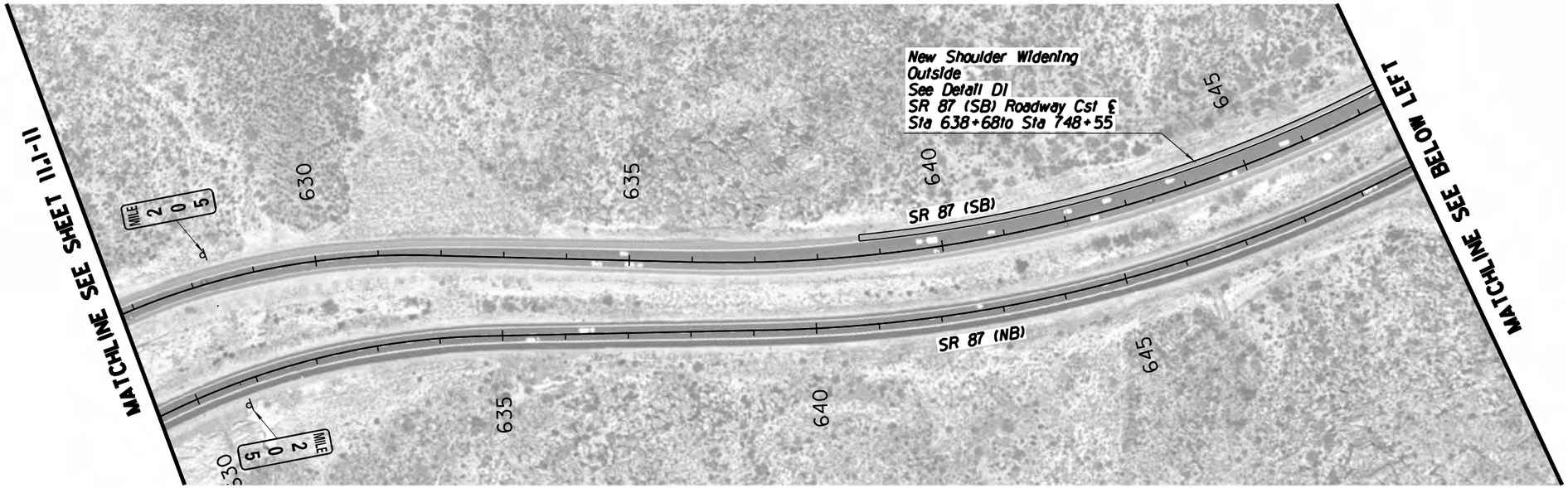
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	11.1-09

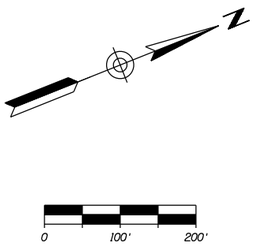
TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

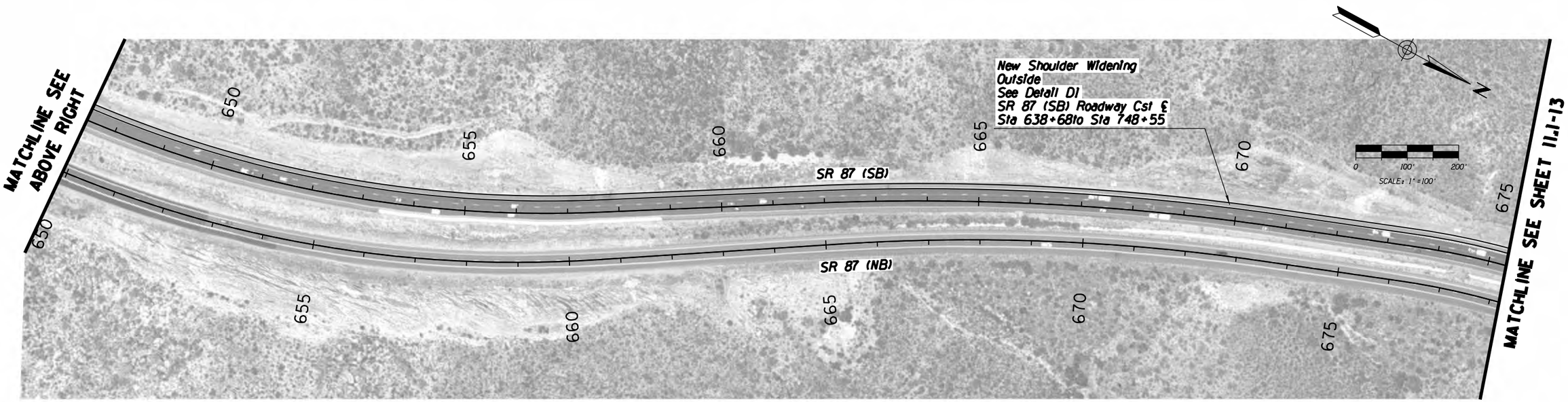
SURVEY NO. | FINISHED PLANS- | REVISIONS- | LOCATION- | DATE-

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			







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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT #2 CENTRAL DISTRICT
SHOULDER IMPROVEMENTS
MP 196 TO 211

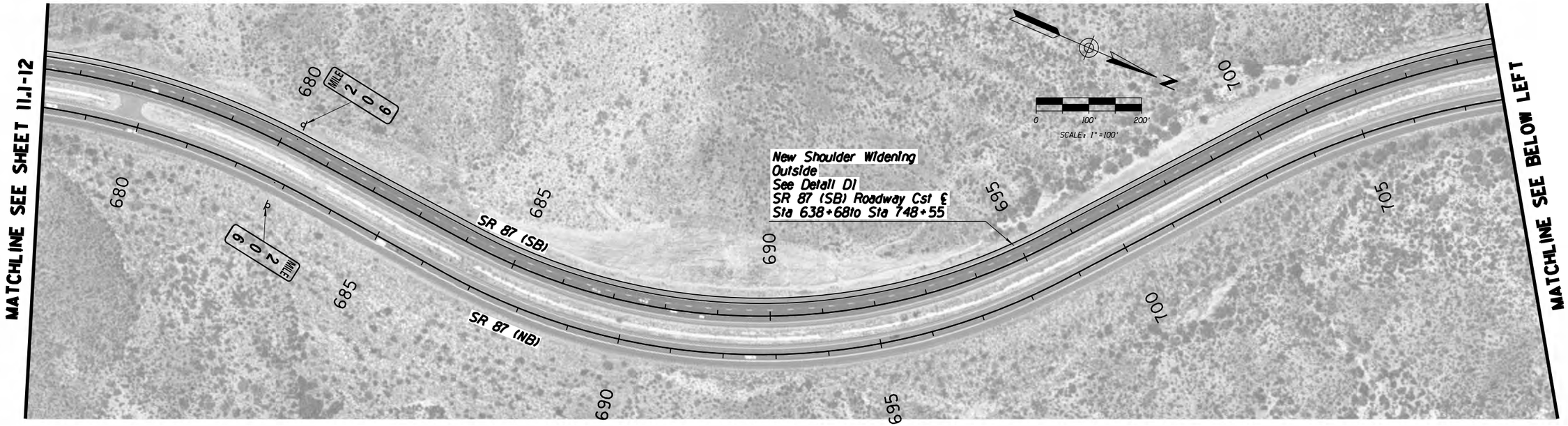
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

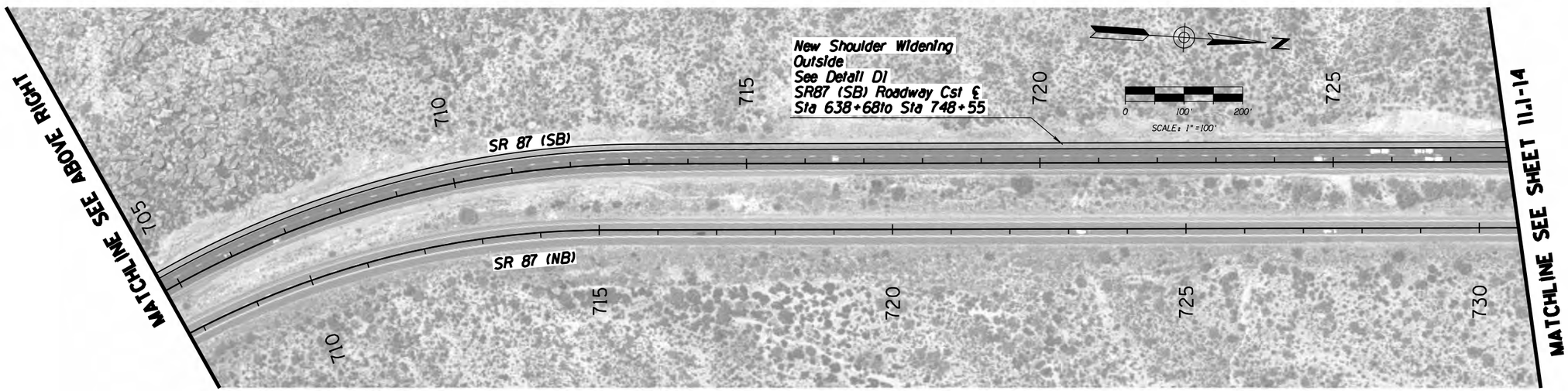
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	11.1-12
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





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DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "2 CENTRAL DISTRICT
SHOULDER IMPROVEMENTS
MP 196 TO 211

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

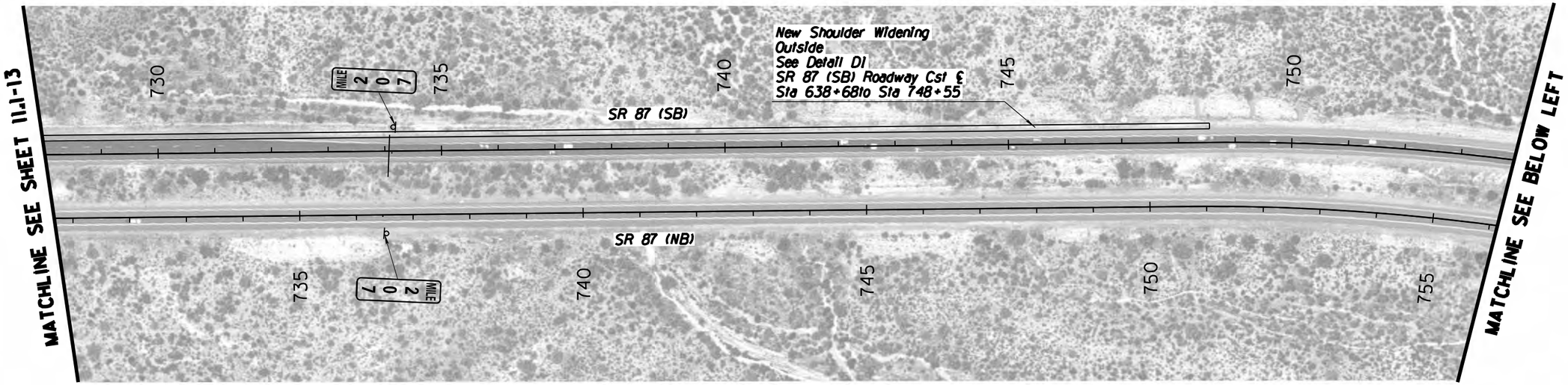
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	11.1-13

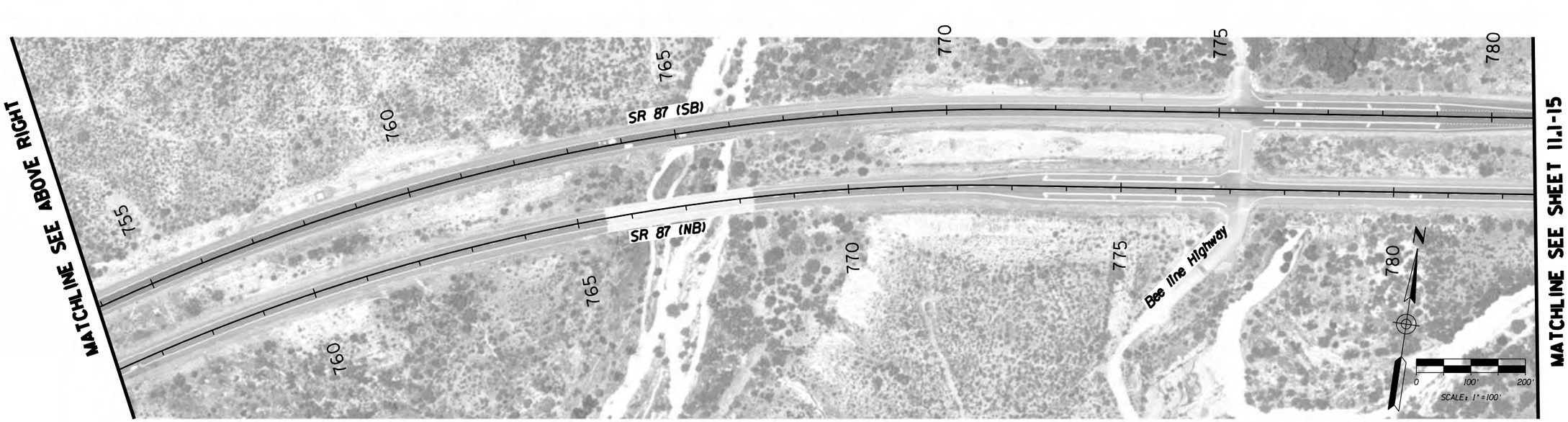
TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "2 CENTRAL DISTRICT
SHOULDER IMPROVEMENTS
MP 196 TO 211

PRELIMINARY
STAGE I
Review
NOT FOR
CONSTRUCTION
OR RECORDING

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

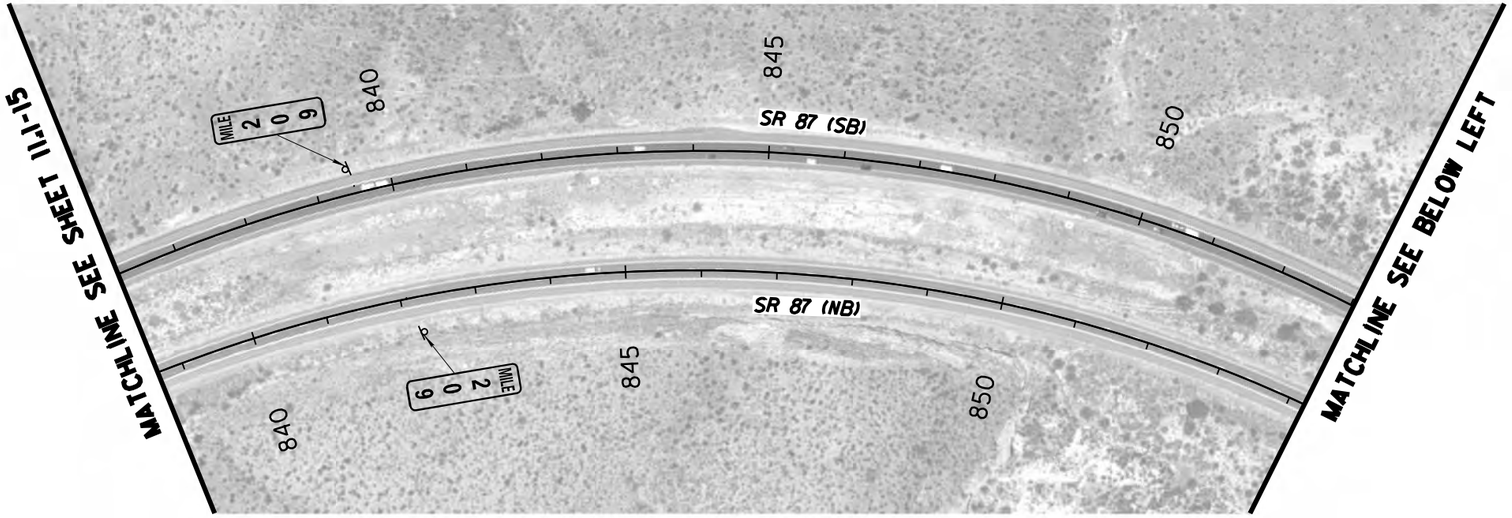
DWG NO. 11.1-14

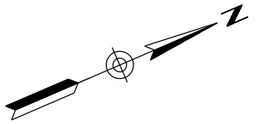
TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

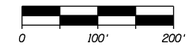
SURVEY NO. | FINISHED PLANS- | REVISIONS- | LOCATION- | DATE-

$TIME$ $DATE$ $USERNAME$ $FILE$

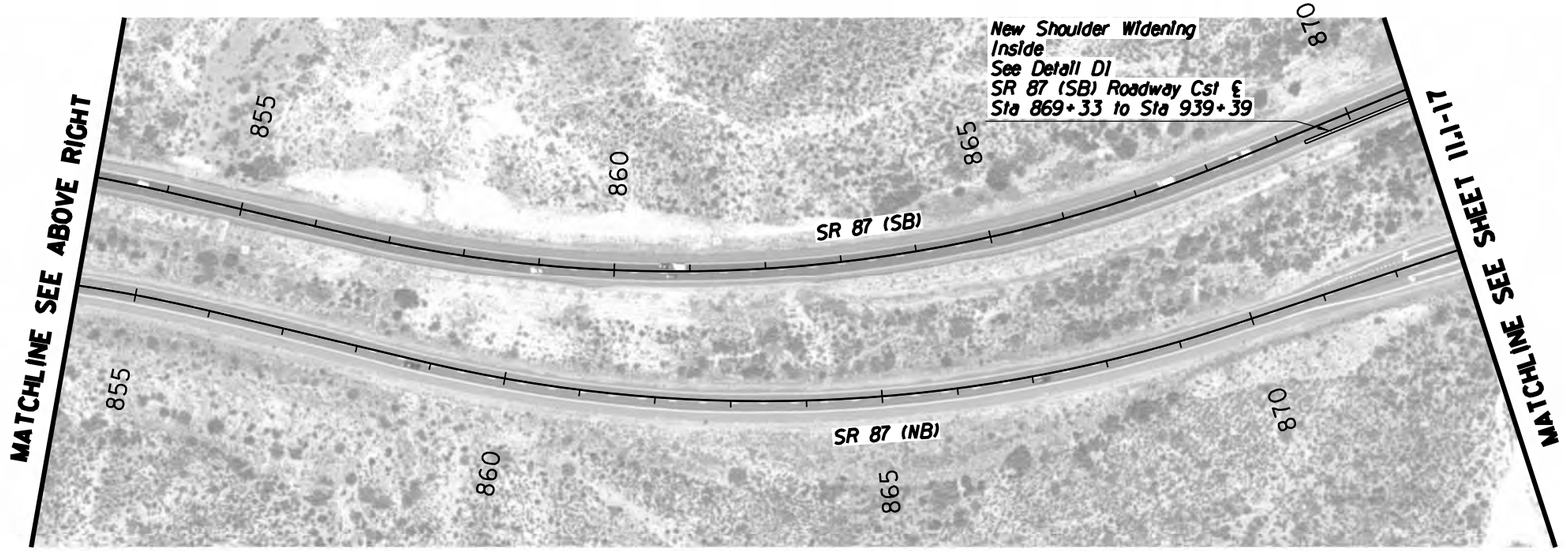
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

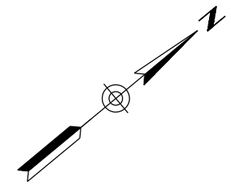


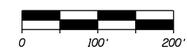




SCALE: 1" = 100'







SCALE: 1" = 100'

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "2 CENTRAL DISTRICT
SHOULDER IMPROVEMENTS
MP 196 TO 211

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

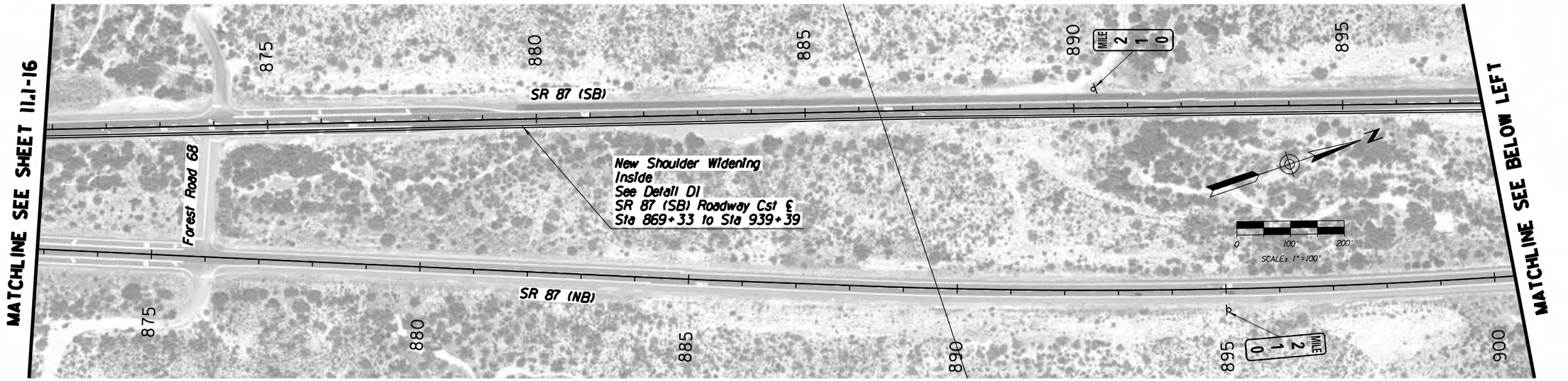
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	11.1-16

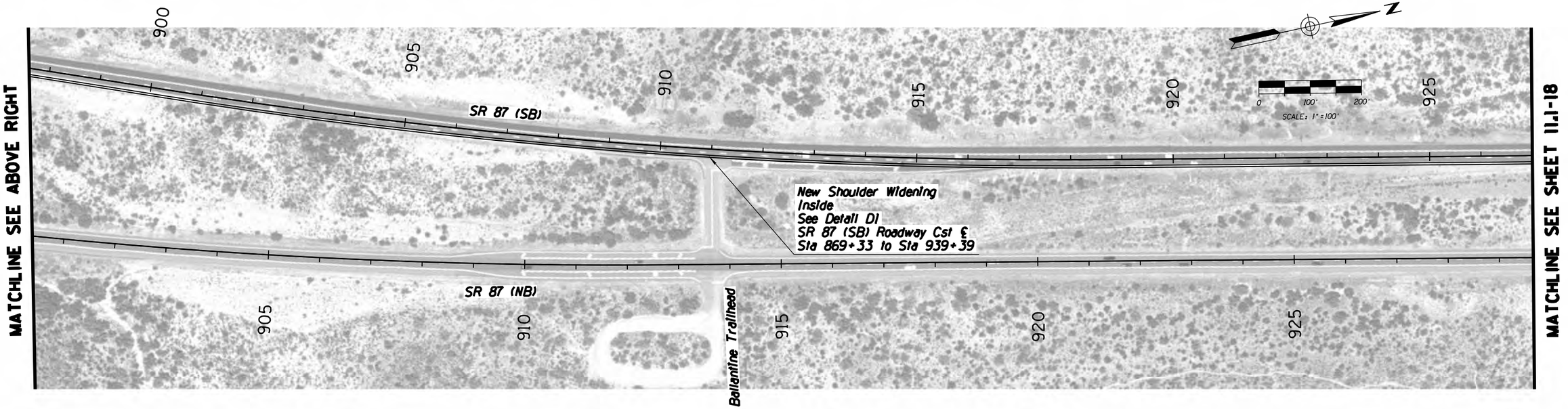
TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT #2 CENTRAL DISTRICT
SHOULDER IMPROVEMENT
MP 196 TO 211

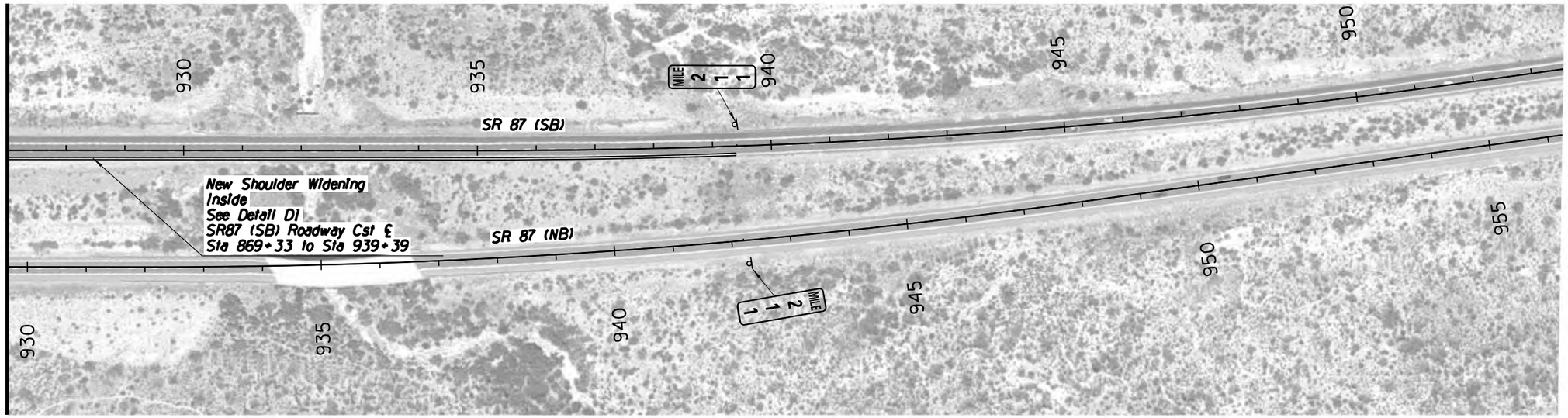
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	11.1-17
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



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0 100' 200'

SCALE: 1" = 100'

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT #2 CENTRAL DISTRICT
SHOULDER IMPROVEMENTS
MP 196 TO 211

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO. 11.1-18
SR 87	MP 190 TO MP 250	
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

PACKAGE PROJECT 3 –

NORTHBOUND IMPROVEMENTS

(MP 212-218)

ADOT SR 87 Corridor Development Study

PRELIMINARY SCOPING REPORT

GENERAL PROJECT INFORMATION	
Date: 8/20/2019	**ADOT Project Manager:**
Project Name: Northbound Improvements (MP 212-218)	
City/Town: N/A	**County:** Maricopa
COG/MPO: MAG	**ADOT District:** Central
Primary Route/Street: SR 87	
Beginning Limit: 212	
End Limit: 218	
Project Length: 6 Miles	
Right of Way Ownership(s) (where proposed project would occur): *(check all that apply)* ☐City/Town ☐County ☒ADOT ☐Private ☐Federal ☐Tribal ☐Other	
Adjacent Land Ownership(s): *(Check all that apply)* ☐City/Town ☐County ☐ADOT ☐Private ☒Federal ☐Tribal ☐Other	

PROJECT NEED
There are large speed differentials in due to the sustained uphill grade, when combined with tight curves causes a safety hazard; two intersections do not have deceleration lanes; substandard shoulder widths in isolated locations.

PROJECT PURPOSE			
What is the Primary Purpose of the Project?	☐Preservation	☒Modernization	☒Expansion
Construct a climbing lane to remove slow-moving heavy vehicles from the through traffic lanes, construct site-specific improvements at isolated locations to improve intersection safety and bring shoulders to current standards.			

PROJECT RISKS	
Check any risks identified that may impact the project's scope, schedule, or budget:	
☐Access/Traffic Control/Detour Issues	☐Right-of-Way
☐Constructability/Construction Window Issues	☐Environmental
☐Stakeholder Issues	☐Utilities
☐Structures & Geotech	☐Other:
Risk Description: *(if a box is checked above, briefly explain the risk)*	

Click or tap here to enter text.

POTENTIAL FUNDING SOURCE(S)				
Anticipated Project Design/Construction Funding Type: *(Check all that applied)*	☐STBG	☐TAP	☒HSIP	☒State
	☐Local	☐Private	☐Tribal	☐Other

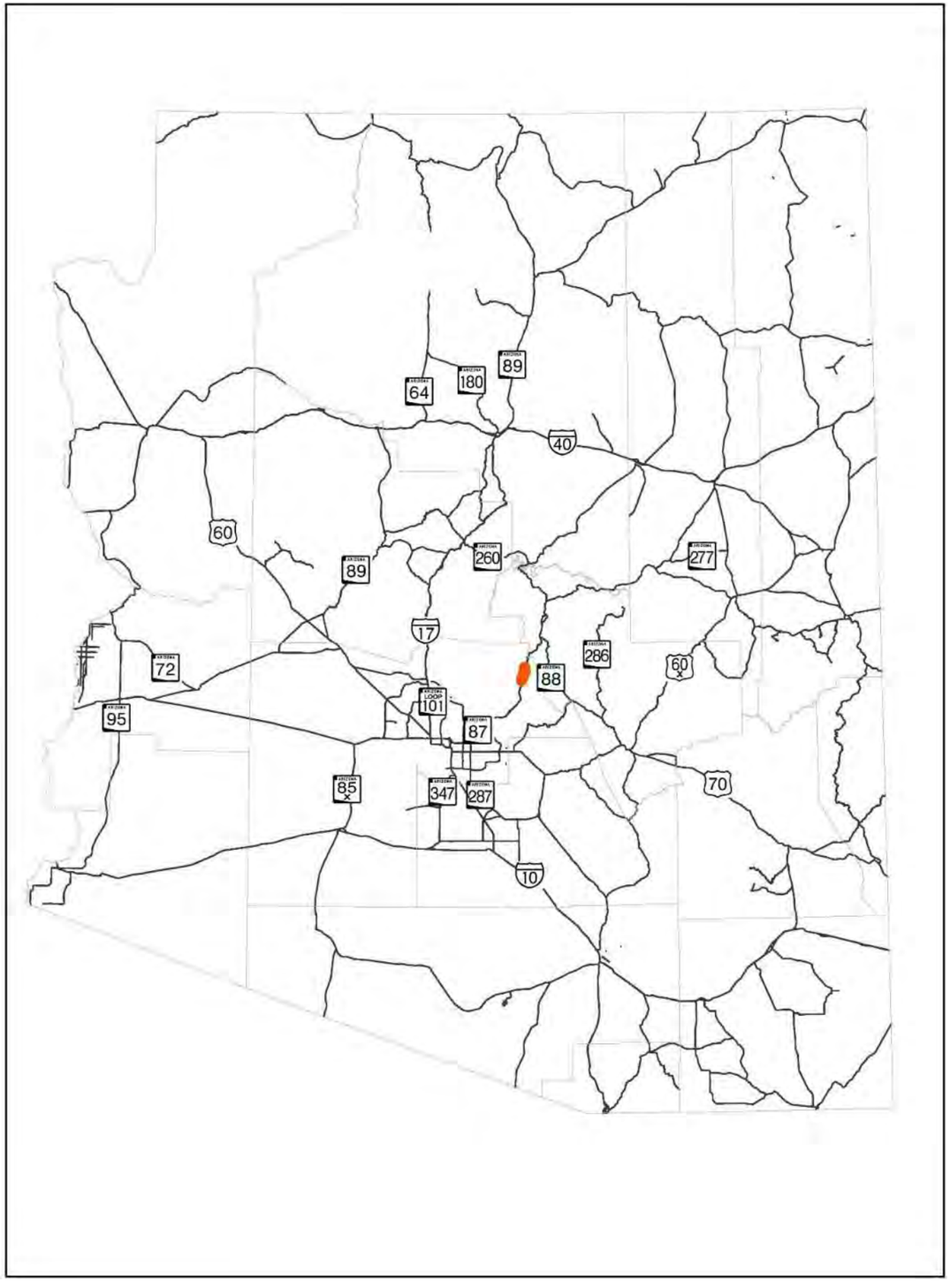
COST ESTIMATE			
Design $887,600.00	Right-of-Way $0.00	Construction $11,590,900.00	Total $12,478,500.00

RECOMMENDED PROJECT DELIVERY
Delivery: ☐Design-Bid-Build ☐Design-Build ☒Other:
Design Program Year: Click or tap here to enter text.
Construction Program Year: Click or tap here to enter text.

ATTACHMENTS
1. **Project Scope of Work**
2. **State Location Map**
3. **Project Vicinity Map**
4. **Itemized Cost Estimate**
5. **Conceptual Design Plans**

ATTACHMENT 1: SCOPE OF WORK
(Provide a detailed breakdown of the project's scope of work using bullet form) • Widen northbound inside shoulder to four feet (MP 212.5-213) • Construct left- and right-turn lanes, inside and outside acceleration lanes in both directions at Log Coral Wash (MP 212.7) • Construct northbound climbing lane (MP 213-216.7) • Add guardrail on east side of roadway (MP 213-213.4) • Address drainage issue between SB and NB alignments (MP 216) • Construct northbound left- and southbound right-turn lane (MP 217.5-217.5)

ATTACHMENT 2: STATE LOCATION MAP



ATTACHMENT 3: PROJECT VICINITY MAP

Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. Widen NB inside shoulder to 4’	22	212.5	213	$450,700	Current inside shoulder is insufficient width
2. Left- and right-turn/deceleration lanes, inside and outside lanes in both directions at the Log Coral Wash intersection	23	212.7	212.7	$2,330,600	There are no turn/deceleration lanes at this intersection, there is a high percentage of vehicles with trailers that may warrant acceleration lanes.
3. Construct NB climbing lane	26	213	216.7	$8,973,700	Approximately 15% of traffic on this segment is heavy commercial vehicles, average speeds are 8 mph under the speed limit, 33% of vehicles are traveling greater than 10 mph under the speed limit, this location is within an identified crash hot spot.
4. Add guardrail on east side of roadway	27	213	213.4	$207,700	Six crashes occurred on the curve in this section where the vehicle ran off the road to the right and the vehicle overturned
5. Address drainage issue between SB and NB alignments	35	216	216	$50,000	During rain events, water draining from the southbound alignment seeps through the rock face onto the northbound alignment below, causing water to gather in the outside northbound travel lane.
6. Add NB left-turn and SB right-turn lane	39	217.5	217.5	$465,800	There are currently no deceleration/turn lanes at this intersection.
			Total:	**$12,478,500**	

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

22. Widen northbound inside shoulder to 4' (MP 212.5)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	233	$35.00	$8,155
2020201	SAW CUTTING	L.FT.	2,092	$2.50	$5,230
2030301	ROADWAY EXCAVATION	CU.YD.	3,100	$10.00	$31,000
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	698	$120.00	$83,760
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	346	$160.00	$55,360
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	21	$120.00	$2,520
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$2,092.00	$2,092
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	2,092	$0.75	$1,569
			Roadway Construction Subtotal		**$203,186**
	Unidentified Item Allowance (15%)				$ 30,478
				Subtotal	**$233,664**
	Water Supply/Dust Palliative (3%)				$ 7,010
	Maintenance And Protection Of Traffic (15%)				$ 35,050
	Erosion Control (1%)				$ 2,337
	Contractor Quality Control (2%)				$ 4,674
	Construction Surveying And Layout (2%)				$ 4,674
				Other Item Subtotal	**$287,409**
	Mobilization (12%)				$ 34,490
				Construction Subtotal	**$ 321,899**
	Engineering Design (10%)				$ 32,190
	Construction Engineering and Contingencies (20%)				$ 64,380
	Indirect Cost Allocation (10.02%)				$ 32,255
				Construction Total	**$ 450,724**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

23. NB LT and RT lanes, inside and outside accel lanes and fix both shoulders at Log Coral Wash (MP 212.7)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	7,702	$20.00	$154,040
2020201	SAW CUTTING	L.FT.	4,332	$2.50	$10,830
2030301	ROADWAY EXCAVATION	CU.YD.	3,860	$10.00	$38,600
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	3,273	$60.00	$196,380
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	2,526	$80.00	$202,080
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	204	$100.00	$20,400
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$4,332.00	$4,332
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	4,332	$0.75	$3,249
				Roadway Construction Subtotal	**$648,411**
	Unidentified Item Allowance (15%)				$ 97,262
				Subtotal	**$745,673**
	Water Supply/Dust Palliative (3%)				$ 22,371
	Maintenance And Protection Of Traffic (15%)				$ 111,851
	Erosion Control (1%)				$ 7,457
	Contractor Quality Control (2%)				$ 14,914
	Construction Surveying And Layout (2%)				$ 14,914
				Other Item Subtotal	**$917,180**
	Mobilization (12%)				$ 110,062
				Construction Subtotal	**$ 1,027,242**
	Engineering Design (10%)				$ 102,725
	Construction Engineering and Contingencies (20%)				$ 205,449
	Indirect Cost Allocation (10.02%)				$ 102,930
				Construction Total	**$ 1,438,346**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

23. Southbound left- and right-turn lanes, inside and outside acceleration lanes and fix both shoulders at Log Coral Wash (MP 21

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	3,792	$20.00	$75,840
2020053	REMOVE (GR TERMINAL)	EACH	4	$400.00	$1,600
2020071	REMOVE GUARD RAIL	L.FT.	800	$5.00	$4,000
2020201	SAW CUTTING	L.FT.	2,133	$2.50	$5,333
2030301	ROADWAY EXCAVATION	CU.YD.	1,900	$10.00	$19,000
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	1,578	$60.00	$94,680
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	1,188	$120.00	$142,560
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	95	$120.00	$11,400
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$2,133.00	$2,133
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	800	$30.00	$24,000
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	2	$2,500.00	$5,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	2	$800.00	$1,600
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	2,133	$0.75	$1,600
				Roadway Construction Subtotal	**$402,245**
	Unidentified Item Allowance (15%)				$ 60,337
				Subtotal	**$462,582**
	Water Supply/Dust Palliative (3%)				$ 13,878
	Maintenance And Protection Of Traffic (15%)				$ 69,388
	Erosion Control (1%)				$ 4,626
	Contractor Quality Control (2%)				$ 9,252
	Construction Surveying And Layout (2%)				$ 9,252
				Other Item Subtotal	**$568,978**
	Mobilization (12%)				$ 68,278
				Construction Subtotal	**$ 637,256**
	Engineering Design (10%)				$ 63,726
	Construction Engineering and Contingencies (20%)				$ 127,452
	Indirect Cost Allocation (10.02%)				$ 63,854
				Construction Total	**$ 892,289**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

26. Construct northbound climbing lane (MP 213-216.7)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	14	$5,000.00	$70,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	2,231	$20.00	$44,620
2020053	REMOVE (GR TERMINAL)	EACH	4	$400.00	$1,600
2020071	REMOVE GUARD RAIL	L.FT.	5,019	$5.00	$25,095
2020201	SAW CUTTING	L.FT.	20,076	$2.50	$50,190
2030301	ROADWAY EXCAVATION	CU.YD.	1,490	$10.00	$14,900
2030901	BORROW	CU.YD.	148,720	$12.00	$1,784,640
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	14,128	$50.00	$706,400
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	10,698	$80.00	$855,840
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	856	$90.00	$77,040
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$20,076.00	$20,076
8050003	SEEDING (CLASS II)	ACRE	14	$3,500.00	$49,000
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	10,038	$30.00	$301,140
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	6	$2,500.00	$15,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	6	$800.00	$4,800
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	20,076	$0.75	$15,057
				Roadway Construction Subtotal	**$4,045,398**
	Unidentified Item Allowance (15%)				$ 606,810
				Subtotal	**$4,652,208**
	Water Supply/Dust Palliative (3%)				$ 139,567
	Maintenance And Protection Of Traffic (15%)				$ 697,832
	Erosion Control (1%)				$ 46,523
	Contractor Quality Control (2%)				$ 93,045
	Construction Surveying And Layout (2%)				$ 93,045
				Other Item Subtotal	**$5,722,220**
	Mobilization (12%)				$ 686,667
				Construction Subtotal	**$ 6,408,887**
	Engineering Design (10%)				$ 640,889
	Construction Engineering and Contingencies (20%)				$ 1,281,778
	Indirect Cost Allocation (10.02%)				$ 642,171
				Construction Total	**$ 8,973,725**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

27. Add guardrail on right (east) side of roadway (MP 213-213.4)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2030301	ROADWAY EXCAVATION	CU.YD.	950	$10.00	$9,500
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	2,135	$30.00	$64,050
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	2	$2,500.00	$5,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	2	$800.00	$1,600
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
				Roadway Construction Subtotal	**$93,650**
	Unidentified Item Allowance (15%)				$ 14,048
				Subtotal	**$107,698**
	Water Supply/Dust Palliative (3%)				$ 3,231
	Maintenance And Protection Of Traffic (15%)				$ 16,155
	Erosion Control (1%)				$ 1,077
	Contractor Quality Control (2%)				$ 2,154
	Construction Surveying And Layout (2%)				$ 2,154
				Other Item Subtotal	**$132,469**
	Mobilization (12%)				$ 15,897
				Construction Subtotal	**$ 148,366**
	Engineering Design (10%)				$ 14,837
	Construction Engineering and Contingencies (20%)				$ 29,674
	Indirect Cost Allocation (10.02%)				$ 14,867
				Construction Total	**$ 207,744**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

39. Add northbound left-turn lane (MP 217.5)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	61	$35.00	$2,135
2020201	SAW CUTTING	L.FT.	541	$2.50	$1,353
2030301	ROADWAY EXCAVATION	CU.YD.	490	$10.00	$4,900
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	381	$120.00	$45,720
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	289	$160.00	$46,240
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	24	$120.00	$2,880
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$541.00	$541
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	181	$30.00	$5,430
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	1	$2,500.00	$2,500
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	1	$800.00	$800
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	541	$1.50	$812
				Roadway Construction Subtotal	**$126,810**
	Unidentified Item Allowance (15%)				$ 19,022
				Subtotal	**$145,832**
	Water Supply/Dust Palliative (3%)				$ 4,375
	Maintenance And Protection Of Traffic (15%)				$ 21,875
	Erosion Control (1%)				$ 1,459
	Contractor Quality Control (2%)				$ 2,917
	Construction Surveying And Layout (2%)				
				Other Item Subtotal	**$179,375**
	Mobilization (12%)				$ 21,525
				Construction Subtotal	**$ 200,900**
	Engineering Design (10%)				$ 20,090
	Construction Engineering and Contingencies (20%)				$ 40,180
	Indirect Cost Allocation (10.02%)				$ 20,131
				Construction Total	**$ 281,301**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

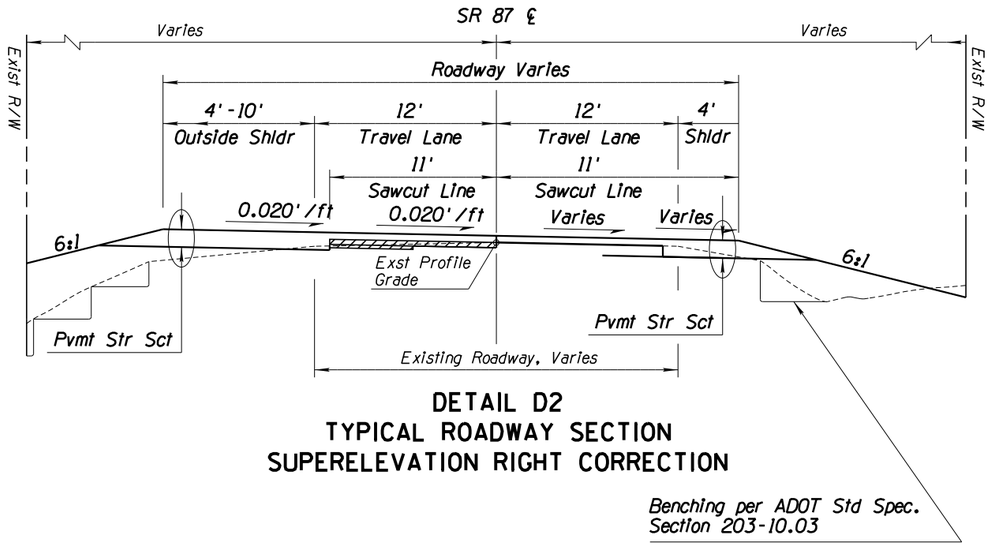
39. Southbound right-turn lane (MP 217.5)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	61	$35.00	$2,135
2020201	SAW CUTTING	L.FT.	541	$2.50	$1,353
2030301	ROADWAY EXCAVATION	CU.YD.	490	$10.00	$4,900
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	261	$120.00	$31,320
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	169	$160.00	$27,040
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	13	$120.00	$1,560
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$541.00	$541
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	541	$1.50	$812
				Roadway Construction Subtotal	**$83,160**
	Unidentified Item Allowance (15%)				$ 12,474
				Subtotal	**$95,634**
	Water Supply/Dust Palliative (3%)				$ 2,870
	Maintenance And Protection Of Traffic (15%)				$ 14,346
	Erosion Control (1%)				$ 957
	Contractor Quality Control (2%)				$ 1,913
	Construction Surveying And Layout (2%)				$ 1,913
				Other Item Subtotal	**$117,633**
	Mobilization (12%)				$ 14,116
				Construction Subtotal	**$ 131,749**
	Engineering Design (10%)				$ 13,175
	Construction Engineering and Contingencies (20%)				$ 26,350
	Indirect Cost Allocation (10.02%)				$ 13,202
				Construction Total	**$ 184,476**

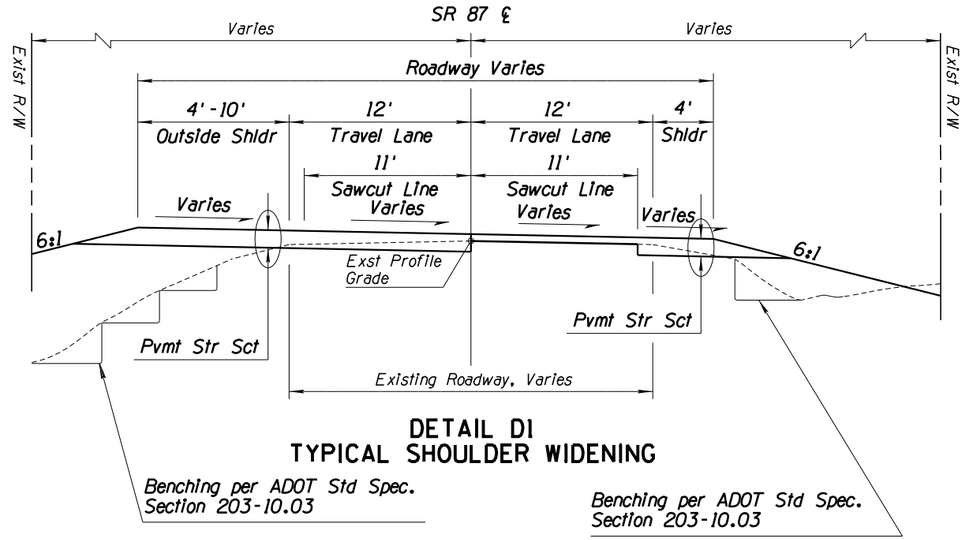
ATTACHMENT 5: PRELIMINARY PLANS

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

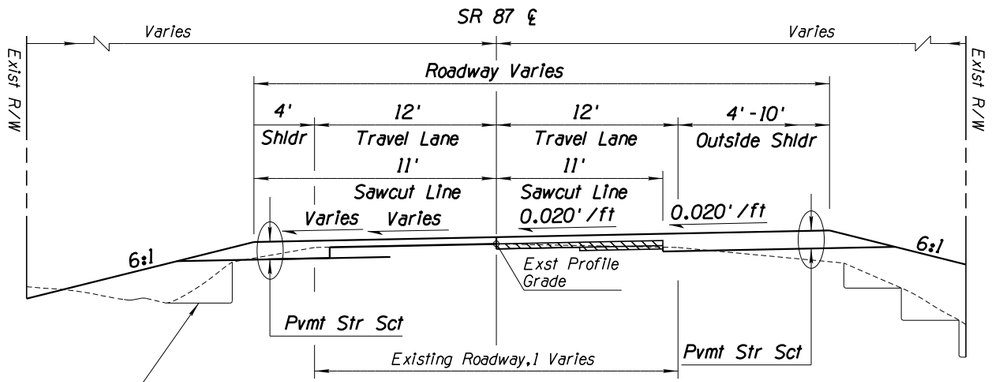
SR 87 MILE POST STATION			
MP NB	STATION	MP SB	STATION
196	101+73	196	101+18
197	155+53	197	154+02
198	207+69	198	207+94
199	261+02	199	259+13
200	314+21	200	311+72
201	367+73	201	364+06
202	419+18	202	417+81
203	471+36	203	470+65
204	526+28	204	523+10
205	577+70	205	575+84
206	630+73	206	628+30
207	682+81	207	680+28
208	736+47	208	734+12
209	788+55	209	786+62
210	842+08	210	839+50
211	894+91	211	890+40
212	942+20	212	939+42
213	998+65	213	995+55
214	1051+86	214	1050+06
215	1105+38	215	1095+77
216	1158+68	216	1147+95
217	1213+92	217	1199+48
218	1268+31	218	1250+20
219	1318+19	219	1304+12
220	1374+67	220	1359+76
221	1427+95	221	1412+99
222	1480+60	222	1465+84
223	1533+97	223	1518+89
224	1584+61	224	1570+72
225	1639+50	225	1625+29
226	1689+86	226	1676+32
227	1740+23	227	1726+14
228	1792+50	228	1778+04
229	1845+24	229	1831+98
230	1898+50	230	1884+70
231	1949+61	231	1933+71
232	1999+33	232	1985+29
233	2047+74	233	2033+06
234	2101+13	234	2085+05
235	2154+59	235	2137+29
236	2207+09	236	2189+44
237	2259+88	237	2240+86
238	2311+66	238	2293+85
239	2364+28	239	2344+91
240	2416+01	240	2397+41
241	2467+79	241	2448+96
242	2518+51	242	2496+68
243	2571+26	243	2549+70
244	2620+38	244	2601+82
245	2677+47	245	2655+01
246	2729+53	246	2703+04
247	2741+30	247	2747+68
248	2794+18	248	2801+15
249	2847+25	249	2854+41
250	2899+69	250	2906+58



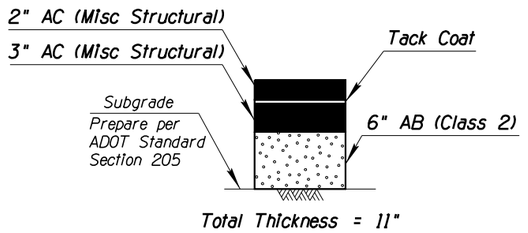
DETAIL D2
TYPICAL ROADWAY SECTION SUPERELEVATION RIGHT CORRECTION



DETAIL D1
TYPICAL SHOULDER WIDENING



DETAIL D3
TYPICAL ROADWAY SECTION SUPERELEVATION LEFT CORRECTION



Total Thickness = 11"

PAVEMENT STRUCTURAL SECTION

	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

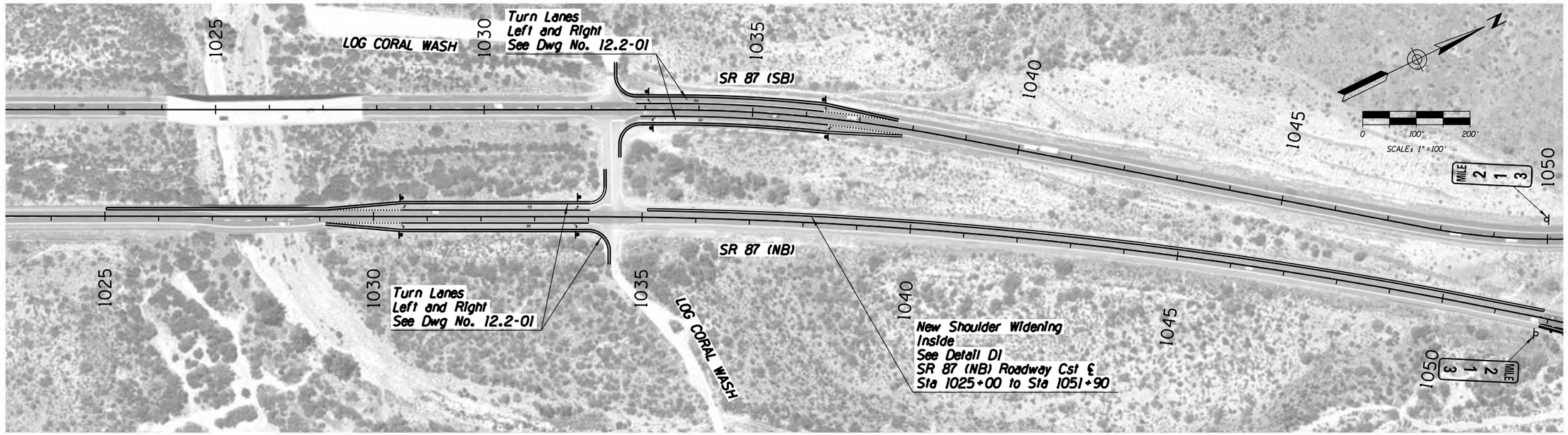
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	___ OF ___

TRACS NO. XXXXX XXX | XXX-X(XXX)X

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

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



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

	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "3 NB IMPROVEMENTS
MP 212 TO 218

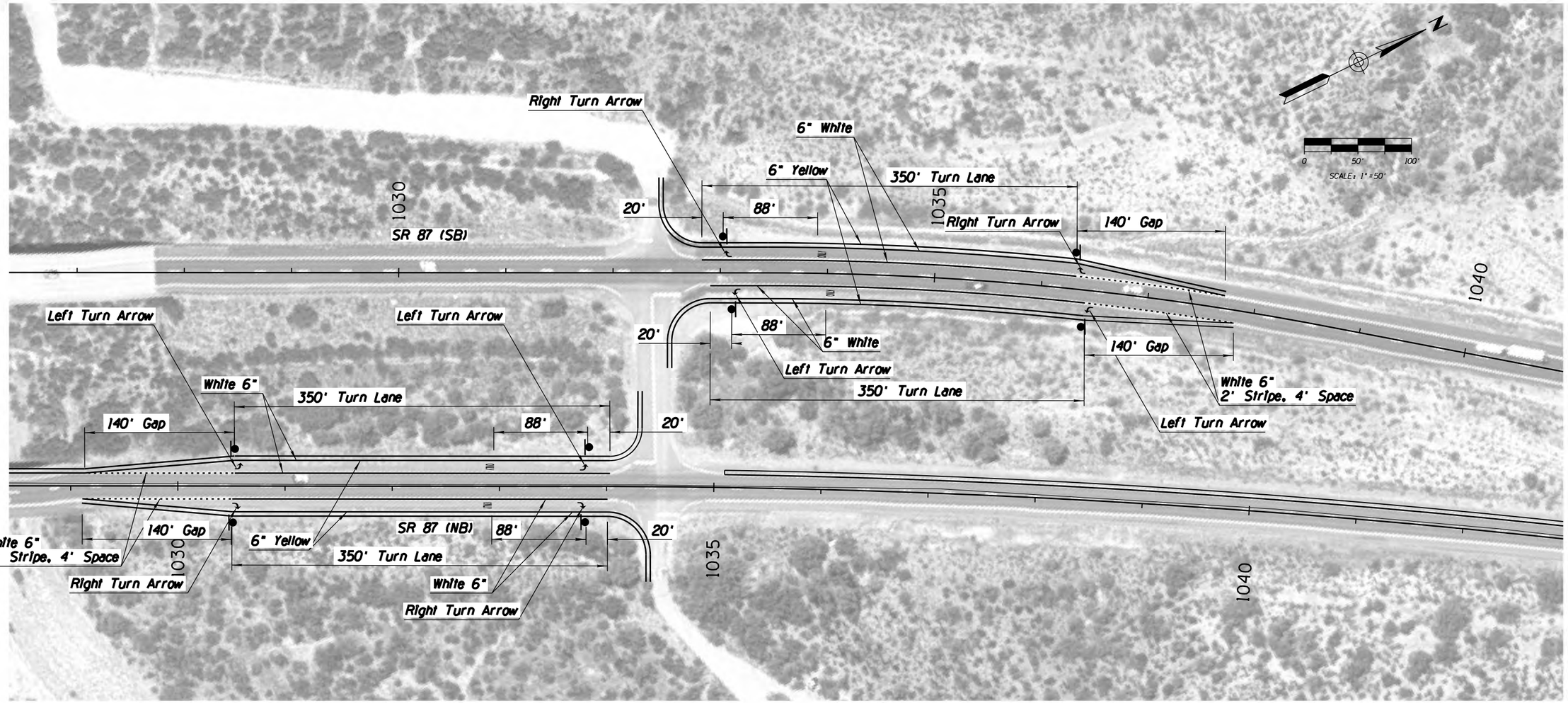
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	12.1-01

TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "3 NB IMPROVEMENTS
MP 212 TO 218

ROUTE: SR 87
LOCATION: MP 190 TO MP 250

TRACS NO. XXXXX XXX
XXX-X(XXX)X

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

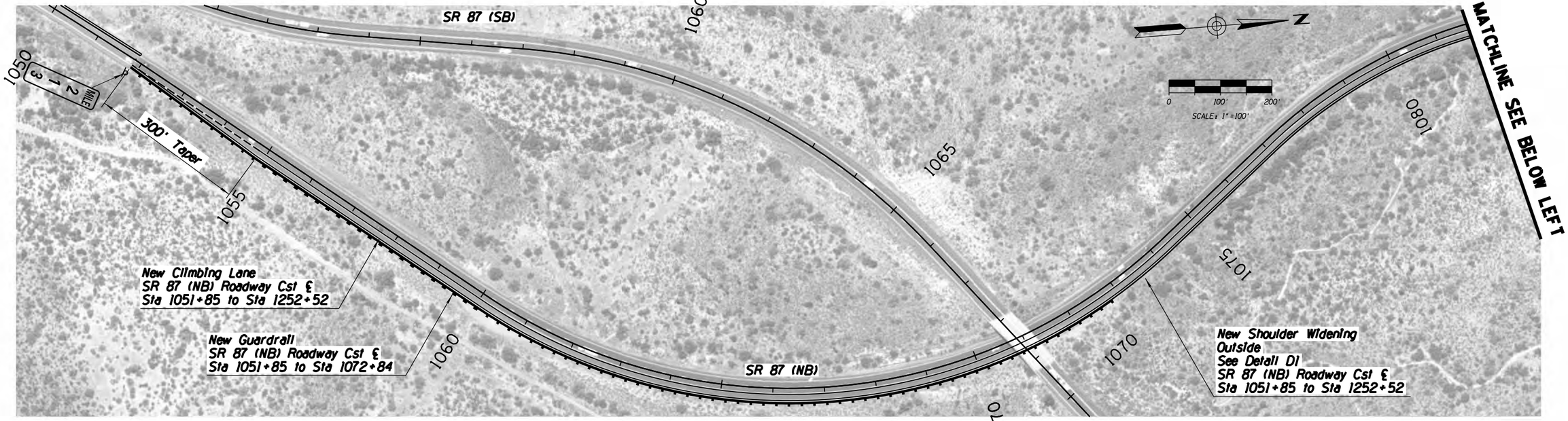
DWG NO. 12.2-01

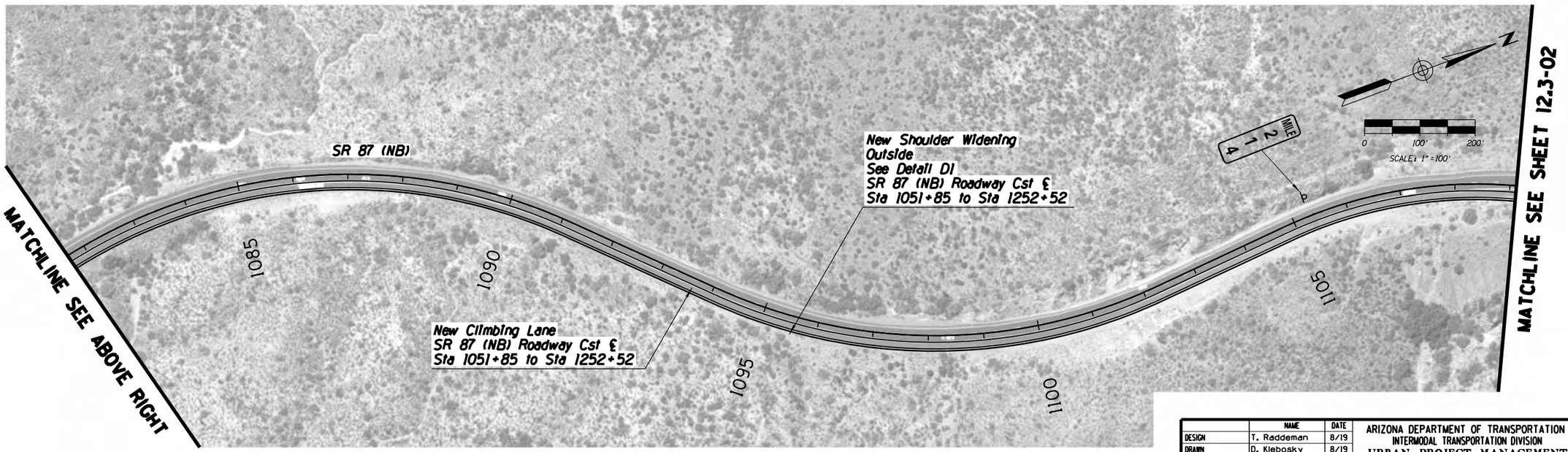
___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "3 NB IMPROVEMENTS
MP 212 TO 218

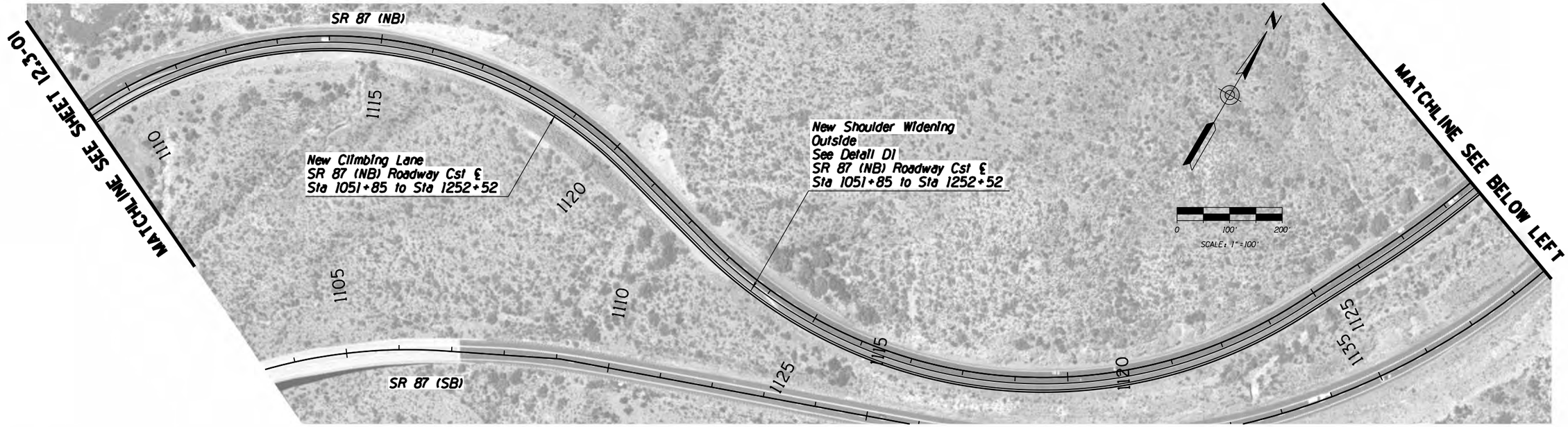
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

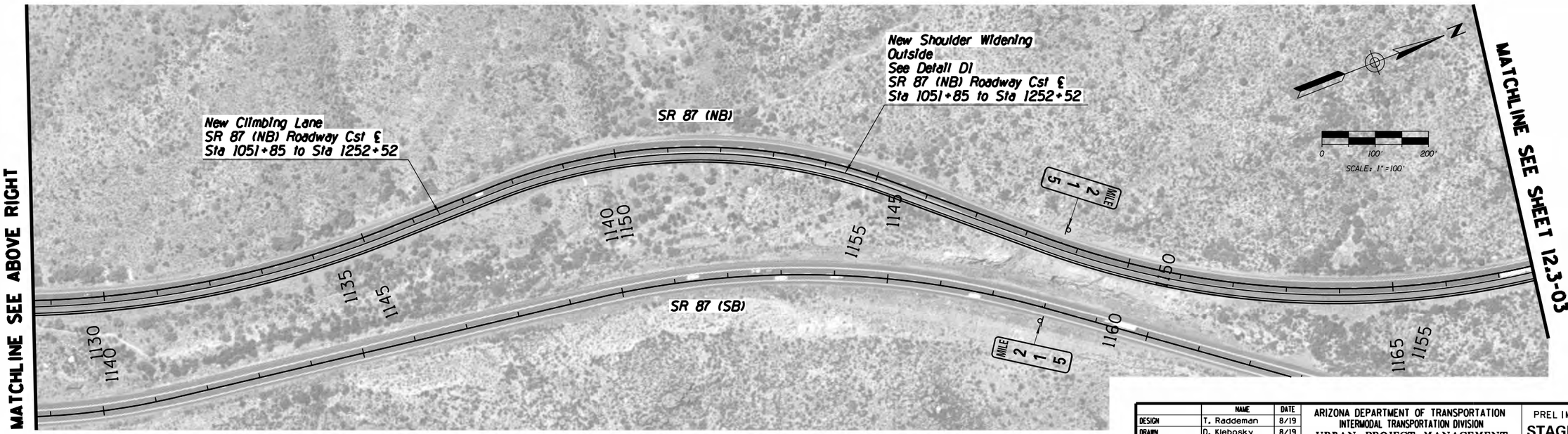
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	12.3-01
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "3 NB IMPROVEMENTS
MP 212 TO 218

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

TRACS NO. XXXXX XXX | XXX-X(XXX)X

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

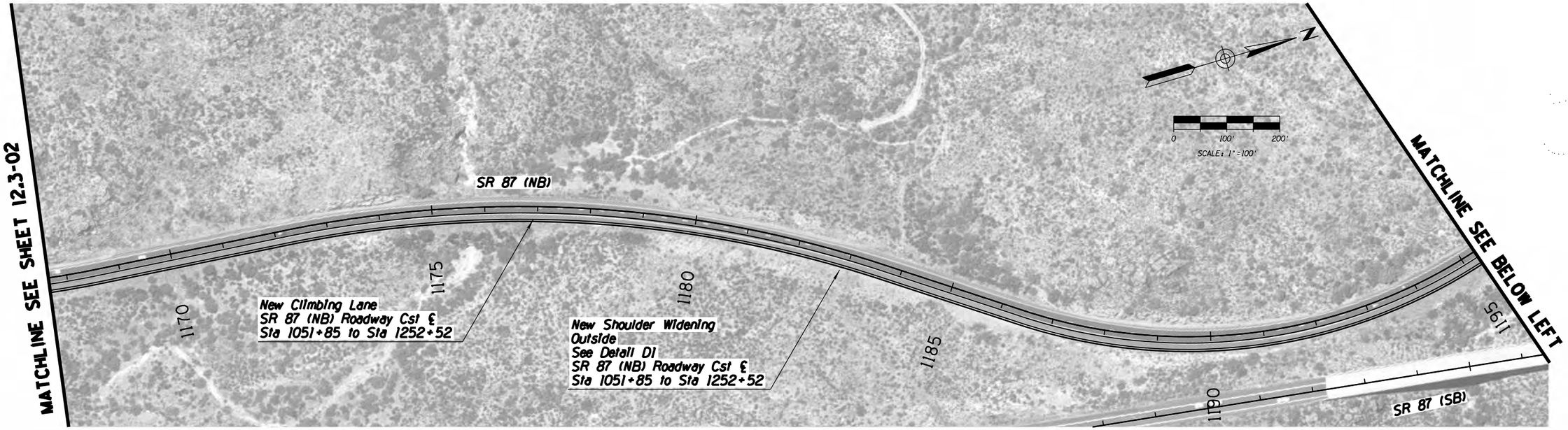
DWG NO. 12.3-02

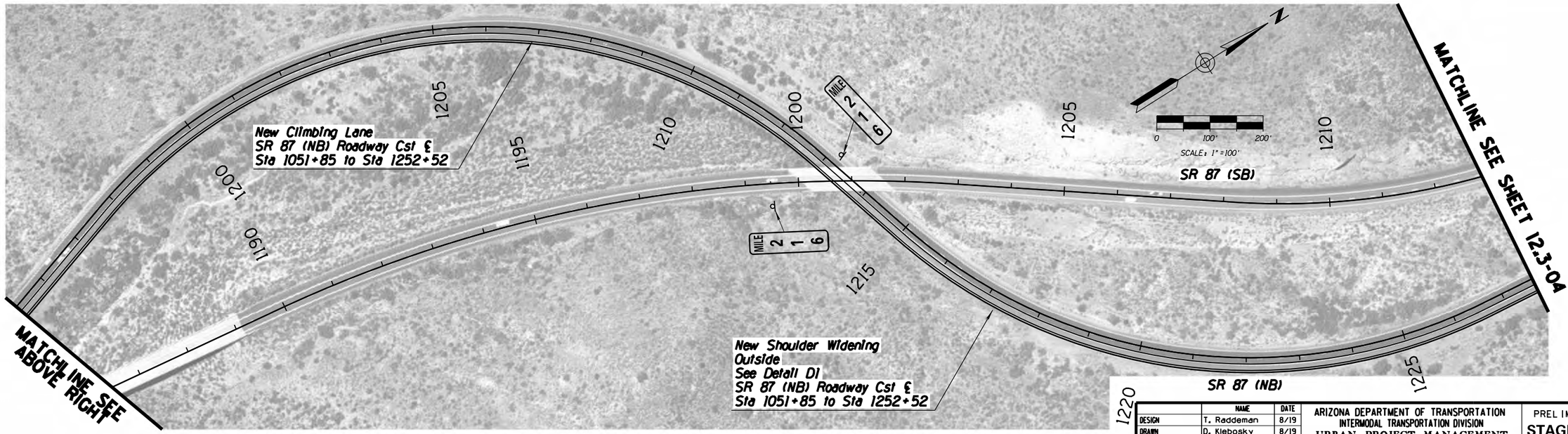
___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "3 NB IMPROVEMENTS
MP 212 TO 218

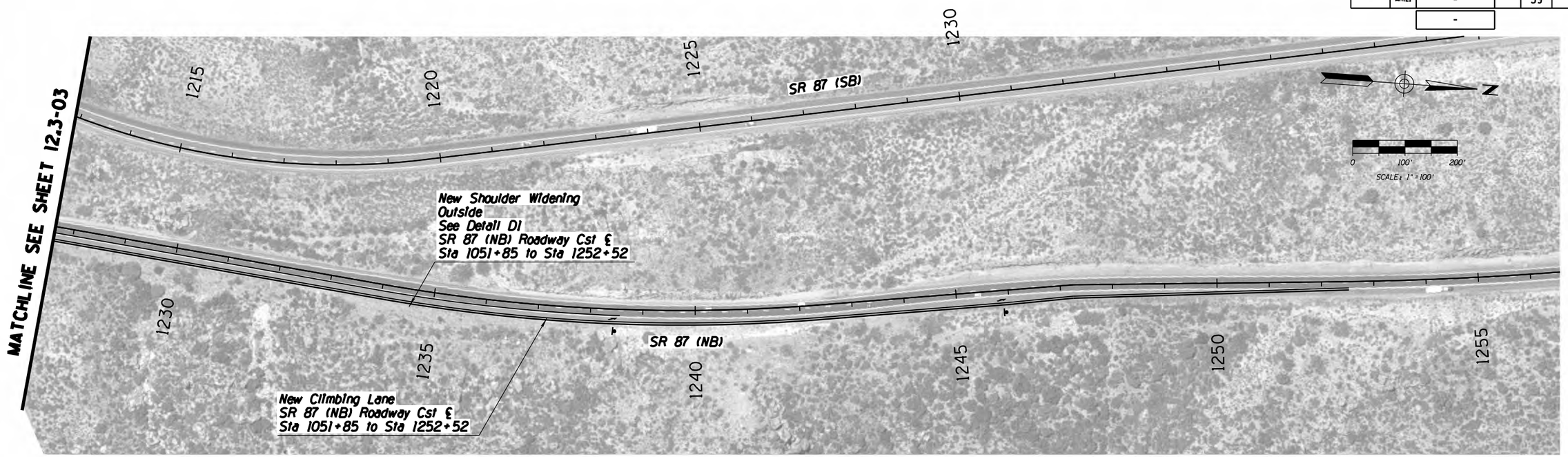
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	12.3-03
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "3 NB IMRPOVEMENTS
MP 212 TO 218

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

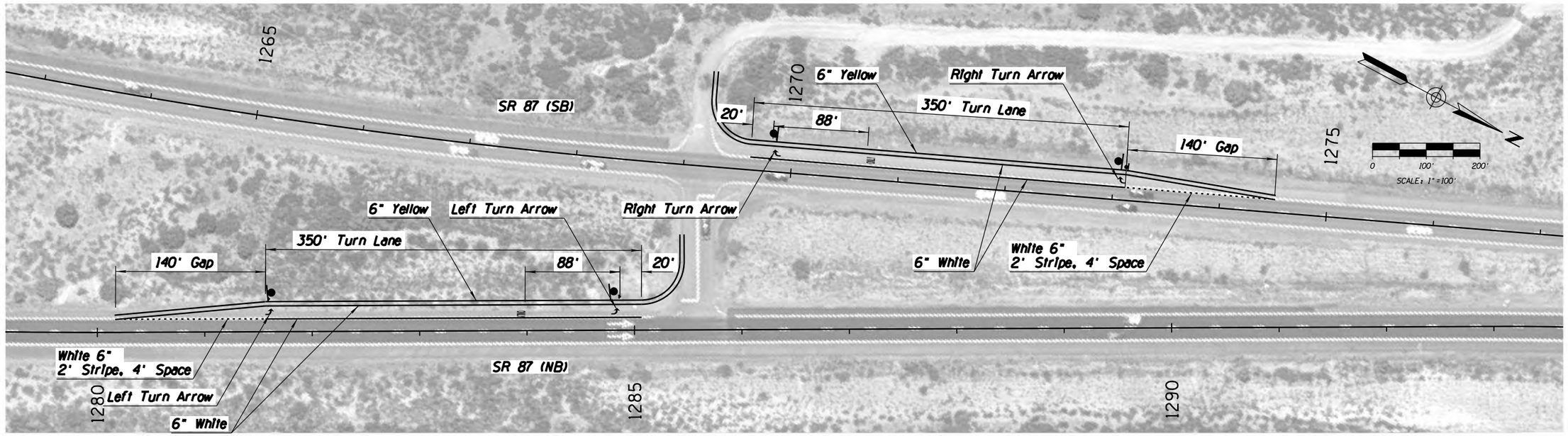
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	12.3-04

TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



	NAME	DATE
DESIGN	SS	8/19
DRAWN	CEM	8/19
CHECKED	RLK	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "3 NB IMPROVEMENTS
MP 212 TO 218

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	12.5-01

TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

PACKAGE PROJECT 4 –

CENTRAL DISTRICT ROCK-FALL MITIGATION

(MP 213-218)

ADOT SR 87 Corridor Development Study

PRELIMINARY SCOPING REPORT

GENERAL PROJECT INFORMATION	
Date: 8/20/2019	**ADOT Project Manager:**
Project Name: Central District Rock-Fall Mitigation	
City/Town: N/A	**County:** Maricopa
COG/MPO: MAG	**ADOT District:** Central
Primary Route/Street: SR 87	
Beginning Limit: 214	
End Limit: 218	
Project Length: 4 Miles	
Right of Way Ownership(s) (where proposed project would occur): *(check all that apply)* ☐City/Town ☐County ☒ADOT ☐Private ☐Federal ☐Tribal ☐Other	
Adjacent Land Ownership(s): *(Check all that apply)* ☐City/Town ☐County ☐ADOT ☐Private ☒Federal ☐Tribal ☐Other	

PROJECT NEED
Erosion and rock-fall issues between MP 214 and 218 causing recurring maintenance issues and debris-related crashes

PROJECT PURPOSE			
What is the Primary Purpose of the Project?	☐Preservation	☒Modernization	☐Expansion
Mitigate rock-fall issues.			

PROJECT RISKS	
Check any risks identified that may impact the project's scope, schedule, or budget:	
☐Access/Traffic Control/Detour Issues	☐Right-of-Way
☐Constructability/Construction Window Issues	☐Environmental
☐Stakeholder Issues	☐Utilities
☐Structures & Geotech	☐Other:
Risk Description: *(if a box is checked above, briefly explain the risk)* Click or tap here to enter text.	

POTENTIAL FUNDING SOURCE(S)

Anticipated Project Design/Construction Funding Type: *(Check all that applied)*	☐STBG	☐TAP	☐HSIP	☒State
	☐Local	☐Private	☐Tribal	☐Other

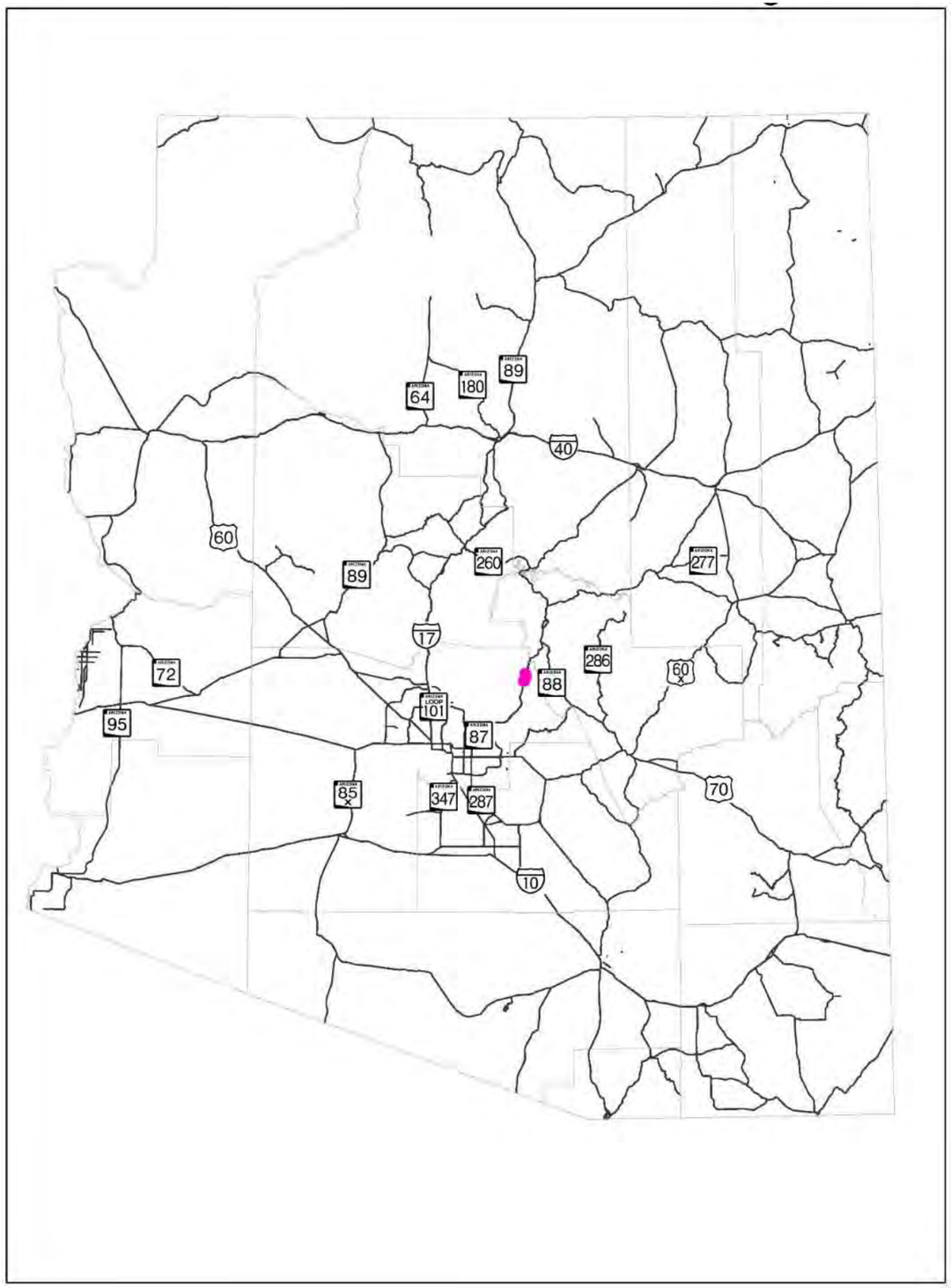
COST ESTIMATE			
Design	Right-of-Way	Construction	Total
$280,000.00	$0.00	$2,520,000	$2,800,000

RECOMMENDED PROJECT DELIVERY
Delivery: ☐Design-Bid-Build ☐Design-Build ☒Other:
Design Program Year: Click or tap here to enter text.
Construction Program Year: Click or tap here to enter text.

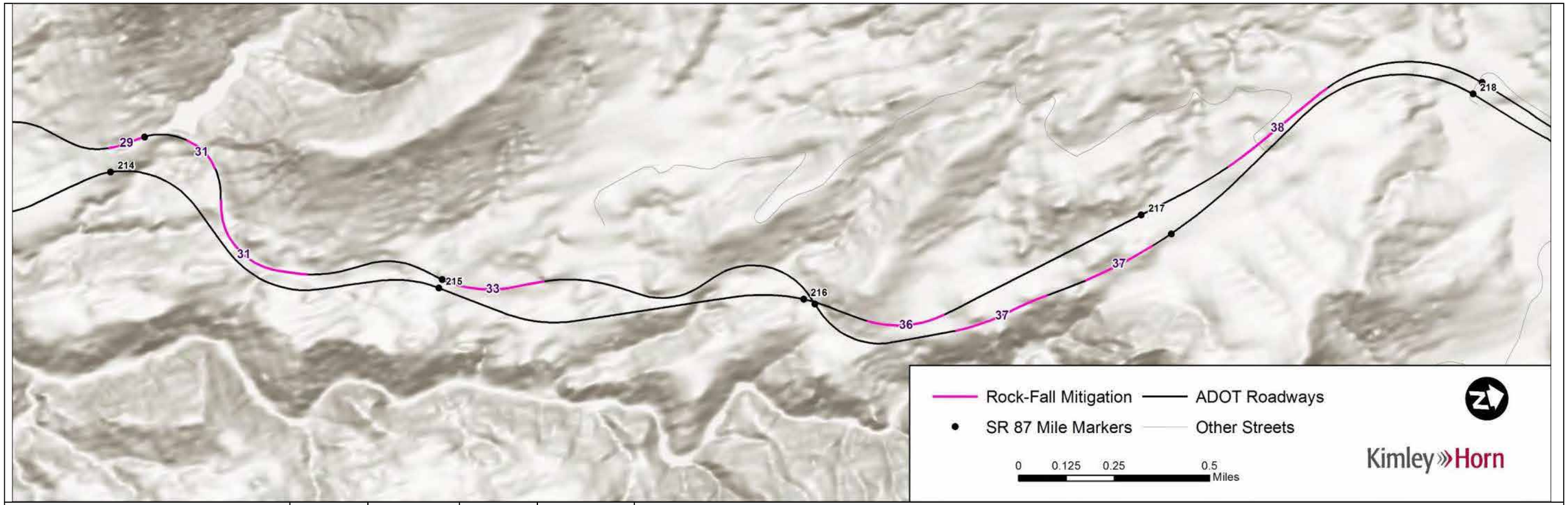
ATTACHMENTS
1. **Project Scope of Work**
2. **State Location Map**
3. **Project Vicinity Map**
4. **Itemized Cost Estimate**
5. **Conceptual Design Plans**

ATTACHMENT 1: SCOPE OF WORK
(Provide a detailed breakdown of the project's scope of work using bullet form)
• Northbound rock-fall mitigation – west side (MP 213.9-214)
• Northbound rock-fall mitigation – east side (MP 214.2-214.3)
• Northbound rock-fall mitigation – east side (MP 214.4-214.6)
• Northbound rock-fall mitigation – west side (MP 215-215.2)
• Southbound rock-fall mitigation – east side (MP 216.1-216.2)
• Northbound rock-fall mitigation – west side (MP 216.4-216.6)
• Northbound rock-fall mitigation – west side (MP 216.7-216.9)
• Southbound rock-fall mitigation – east side (MP 217.3-217.6)

ATTACHMENT 3: STATE LOCATION MAP



ATTACHMENT 3: PROJECT VICINITY MAP



Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. NB both sides – re-slope to ¾:1, widen and deepen ditches	29	213.9	214	$250,000	Frequent cleanup required on shoulder, cut eroding and raveling, short sight distance
2. NB left side – re-slope ¾:1 (1st stretch), ½:1 (2nd stretch, rock portions), and 1:1 (earth, saprolite); round crest in gravels; pinned netting in earthen materials; widen and deepen ditch; rock lined crown ditch	31	1: 214.2 2: 214.4	1: 214.3 2: 214.6	1: $995,000 2: $350,000	1st stretch: Wedge and toppling geometries plus raveling lead to frequent rock on shoulder, differential erosion features slope to roadway 2nd stretch: Slabby granite with planar fractures leading to raveling, toppling and wedge releases to shoulder and roadway; accumulations of saprolite w/boulders at crest, some w/inclined surfaces toward roadway
3. NB left side – scale, widen and deepen ditch	33	215	215.2	$170,000	Erosion with unfavorable structure, inadequate ditch
4. SB left side – heavy scaling, bolts, local pinned mesh	36	216.1	216.2	$450,000	Erosion with favorable structure along faults and dikes, continuous and discontinuous fractures dipping toward roadway, toppling
5. NB left side – heavy scaling, bolts, dowels (1st stretch); heavy scaling, spot rock bolting, erosion control (2nd stretch)	37	1: 216.4 2: 216.7	1: 216.6 2: 216.9	1: $100,000 2: $100,000	1st stretch: Differential erosion in saprolite, may release large boulders, outward dipping sliding surface 2nd stretch: Continuous fractures dipping moderately outward, major erosion w/unfavorable structure, eroded faults at MP 216.77
6. SB left side – heavy scaling, pattern bolting, erosion control	38	217.3	217.6	$385,000	Erosion, continuous fractures dipping outward, release along continuous dike, significant recent rockfall history
			Total:	**$2,800,000**	

ATTACHMENT 4: ITEMIZED COST ESTIMATE

Itemized cost estimates were not developed for the rock-fall mitigation projects.

ATTACHMENT 5: PRELIMINARY PLANS

Preliminary (15%) plans were not developed for the rock-fall mitigation projects.

PACKAGE PROJECT 5 –

NORTHCENTRAL DISTRICT ITS/SIGNAGE IMPROVEMENTS

(MP 218-251)

ADOT SR 87 Corridor Development Study

PRELIMINARY SCOPING REPORT

GENERAL PROJECT INFORMATION	
Date: 8/20/2019	**ADOT Project Manager:**
Project Name: Northcentral District ITS/Signage Improvements	
City/Town: N/A	**County:** Maricopa/Gila
COG/MPO: MAG/CAG	**ADOT District:** Northcentral
Primary Route/Street: SR 87	
Beginning Limit: 218	
End Limit: 250	
Project Length: 32 Miles	
Right of Way Ownership(s) (where proposed project would occur): *(check all that apply)* ☐City/Town ☐County ☒ADOT ☐Private ☐Federal ☐Tribal ☐Other	
Adjacent Land Ownership(s): *(Check all that apply)* ☐City/Town ☒County ☐ADOT ☐Private ☒Federal ☐Tribal ☐Other	

PROJECT NEED
SR 87 Corridor from Milepost 198 through 250 is prone to motor vehicle accidents. Between 2013 and 2017, there were 615 crashes, 37 of which included a fatality or serious injury. There is also substantial congestion experienced during summer weekends south of Payson.

PROJECT PURPOSE			
What is the Primary Purpose of the Project?	☐Preservation	☒Modernization	☐Expansion
Improve safety/congestion by implementing improved signage and intelligent transportation system infrastructure.			

PROJECT RISKS	
Check any risks identified that may impact the project's scope, schedule, or budget:	
☐Access/Traffic Control/Detour Issues	☐Right-of-Way
☐Constructability/Construction Window Issues	☐Environmental
☐Stakeholder Issues	☒Utilities
☐Structures & Geotech	☐Other:
Risk Description: *(if a box is checked above, briefly explain the risk)* Providing power to the site for the installation of a new dynamic message sign.	

POTENTIAL FUNDING SOURCE(S)				
Anticipated Project Design/Construction Funding Type: *(Check all that applied)*	☐STBG	☐TAP	☒HSIP	☒State
	☐Local	☐Private	☐Tribal	☐Other

COST ESTIMATE			
Design	Right-of-Way	Construction	Total
$189,400.00	$0.00	$1,704,600.00	$1,894,000.00

RECOMMENDED PROJECT DELIVERY
Delivery: ☐Design-Bid-Build ☐Design-Build ☒Other:
Design Program Year: Click or tap here to enter text.
Construction Program Year: Click or tap here to enter text.

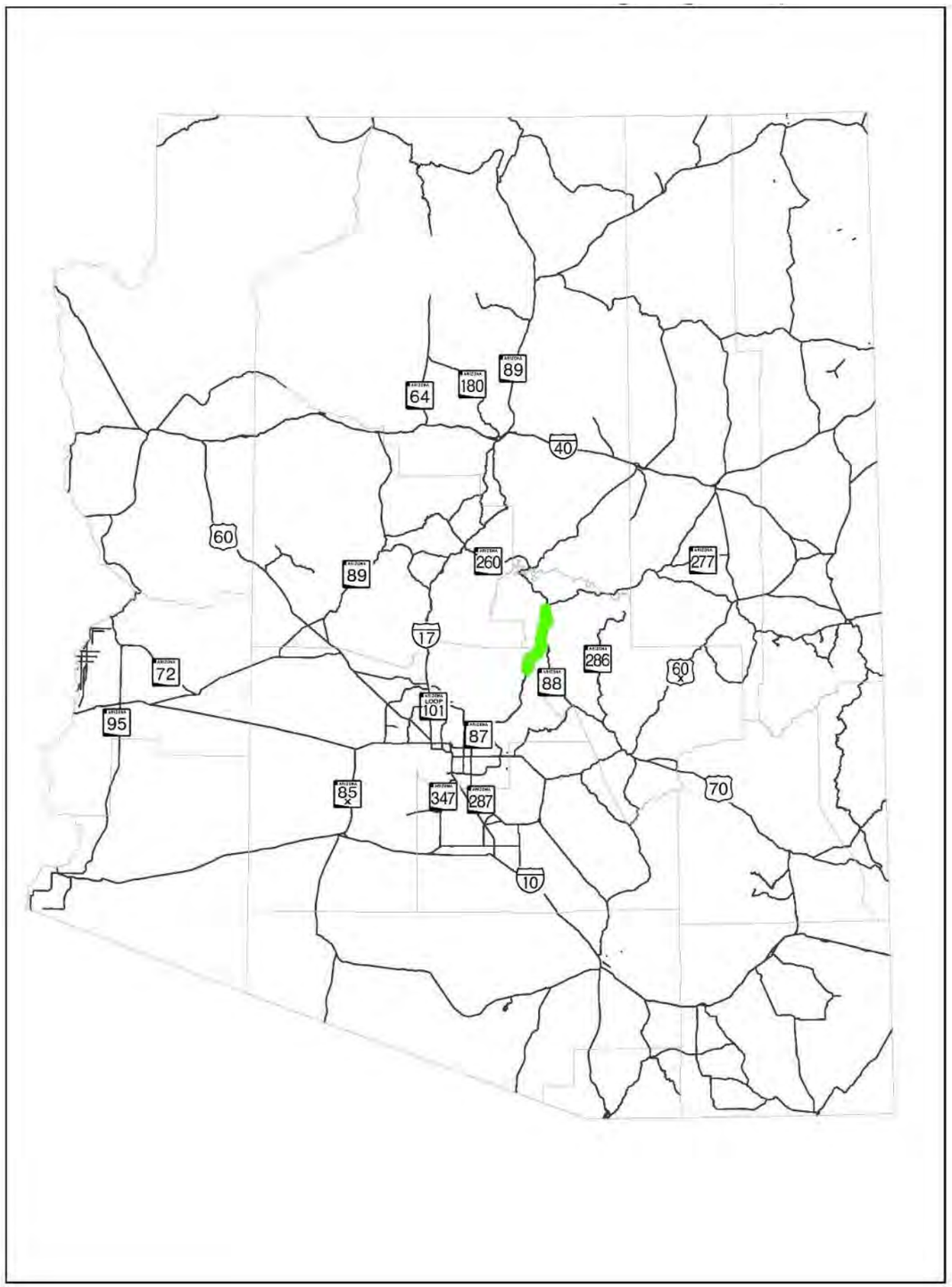
ATTACHMENTS
1. **Project Scope of Work**
2. **State Location Map**
3. **Project Vicinity Map**
4. **Itemized Cost Estimate**
5. **Conceptual Design Plans**

ATTACHMENT 1: SCOPE OF WORK

(Provide a detailed breakdown of the project's scope of work using bullet form)

- Southbound speed feedback sign (MP 219.6)
- Southbound speed feedback sign (MP 221)
- Northbound speed feedback sign (MP 224.5)
- Southbound speed feedback sign (MP 229.3)
- Southbound speed feedback sign (MP 231)
- Northbound speed feedback sign (MP 232.5)
- Northbound dynamic message sign (MP 235)
- Westbound stop sign beacon – SR 188 (MP 235.7)
- Intersection warning signage – Deer Creek Drive (MP 237.6)
- Intersection warning signage – Gisela Road (MP 239.5)
- Northbound speed feedback sign (MP 240)
- Intersection warning signage – South Rye Crossover (MP 240.5)
- Intersection warning signage – North Rye Crossover (MP 240.9)
- Variable speed limits with dynamic message signs at both termini (MP 241-247)
- Southbound speed feedback sign (MP 241)
- Southbound road weather information system with dynamic warning beacons (MP 244)
- Southbound speed feedback sign (MP 245)
- Northbound and southbound RWIS with dynamic warning beacons (MP 246.3)
- Southbound speed feedback sign (MP 247)
- Southbound speed feedback sign (MP 249.8)
- Southbound dynamic message sign (MP 251)

ATTACHMENT 2: STATE LOCATION MAP



ATTACHMENT 3: PROJECT VICINITY MAP

Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. SB speed feedback sign	46	219.6	219.6	$25,000	Speeding is an issue at this location, a speed study at MP 221 showed an 85th percentile speed of 73 mph.
2. SB speed feedback sign	49	221	221	$25,000	Speeding is an issue at this location, a speed study at this location showed an 85th percentile speed of 73 mph.
3. NB speed feedback sign	54	224.5	224.5	$25,000	Within an identified crash hot spot where 50% of crashes involved traveling too fast for conditions, 27% of crashes ran into a concrete traffic barrier, 23% ran off the road to the right, 12% ran off the road to the left.
4. SB speed feedback sign	60	229.3	229.3	$25,000	A downhill grade leading into a relatively sharp curve (with a 55-mph advisory speed) is an optimal location for a speed feedback sign to reinforce the advisory speed.
5. SB speed feedback sign	65	231	231	$25,000	There is a small cluster of serious injury and fatal crashes at this location. A combination of a downhill grade and relatively sharp curves are optimal locations for a speed feedback sign.
6. NB speed feedback sign	68	232.5	232.5	$25,000	A 6% downhill grade leading into a relatively sharp curve is an optimal location for a speed feedback sign to reinforce the speed limit.
7. New NB DMS	72	235	235	$250,000	Provides the opportunity to detour NB traffic onto SR 188 in response to incidents or extreme congestion leading into Payson.
8. WB stop sign beacon on SR 188	73	235.7	235.7	$15,000	Improves the visibility of the stop sign to slow traffic down in advance of the intersection.
9. Intersection warning signage – Deer Creek Dr	77	237.6	237.6	$5,000	Relatively inexpensive treatment to increase awareness of the Deer Creek Dr. intersection.
10. Intersection warning signage at Gisela Road	83	239.5	239.5	$5,000	Increase awareness and attention to cross-traffic at the Gisela Road intersection; one crash was reported in the crash analysis at this location.
11. NB speed feedback sign	84	240	240	$25,000	Reinforce the speed limit through the Rye area, the current 85th percentile speed is 73 mph.
12. Intersection warning signage at the S. Rye Crossover	86	240.5	240.5	$5,000	Increase awareness and attention to cross-traffic at the S. Rye Crossover intersection; two crashes were reported in the crash analysis at this location.
13. Intersection warning signage at the N. Rye Crossover	88	240.9	240.9	$5,000	Increase awareness and attention to the cross-traffic at the N. Rye Crossover intersection.
14. Variable speed limits, with DMS on both ends	91	241	247	$844,000	Add the ability to raise and lower speed limits in an area with a high propensity for crashes based on weather, events, crashes, or other factors where reduced speed limits may be warranted.
15. SB speed feedback sign	92	241	241	$25,000	Reinforce the speed limit through the Rye area, the current 85th percentile speed is 74 mph and the average speed is 72 mph.
16. NB and SB RWIS with dynamic warning beacons	95	244	244	$60,000	Provide the ability to warn drivers of adverse weather conditions, could be in communication with the proposed variable speed limits.
17. SB speed feedback sign	96	245	245	$25,000	Increase awareness of the speed limit on the long, downhill grade with sharp curves.

18. NB and SB RWIS with dynamic warning beacons	113	246.3	246.3	$180,000	In the northbound direction, provide the ability to warn drivers of adverse weather conditions and could be in communication with the proposed variable speed limits. In the southbound direction, provide a Dynamic Curve Warning System for Corvair Curve that uses supplemental beacons and/or messages that activate when a motorist approaches the curve at a high speed. A typical dynamic curve warning system combines a speed measuring device (such as loop detectors or radar) with flashing beacon and a variable message sign. The system can incorporate a camera to provide visual surveillance of the curve. The system is designed to slow high-speed vehicles as they approach and enter a horizontal curve. It works by measuring the speeds of approaching vehicles and providing messages to speeding drivers to slow down to an advisory speed.
19. SB speed feedback sign	101	247	247	$25,000	Reinforce the speed limit and driver awareness of their speeds, 85th percentile speeds are 19 mph over the speed limit and average speeds are 17 mph over the speed limit.
20. SB speed feedback sign	110	249.8	249.8	$25,000	Reinforce the speed limit and driver awareness of their speeds.
21. New SB DMS	111	251	251	$250,000	Provides the ability to advise SB traffic to turn around in response to incidents or extreme congestion on the SR 87 corridor south of Payson.
			Total:	**$1,894,000**	

ATTACHMENT 4: ITEMIZED COST ESTIMATE

Itemized cost estimates were not developed for the ITS/Signage Improvement projects.

ATTACHMENT 5: PRELIMINARY PLANS

Preliminary (15%) plans were not developed for the ITS/Signage Improvement Projects

PACKAGE PROJECT 6 –

NORTHCENTRAL DISTRICT ROCK-FALL MITIGATION

(MP 222-247)

ADOT SR 87 Corridor Development Study

PRELIMINARY SCOPING REPORT

GENERAL PROJECT INFORMATION	
Date: 8/20/2019	**ADOT Project Manager:**
Project Name: Northcentral District Rock-Fall Mitigation	
City/Town: N/A	**County:** Gila
COG/MPO: MAG/CAG	**ADOT District:** Northcentral
Primary Route/Street: SR 87	
Beginning Limit: 222	
End Limit: 234	
Project Length: 12 Miles	
Right of Way Ownership(s) (where proposed project would occur): *(check all that apply)* ☐City/Town ☐County ☒ADOT ☐Private ☐Federal ☐Tribal ☐Other	
Adjacent Land Ownership(s): *(Check all that apply)* ☐City/Town ☐County ☐ADOT ☐Private ☒Federal ☐Tribal ☐Other	

PROJECT NEED
Erosion and rock-fall issues between MP 222 and 234 causing recurring maintenance issues and debris-related crashes

PROJECT PURPOSE			
What is the Primary Purpose of the Project?	☐Preservation	☒Modernization	☐Expansion
Mitigate rock-fall issues.			

PROJECT RISKS	
Check any risks identified that may impact the project's scope, schedule, or budget:	
☐Access/Traffic Control/Detour Issues	☐Right-of-Way
☐Constructability/Construction Window Issues	☐Environmental
☐Stakeholder Issues	☐Utilities
☐Structures & Geotech	☐Other:
Risk Description: *(if a box is checked above, briefly explain the risk)* Click or tap here to enter text.	

POTENTIAL FUNDING SOURCE(S)

Anticipated Project Design/Construction Funding Type: *(Check all that applied)*	☐STBG	☐TAP	☐HSIP	☒State
	☐Local	☐Private	☐Tribal	☐Other

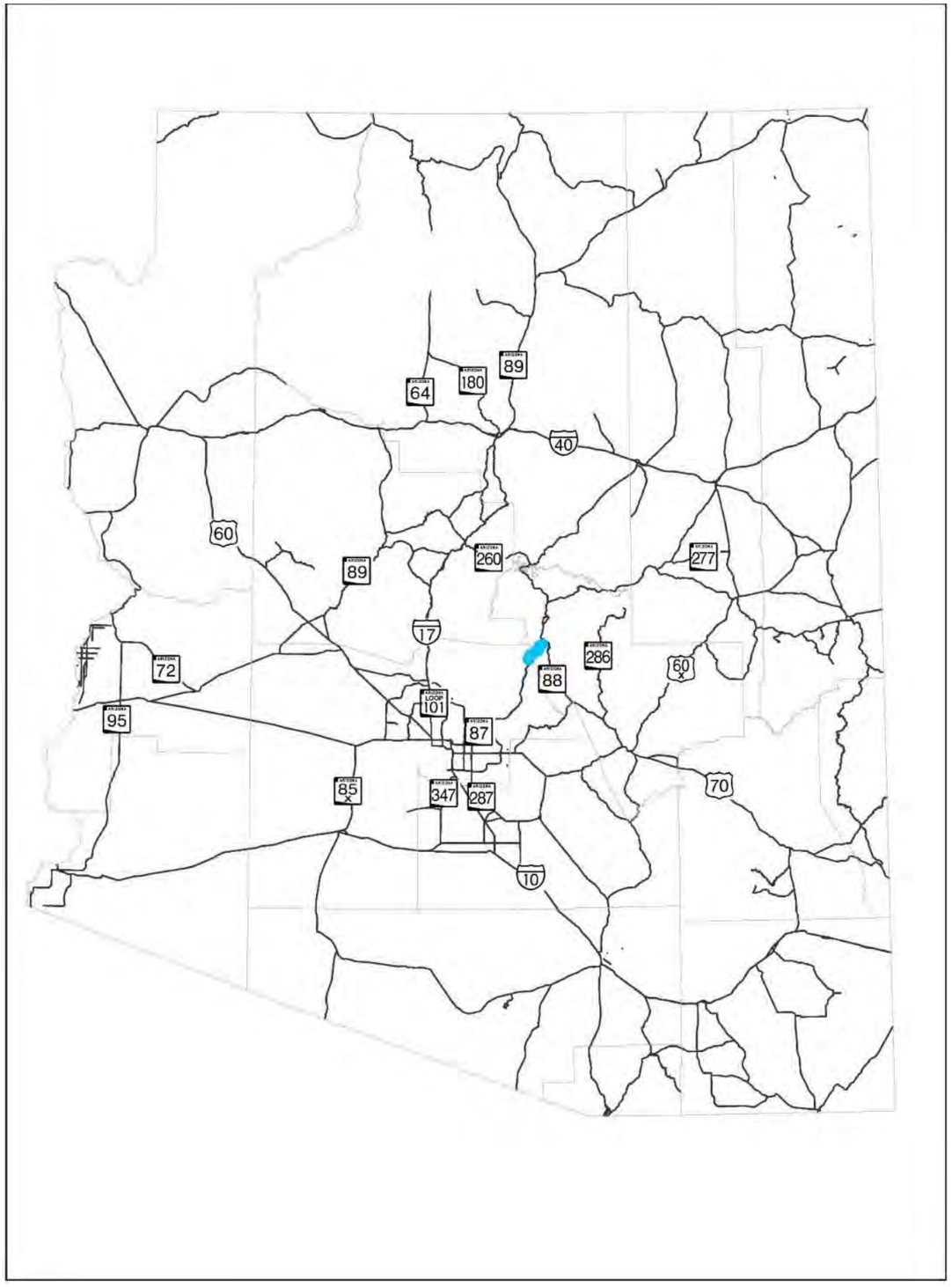
COST ESTIMATE			
Design $584,000.00	Right-of-Way $0.00	Construction $5,256,000	Total $5,840,000

RECOMMENDED PROJECT DELIVERY
Delivery: ☐Design-Bid-Build ☐Design-Build ☒Other:
Design Program Year: Click or tap here to enter text.
Construction Program Year: Click or tap here to enter text.

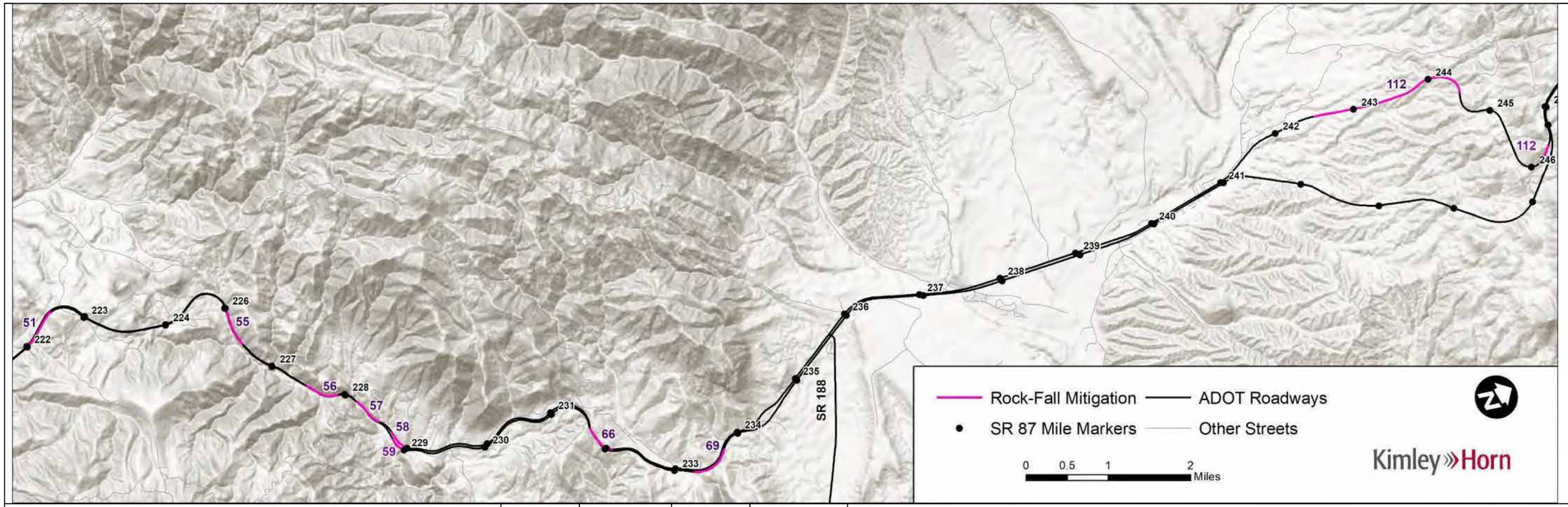
ATTATCHMENTS
1. **Project Scope of Work**
2. **State Location Map**
3. **Project Vicinity Map**
4. **Itemized Cost Estimate**
5. **Conceptual Design Plans**

ATTACHMENT 1: SCOPE OF WORK
(Provide a detailed breakdown of the project's scope of work using bullet form)
• Northbound rock-fall mitigation – east side (MP 222.2-222.6)
• Southbound rock-fall mitigation – west side (MP 226.1-226.5)
• Southbound rock-fall mitigation – west side (MP 227.5-227.9)
• Southbound rock-fall mitigation – west side (MP 228.2-228.5)
• Southbound rock-fall mitigation – both sides (MP 228.7-229.0)
• Northbound rock-fall mitigation – both sides (MP 228.9-229)
• Northbound rock-fall mitigation – east side (MP 231.6-231.7)
• Southbound rock-fall mitigation – east side (MP 231.7-232.1)
• Northbound rock-fall mitigation – east side (MP 233.3-233.7)
• Southbound rock-fall mitigation – east side (MP 242.5-244.5, 246.4-246.6)

ATTACHMENT 2: STATE LOCATION MAP



ATTACHMENT 3: PROJECT VICINITY MAP



Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. NB both sides – re-grade with rock-lined interceptor channels and crown ditch, gabions	51	222	222.6	$650,000	Re-grade with rock-lined interceptor channels and crown ditch, gabions
2. SB left side – pinned mesh in the narrow shoulder area, deepen ditch to 6', rock fence on bench, grade slope and scale (1st stretch); crest erosion, protect with thrie beam barrier, pinned mesh in crown area gravels, scale (2nd stretch); pinned mesh in the crest, deepen ditch, protect with weathering thrie beam barrier (3rd stretch)	55	1: 226 2: 226.1 3: 226.3	1: 226.1 2: 226.3 3: 226.5	1: $440,000 2: $325,000 3: $550,000	1st stretch: Erosion with boulders, upper bench may be breached, potential upslope contribution above bench. Rock fall is frequent but widened paved shoulder keeps most rock off pavement, despite lack of ditch cross slope. 2nd stretch: Crest erosion, limited catchment with many rock falls 3rd stretch: Local terrace gravels at top of slope cut, rock face well vegetated and mostly stable but catchment is inadequate
3. SB left side – deepen ditch by toe excavation, protect ditch cross slope with weathering thrie beam barrier	56	227.5	227.9	$250,000	Tall cut appx 3/4:1 paved ditch inadequate depth. Rock slope mostly well vegetated and uniform, generally stable. Local raveling and release from crest.
4. SB left side - spot and pattern rock bolting (crane basket), attenuators, local anchored mesh, heavy scaling, widen and deepen ditch and protect with weathering thrie beam or concrete barrier	57	228.2	228.5	$660,000	High & steep cut, widespread plane shear and wedge fracture geometries, erosion along faults and shears. Ditch width and cross slope inadequate. Emergency cleanups have been infrequent, but free-standing rock erosion features are developing and may lead to significant and damaging future falls.
5. SB left side – rock lined crown ditch, dress and revegetate slope, widen and deepen ditch and protect with weathering thrie beam barrier (1st stretch); SB right side - deepen ditch and protect with weathering thrie beam barrier	58	1: 228.7 2: 228.8	1: 229 2: 229	1: $230,000 2: $150,000	1st stretch: Fanglomerate, benches 80%-90% eroded w/vegetation on remnants, rock fall almost to shoulder, ditch depth inadequate. Assume 2018 repair $$ appearing in PeCos was for this cut. 2nd stretch: Fanglomerate, many rocks in ditch, depth inadequate
6. NB both sides – re-grade to eliminate remnant benches, use sace to improve ditch configuration both sides	59	228.8	229	$160,000	Looser material atop cut overlies denser fanglomerate. Catch benches have filled up, potential for rock bouncing out from face
7. NB right side – re-grade with rock-lined interceptor channels and crown ditch, gabions (1st stretch); SB left side – in rock cut deepen ditch and protect with weathering thrie beam barrier, retain paved shoulders; in alluvium construct rock-lined crown and interceptor ditches, gabions as necessary (2nd stretch)	66	1: 231.6 2: 231.7	1: 231.7 2: 232.1	1: $530,000 2: $485,000	1st stretch: Heavy rill erosion, obvious recent clean-up work 2nd stretch: Partial raveling but mostly kinematically stable rock slope with ditch of inadequate depth. North 2/3 is valley fill sediments with heavy rill erosion, locally undercutting slope face, no crown ditch
8. NB right side – re-grade with rock-lined interceptor channels and crown ditch, gabions	69	233.3	233.7	$780,000	Two tall cuts in unconsolidated alluvium, heavy rill erosion, widened shoulders, history of major sluffing & major reconstruction, may recur.

9. SB left side – Move slope back 10 ft to widen and deepen ditch, revegetate earth slopes, R&R barrier with single-beam weathering type (1st stretch); SB left side – round crest & layback & widen ditch, protect deepened ditch with weathering single-beam barrier (2nd stretch)	112	1: 242.5 2: 246.4	1: 244.5 2: 246.6	1: $500,000 2: $130,000	1st stretch: 6 cuts SB LT, rocks roll out into travel lanes during significant rainfall or snowmelt events 2nd stretch: Boulders at crest eroding out, maintenance activity has occurred in the MP range.
			Total:	**$5,840,000**	

ATTACHMENT 4: ITEMIZED COST ESTIMATE

Itemized cost estimates were not developed for the rock-fall mitigation projects.

ATTACHMENT 5: PRELIMINARY PLANS

Preliminary (15%) plans were not developed for the rock-fall mitigation projects.

PACKAGE PROJECT 7 –
NORTHBOUND IMPROVEMENTS
(MP 218-226)

ADOT SR 87 Corridor Development Study

PRELIMINARY SCOPING REPORT

GENERAL PROJECT INFORMATION	
Date: 8/20/2019	**ADOT Project Manager:**
Project Name: Northbound Improvements (MP 218-226)	
City/Town: N/A	**County:** Maricopa/Gila
COG/MPO: MAG/CAG	**ADOT District:** Northcentral
Primary Route/Street: SR 87	
Beginning Limit: 218	
End Limit: 226	
Project Length: 8 Miles	
Right of Way Ownership(s) (where proposed project would occur): *(check all that apply)* ☐City/Town ☐County ☒ADOT ☐Private ☐Federal ☐Tribal ☐Other	
Adjacent Land Ownership(s): *(Check all that apply)* ☐City/Town ☒County ☐ADOT ☐Private ☒Federal ☐Tribal ☐Other	

PROJECT NEED
Large speed differentials have been observed during a speed study at this location caused by slow truck speeds due to a steep uphill grade in the northbound direction.

PROJECT PURPOSE			
What is the Primary Purpose of the Project?	☐Preservation	☒Modernization	☒Expansion
Address large speed differentials by providing a climbing lane for trucks, while also making safety improvements at the Bushnell Tanks intersection and north of the climbing lane.			

PROJECT RISKS	
Check any risks identified that may impact the project's scope, schedule, or budget:	
☐Access/Traffic Control/Detour Issues	☐Right-of-Way
☐Constructability/Construction Window Issues	☐Environmental
☐Stakeholder Issues	☐Utilities
☒Structures & Geotech	☐Other:
Risk Description: *(if a box is checked above, briefly explain the risk)*	

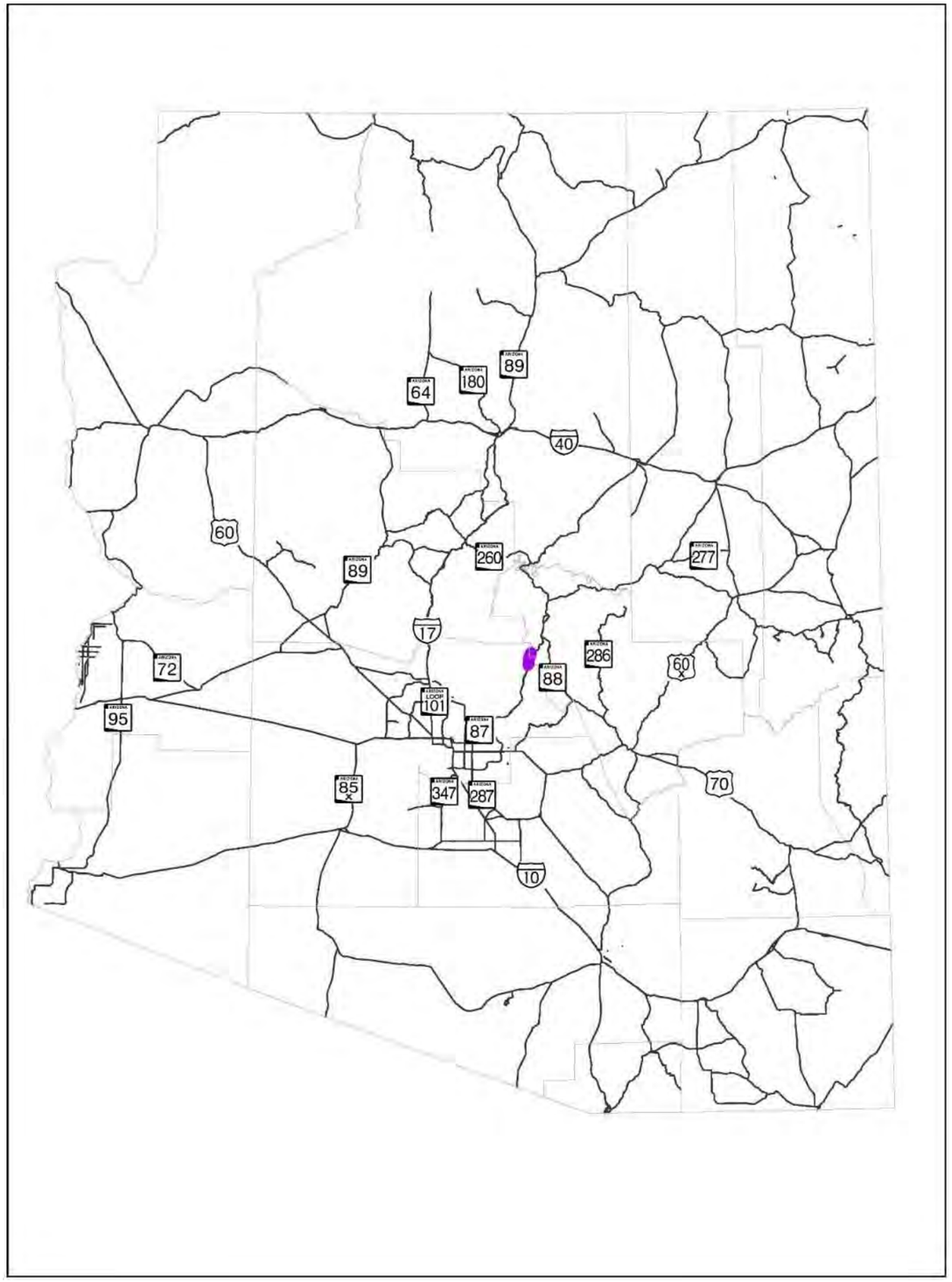
Two bridges will need to be widened to accommodate the climbing lane.				
POTENTIAL FUNDING SOURCE(S)				
Anticipated Project Design/Construction Funding Type: *(Check all that applied)*	☐STBG	☐TAP	☐HSIP	☒State
	☐Local	☐Private	☐Tribal	☐Other

COST ESTIMATE			
Design $2,091,700.00	Right-of-Way $0.00	Construction $27,196,900.00	Total $29,288,600.00

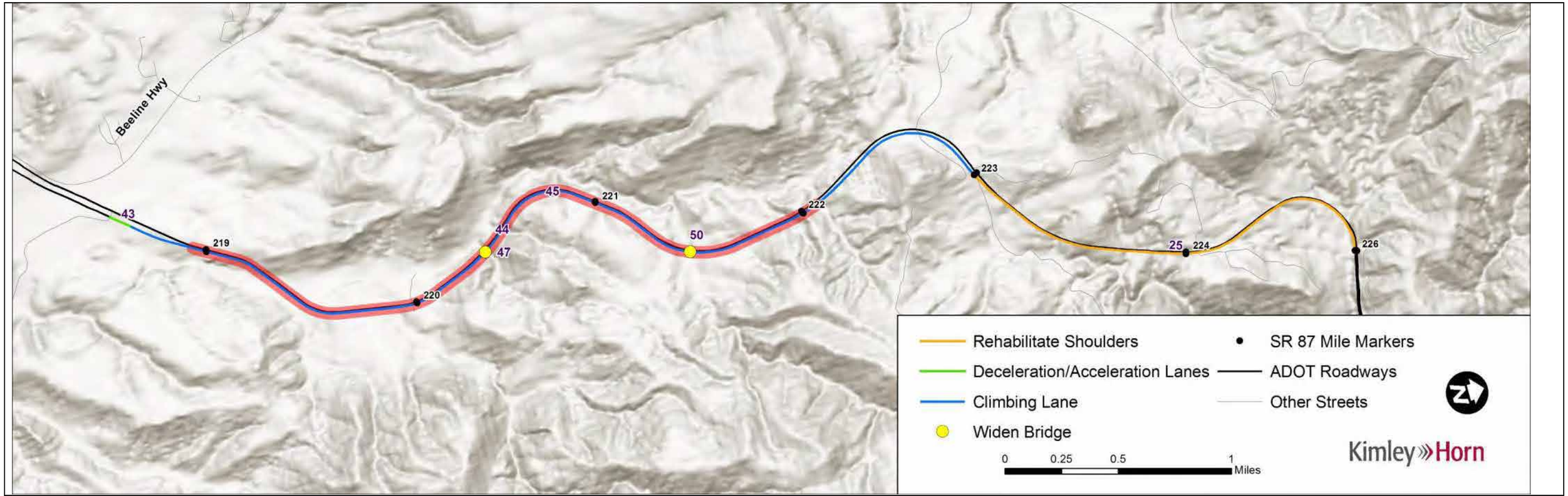
RECOMMENDED PROJECT DELIVERY
Delivery: ☐Design-Bid-Build ☐Design-Build ☒Other:
Design Program Year: Click or tap here to enter text.
Construction Program Year: Click or tap here to enter text.
ATTATCHMENTS
1. **Project Scope of Work** 2. **State Location Map** 3. **Project Vicinity Map** 4. **Itemized Cost Estimates** 5. **Conceptual Design Plans**

ATTACHMENT 1: SCOPE OF WORK
(Provide a detailed breakdown of the project's scope of work using bullet form) • Rehabilitate northbound shoulders (MP 223-226) • Add northbound outside acceleration lane and southbound inside acceleration lane at the Bushnell Tanks Intersection (MP 218.5) • Widen inside shoulders to 4' and outside shoulders to 10' (MP 218.9-222.1) • Construct northbound climbing lane (MP 218.6-223) • Widen the Whiskey Springs bridge to accommodate the proposed climbing lane (MP 220.3) • Widen the Kitty Joe Creek bridge to accommodate the proposed climbing lane (MP 221.4)

ATTACHMENT 2: STATE LOCATION MAP



ATTACHMENT 3: PROJECT VICINITY MAP



Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. Rehabilitate NB shoulders	25	223	226	$1,111,200	The shoulders in this location are in poor condition, with significant cracking and vegetation growing.
2. NB outside acceleration lane, SB inside acceleration lane at Bushnell Tanks intersection	43	218.5	218.5	$1,330,500	Relatively high level of vehicles with trailers that may warrant acceleration lanes.
3. Widen inside shoulders to 4’ and outside shoulders to 10’	44	218.9	222.1	$4,061,600	The current shoulders are of insufficient widths per current safety standards and for effective emergency response.
4. Construct NB climbing lane	45	218.6	223	$16,108,300	Approximately 15% of traffic on this segment is heavy commercial vehicles, the uphill grade causes low speeds and large speed variances between vehicles.
5. Widen Whiskey Springs bridge	47	220.3	220.3	$2,904,500	Bridge will need to be widened to accommodate the proposed northbound climbing lane.
6. Widen Kitty Joe Creek bridge	50	221.4	221.4	$3,772,500	Bridge will need to be widened to accommodate the proposed northbound climbing lane.
			Total:	**$29,288,600**	

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

25. Rehabilitate northbound shoulders – 223-226

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2020053	REMOVE (GR TERMINAL)	EACH	2	$400.00	$800
2020071	REMOVE GUARD RAIL	L.FT.	5,280	$5.00	$26,400
2020085	REMOVE BITUMINOUS PAVEMENT (MILLING) (3")	SQ.YD.	17,096	$3.00	$51,288
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	3,131	$80.00	$250,480
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	505	$90.00	$45,450
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$10,990.00	$10,990
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	2,748	$30.00	$82,440
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	2	$2,500.00	$5,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	2	$800.00	$1,600
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	21,980	$0.75	$16,485
				Roadway Construction Subtotal	**$500,933**
	Unidentified Item Allowance (15%)				$ 75,140
				Subtotal	**$576,073**
	Water Supply/Dust Palliative (3%)				$ 17,283
	Maintenance And Protection Of Traffic (15%)				$ 86,411
	Erosion Control (1%)				$ 5,761
	Contractor Quality Control (2%)				$ 11,522
	Construction Surveying And Layout (2%)				$ 11,522
				Other Item Subtotal	**$708,572**
	Mobilization (12%)				$ 85,029
				Construction Subtotal	**$ 793,601**
	Engineering Design (10%)				$ 79,361
	Construction Engineering and Contingencies (20%)				$ 158,721
	Indirect Cost Allocation (10.02%)				$ 79,519
				Construction Total	**$ 1,111,202**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

43. Northbound outside acceleration lane at Bushnell Tanks (MP 218.5)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	1,600	$20.00	$32,000
2020201	SAW CUTTING	L.FT.	1,440	$2.50	$3,600
2030301	ROADWAY EXCAVATION	CU.YD.	2,140	$10.00	$21,400
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	1,174	$60.00	$70,440
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	927	$160.00	$148,320
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	76	$120.00	$9,120
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$1,440.00	$1,440
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	1,440	$1.50	$2,160
				Roadway Construction Subtotal	**$301,980**
	Unidentified Item Allowance (15%)				$ 45,297
				Subtotal	**$347,277**
	Water Supply/Dust Palliative (3%)				$ 10,419
	Maintenance And Protection Of Traffic (15%)				$ 52,092
	Erosion Control (1%)				$ 3,473
	Contractor Quality Control (2%)				$ 6,946
	Construction Surveying And Layout (2%)				$ 6,946
				Other Item Subtotal	**$427,153**
	Mobilization (12%)				$ 51,259
				Construction Subtotal	**$ 478,412**
	Engineering Design (10%)				$ 47,842
	Construction Engineering and Contingencies (20%)				$ 95,683
	Indirect Cost Allocation (10.02%)				$ 47,937
				Construction Total	**$ 669,874**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

43. Southbound inside acceleration lane at Bushnell Tanks (MP 218.5)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	292	$20.00	$5,840
2020053	REMOVE (GR TERMINAL)	EACH	2	$400.00	$800
2020071	REMOVE GUARD RAIL	L.FT.	350	$5.00	$1,750
2020201	SAW CUTTING	L.FT.	1,310	$2.50	$3,275
2030301	ROADWAY EXCAVATION	CU.YD.	1,950	$10.00	$19,500
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	1,068	$60.00	$64,080
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	843	$160.00	$134,880
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	69	$120.00	$8,280
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$1,310.00	$1,310
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	1,310	$30.00	$39,300
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	1	$2,500.00	$2,500
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	1	$800.00	$800
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	1,310	$1.50	$1,965
				Roadway Construction Subtotal	**$297,780**
	Unidentified Item Allowance (15%)				$ 44,667
				Subtotal	**$342,447**
	Water Supply/Dust Palliative (3%)				$ 10,274
	Maintenance And Protection Of Traffic (15%)				$ 51,368
	Erosion Control (1%)				$ 3,425
	Contractor Quality Control (2%)				$ 6,849
	Construction Surveying And Layout (2%)				$ 6,849
				Other Item Subtotal	**$421,212**
	Mobilization (12%)				$ 50,546
				Construction Subtotal	**$ 471,758**
	Engineering Design (10%)				$ 47,176
	Construction Engineering and Contingencies (20%)				$ 94,352
	Indirect Cost Allocation (10.02%)				$ 47,271
				Construction Total	**$ 660,557**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

44. Widen inside shoulders to 4' and outside shoulders to 10' (MP 218.9 – 222.1)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	4	$5,000.00	$20,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	3,755	$20.00	$75,100
2020053	REMOVE (GR TERMINAL)	EACH	4	$400.00	$1,600
2020071	REMOVE GUARD RAIL	L.FT.	4,224	$5.00	$21,120
2020201	SAW CUTTING	L.FT.	33,792	$2.50	$84,480
2030301	ROADWAY EXCAVATION	CU.YD.	30,040	$7.00	$210,280
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	12,516	$50.00	$625,800
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	6,831	$80.00	$546,480
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	444	$90.00	$39,960
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$16,896.00	$16,896
8050003	SEEDING (CLASS II)	ACRE	4	$3,500.00	$14,000
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	4,224	$30.00	$126,720
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	4	$2,500.00	$10,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	4	$800.00	$3,200
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	33,792	$0.75	$25,344
				Roadway Construction Subtotal	**$1,830,980**
	Unidentified Item Allowance (15%)				$ 274,647
				Subtotal	**$2,105,627**
	Water Supply/Dust Palliative (3%)				$ 63,169
	Maintenance And Protection Of Traffic (15%)				$ 315,845
	Erosion Control (1%)				$ 21,057
	Contractor Quality Control (2%)				$ 42,113
	Construction Surveying And Layout (2%)				$ 42,113
				Other Item Subtotal	**$2,589,924**
	Mobilization (12%)				$ 310,791
				Construction Subtotal	**$ 2,900,715**
	Engineering Design (10%)				$ 290,072
	Construction Engineering and Contingencies (20%)				$ 580,143
	Indirect Cost Allocation (10.02%)				$ 290,652
				Construction Total	**$ 4,061,582**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

45. Construct climbing lane (MP 218.6-223)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	16	$5,000.00	$80,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	2,582	$20.00	$51,640
2020053	REMOVE (GR TERMINAL)	EACH	4	$400.00	$1,600
2020071	REMOVE GUARD RAIL	L.FT.	5,809	$5.00	$29,045
2020201	SAW CUTTING	L.FT.	23,232	$2.50	$58,080
2030301	ROADWAY EXCAVATION	CU.YD.	1,730	$10.00	$17,300
2030901	BORROW	CU.YD.	137,680	$12.00	$1,652,160
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	16,349	$50.00	$817,450
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	12,380	$80.00	$990,400
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	990	$90.00	$89,100
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$23,232.00	$23,232
8050003	SEEDING (CLASS II)	ACRE	16	$3,500.00	$56,000
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	11,616	$30.00	$348,480
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	6	$2,500.00	$15,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	6	$800.00	$4,800
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	23,232	$0.75	$17,424
				Roadway Construction Subtotal	**$4,261,711**
	Two structures widening (12'*500'+12'*650') @ $250/sft				$ 3,450,000
	Unidentified Item Allowance (15%)				$ 639,257
				Subtotal	**$8,350,968**
	Water Supply/Dust Palliative (3%)				$ 250,530
	Maintenance And Protection Of Traffic (15%)				$ 1,252,646
	Erosion Control (1%)				$ 83,510
	Contractor Quality Control (2%)				$ 167,020
	Construction Surveying And Layout (2%)				$ 167,020
				Other Item Subtotal	**$10,271,694**
	Mobilization (12%)				$ 1,232,604
				Construction Subtotal	**$ 11,504,298**
	Engineering Design (10%)				$ 1,150,430
	Construction Engineering and Contingencies (20%)				$ 2,300,860
	Indirect Cost Allocation (10.02%)				$ 1,152,731
				Construction Total	**$ 16,108,319**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

47. Widen Whiskey Springs Bridge (MP 220.3)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
				Roadway Construction Subtotal	**$5,000**
	Structure widening (12'*500') @ $250/sft				$ 1,500,000
	Unidentified Item Allowance (15%)				$ 750
				Subtotal	**$1,505,750**
	Water Supply/Dust Palliative (3%)				$ 45,173
	Maintenance And Protection Of Traffic (15%)				$ 225,863
	Erosion Control (1%)				$ 15,058
	Contractor Quality Control (2%)				$ 30,115
	Construction Surveying And Layout (2%)				$ 30,115
				Other Item Subtotal	**$1,852,074**
	Mobilization (12%)				$ 222,249
				Construction Subtotal	**$ 2,074,323**
	Engineering Design (10%)				$ 207,433
	Construction Engineering and Contingencies (20%)				$ 414,865
	Indirect Cost Allocation (10.02%)				$ 207,848
				Construction Total	**$ 2,904,469**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

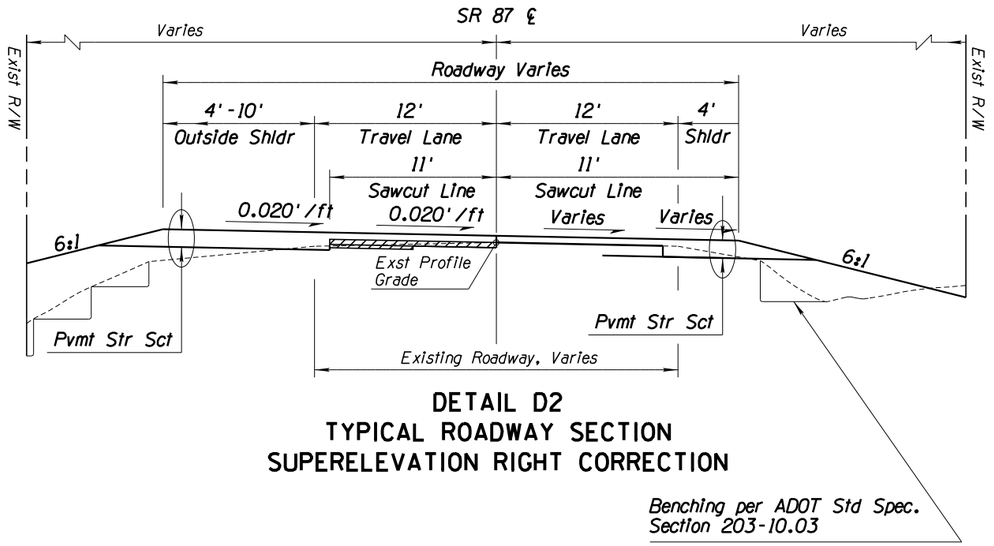
50. Widen Kitty Joe Creek Bridge (MP 221.4)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
				Roadway Construction Subtotal	**$5,000**
	Structure widening (12'*650') @ $250/sft				$ 1,950,000
	Unidentified Item Allowance (15%)				$ 750
				Subtotal	**$1,955,750**
	Water Supply/Dust Palliative (3%)				$ 58,673
	Maintenance And Protection Of Traffic (15%)				$ 293,363
	Erosion Control (1%)				$ 19,558
	Contractor Quality Control (2%)				$ 39,115
	Construction Surveying And Layout (2%)				$ 39,115
				Other Item Subtotal	**$2,405,574**
	Mobilization (12%)				$ 288,669
				Construction Subtotal	**$ 2,694,243**
	Engineering Design (10%)				$ 269,425
	Construction Engineering and Contingencies (20%)				$ 538,849
	Indirect Cost Allocation (10.02%)				$ 269,964
				Construction Total	**$ 3,772,481**

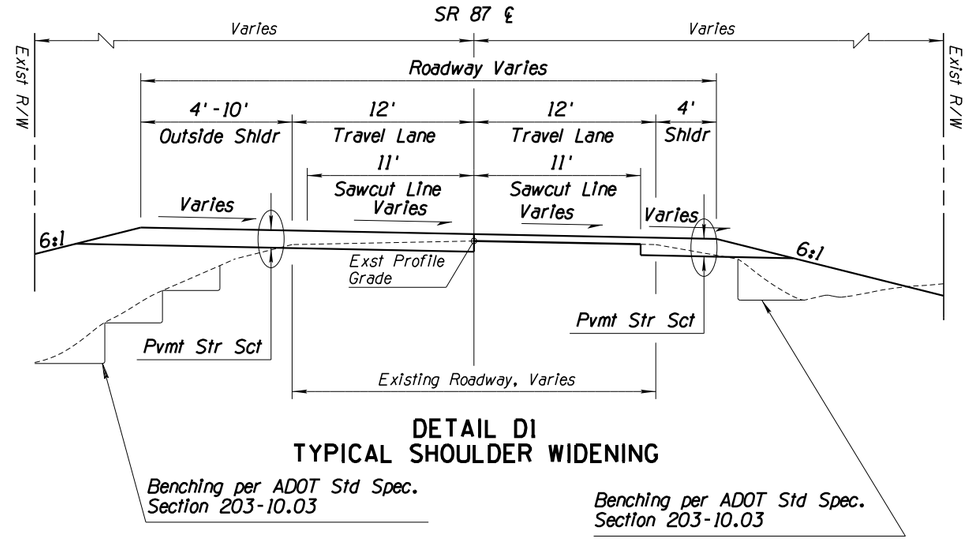
ATTACHMENT 5: PRELIMINARY PLANS

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

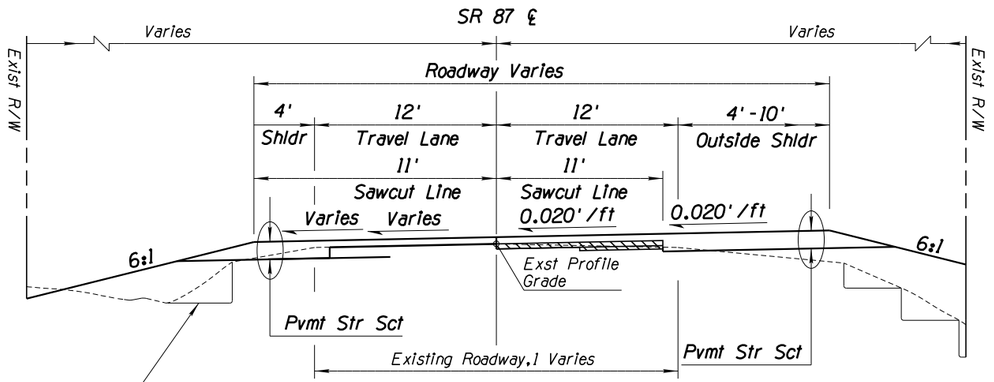
SR 87 MILE POST STATION			
MP NB	STATION	MP SB	STATION
196	101+73	196	101+18
197	155+53	197	154+02
198	207+69	198	207+94
199	261+02	199	259+13
200	314+21	200	311+72
201	367+73	201	364+06
202	419+18	202	417+81
203	471+36	203	470+65
204	526+28	204	523+10
205	577+70	205	575+84
206	630+73	206	628+30
207	682+81	207	680+28
208	736+47	208	734+12
209	788+55	209	786+62
210	842+08	210	839+50
211	894+91	211	890+40
212	942+20	212	939+42
213	998+65	213	995+55
214	1051+86	214	1050+06
215	1105+38	215	1095+77
216	1158+68	216	1147+95
217	1213+92	217	1199+48
218	1268+31	218	1250+20
219	1318+19	219	1304+12
220	1374+67	220	1359+76
221	1427+95	221	1412+99
222	1480+60	222	1465+84
223	1533+97	223	1518+89
224	1584+61	224	1570+72
225	1639+50	225	1625+29
226	1689+86	226	1676+32
227	1740+23	227	1726+14
228	1792+50	228	1778+04
229	1845+24	229	1831+98
230	1898+50	230	1884+70
231	1949+61	231	1933+71
232	1999+33	232	1985+29
233	2047+74	233	2033+06
234	2101+13	234	2085+05
235	2154+59	235	2137+29
236	2207+09	236	2189+44
237	2259+88	237	2240+86
238	2311+66	238	2293+85
239	2364+28	239	2344+91
240	2416+01	240	2397+41
241	2467+79	241	2448+96
242	2518+51	242	2496+68
243	2571+26	243	2549+70
244	2620+38	244	2601+82
245	2677+47	245	2655+01
246	2729+53	246	2703+04
247	2741+30	247	2747+68
248	2794+18	248	2801+15
249	2847+25	249	2854+41
250	2899+69	250	2906+58



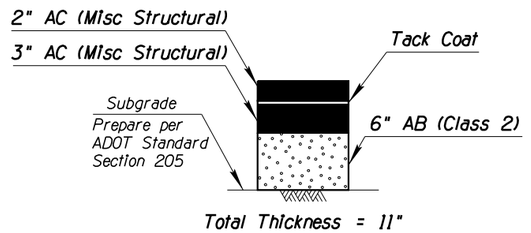
DETAIL D2
TYPICAL ROADWAY SECTION SUPERELEVATION RIGHT CORRECTION



DETAIL D1
TYPICAL SHOULDER WIDENING



DETAIL D3
TYPICAL ROADWAY SECTION SUPERELEVATION LEFT CORRECTION



Total Thickness = 11"

PAVEMENT STRUCTURAL SECTION

	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

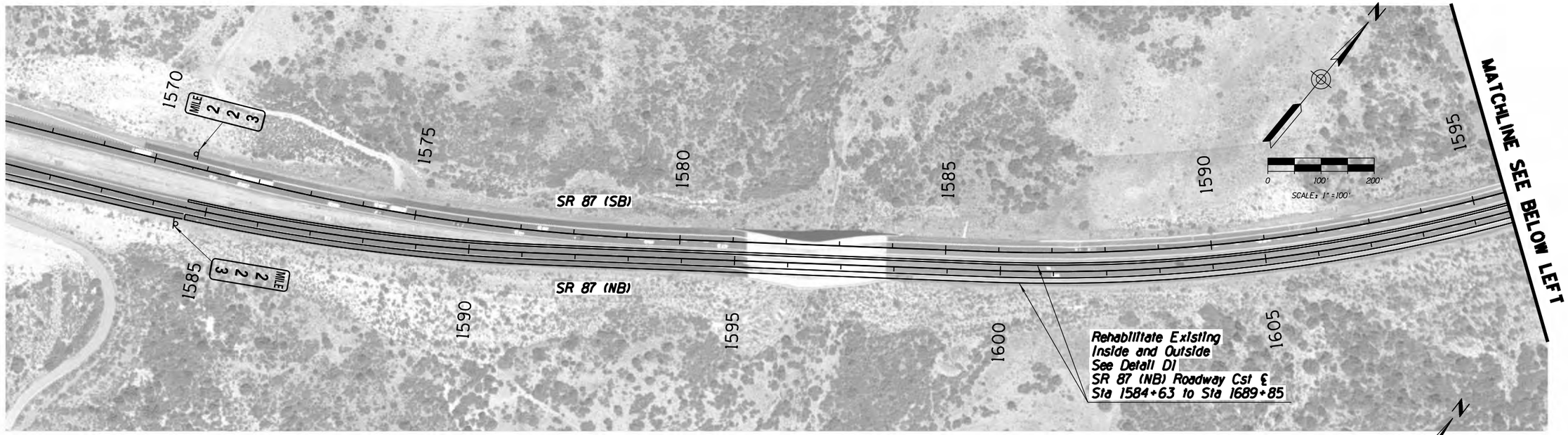
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

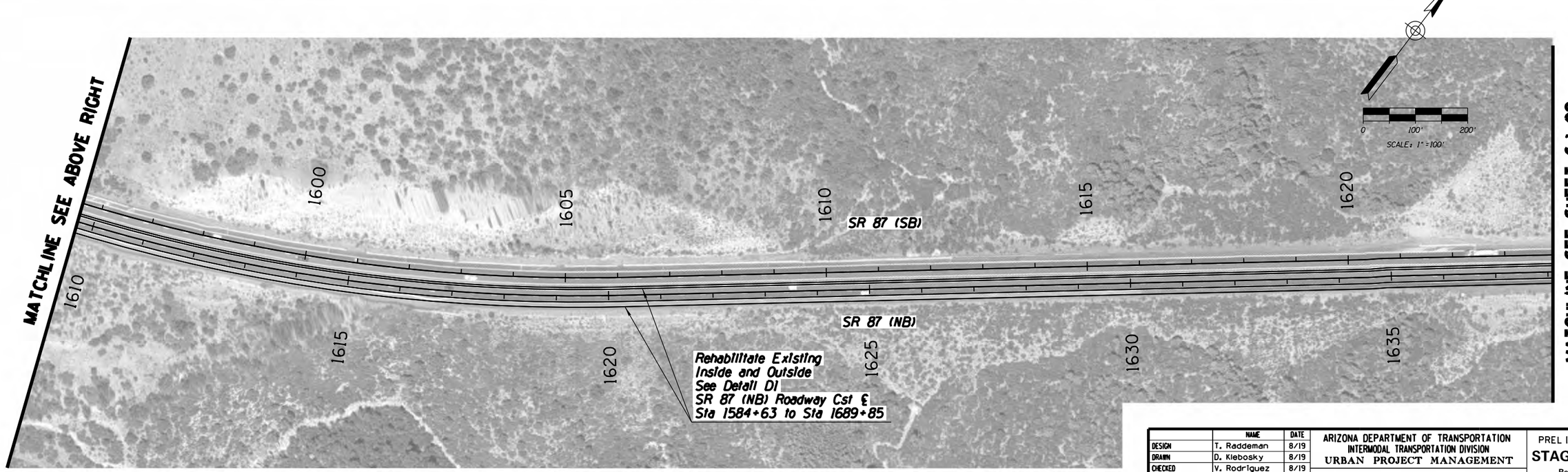
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	___ OF ___

TRACS NO. XXXXX XXX | XXX-X(XXX)X

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

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "7 NB IMPROVEMENTS
MP 218.5 TO 226

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

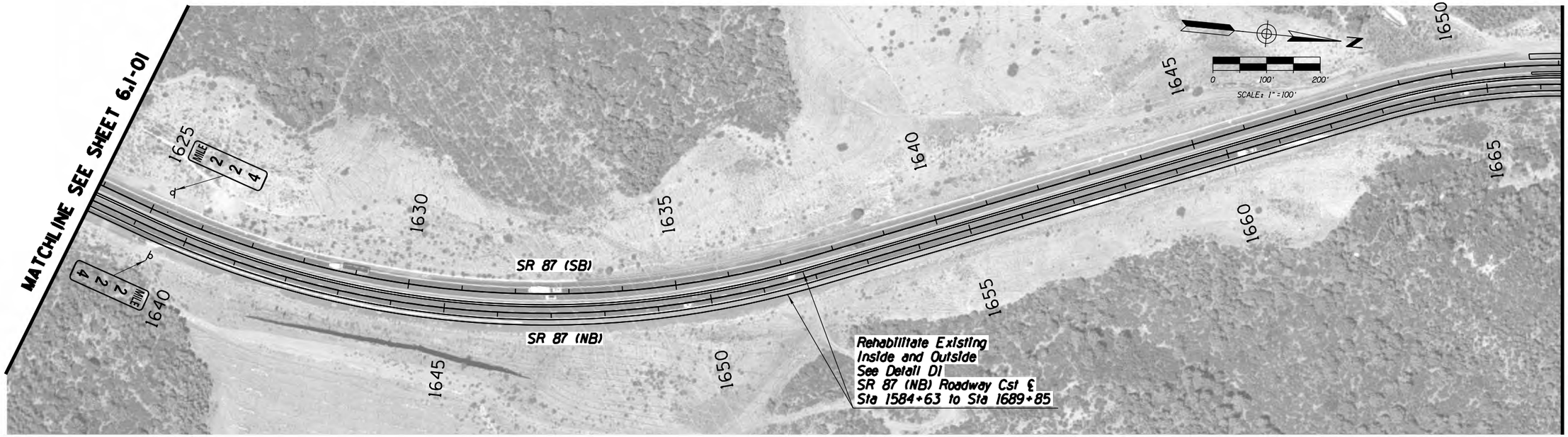
DWG NO. 6.1-01

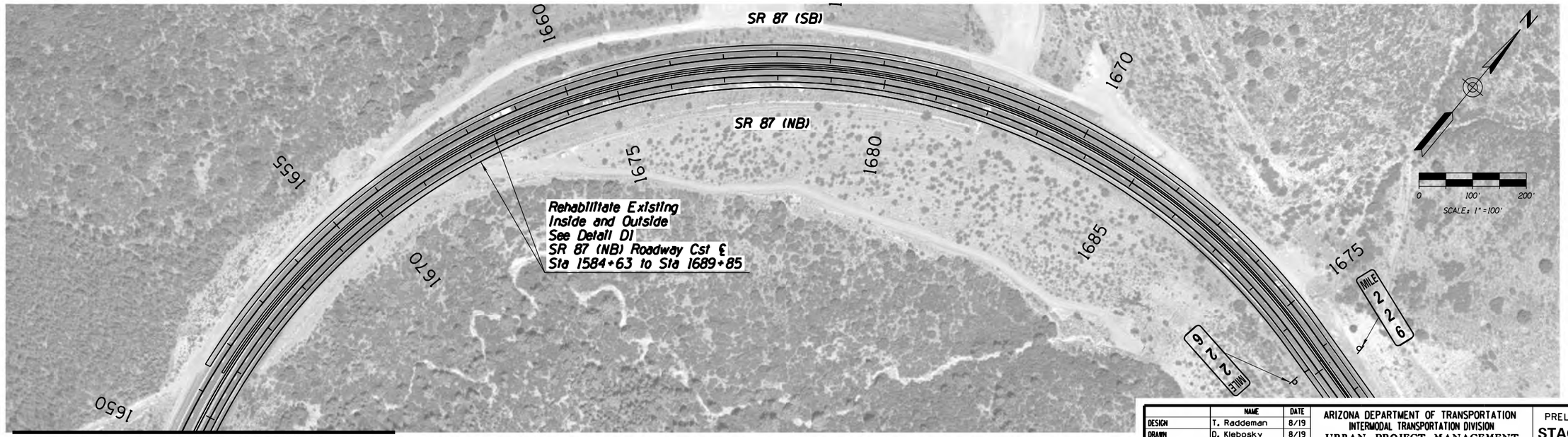
TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "7 NB IMPROVEMENTS
MP 218.5 TO 226

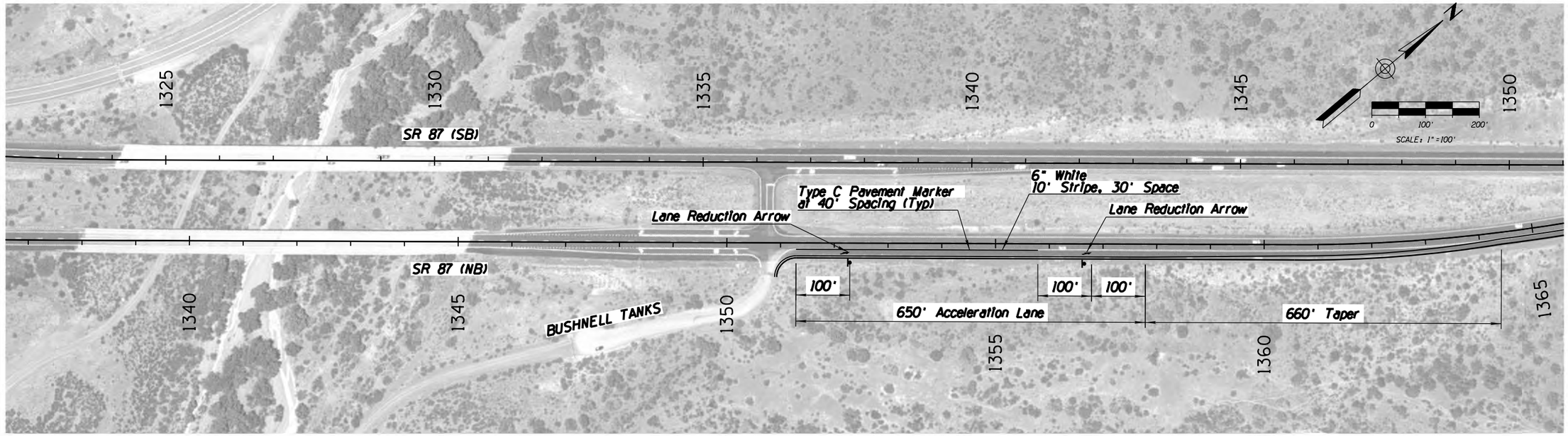
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO. 6.1-02
SR 87	MP 190 TO MP 250	
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



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

	NAME	DATE
DESIGN	SS	8/19
DRAWN	CEM	8/19
CHECKED	RLK	8/19

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INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

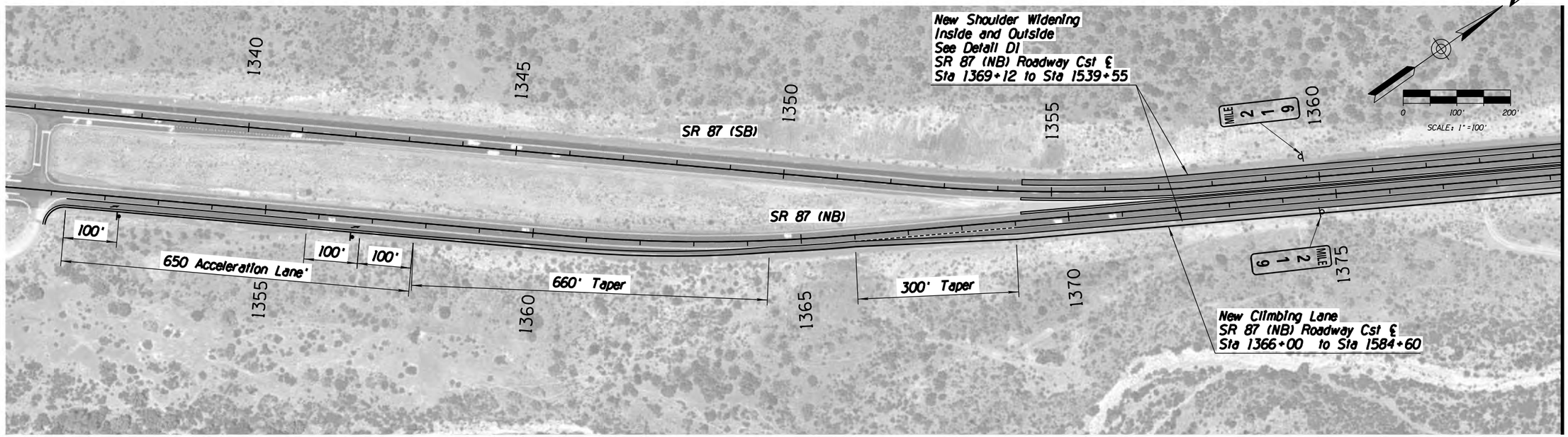
PROJECT "7 NB IMPROVEMENTS
MP 218.5 TO 226

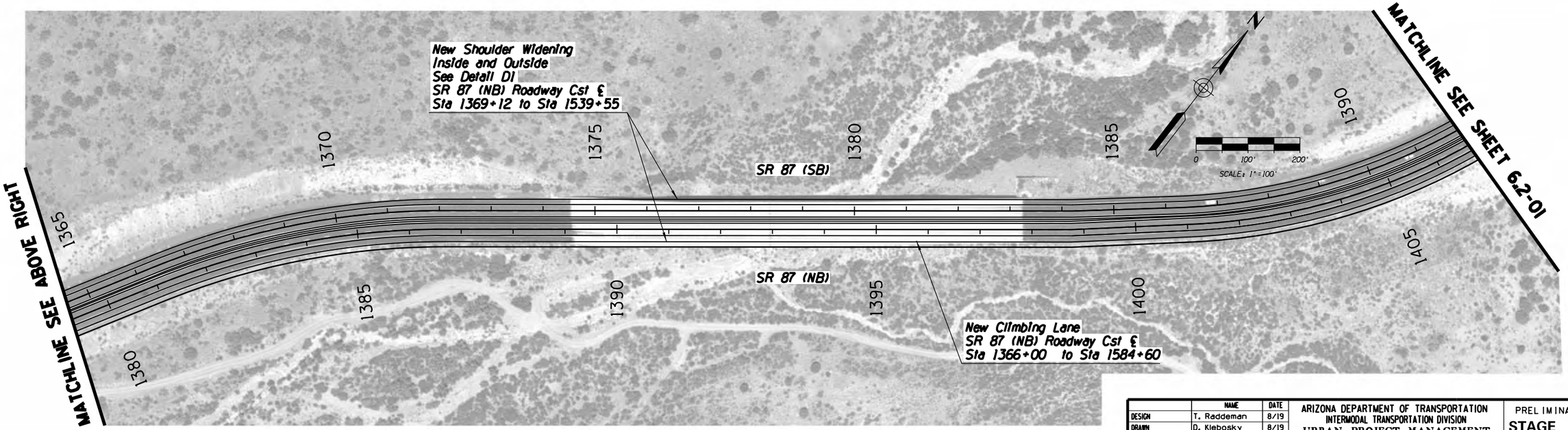
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO. 6.2-01
SR 87	MP 190 TO MP 250	
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "7 NB IMPROVEMENTS
MP 218.5 TO 226

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

TRACS NO. XXXXX XXX | XXX-X(XXX)X

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

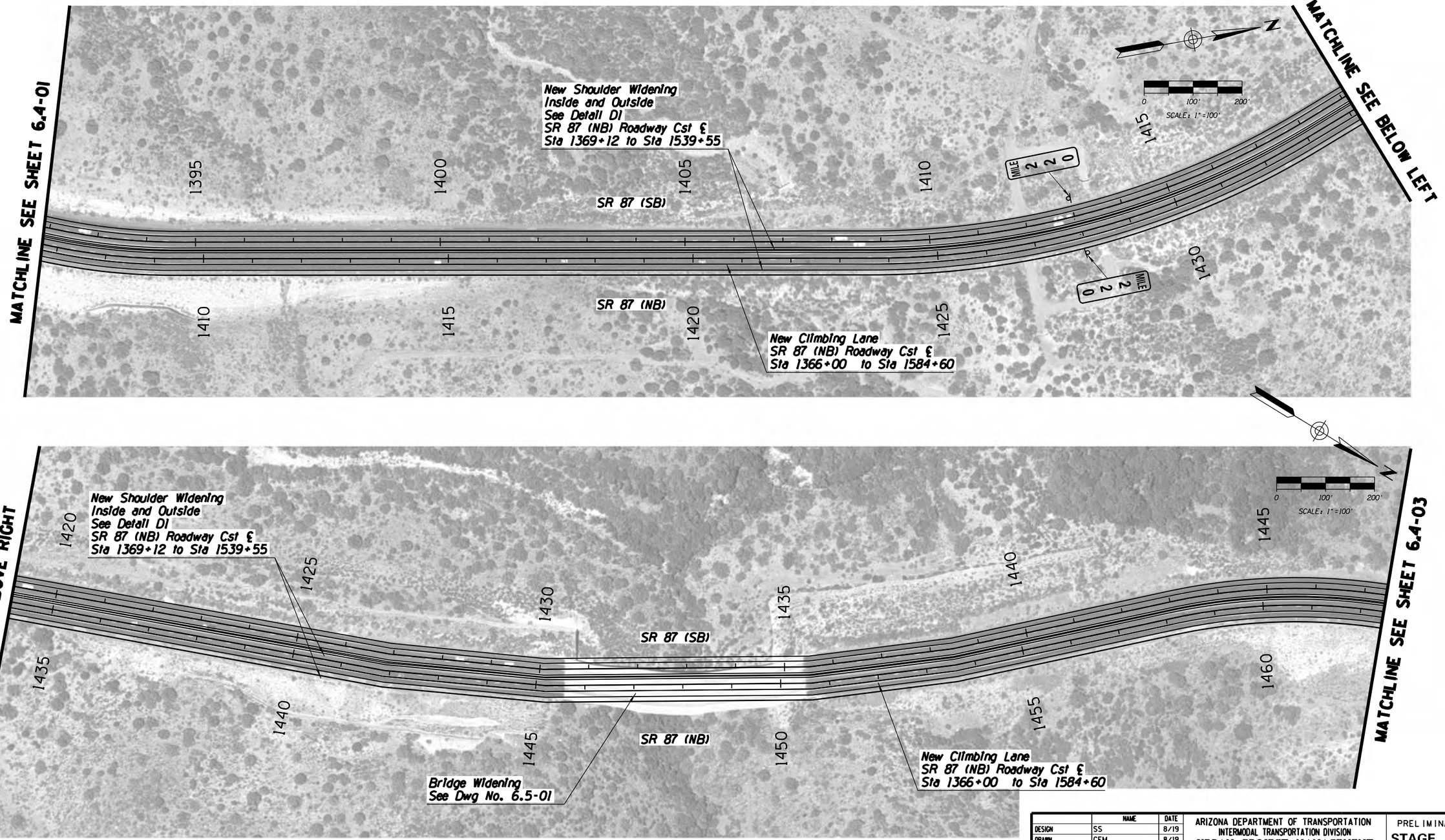
DWG NO. 6.4-01

___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



	NAME	DATE
DESIGN	SS	8/19
DRAWN	CEM	8/19
CHECKED	RLK	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "7 NB IMPROVEMENTS
MP 218.5 TO 226

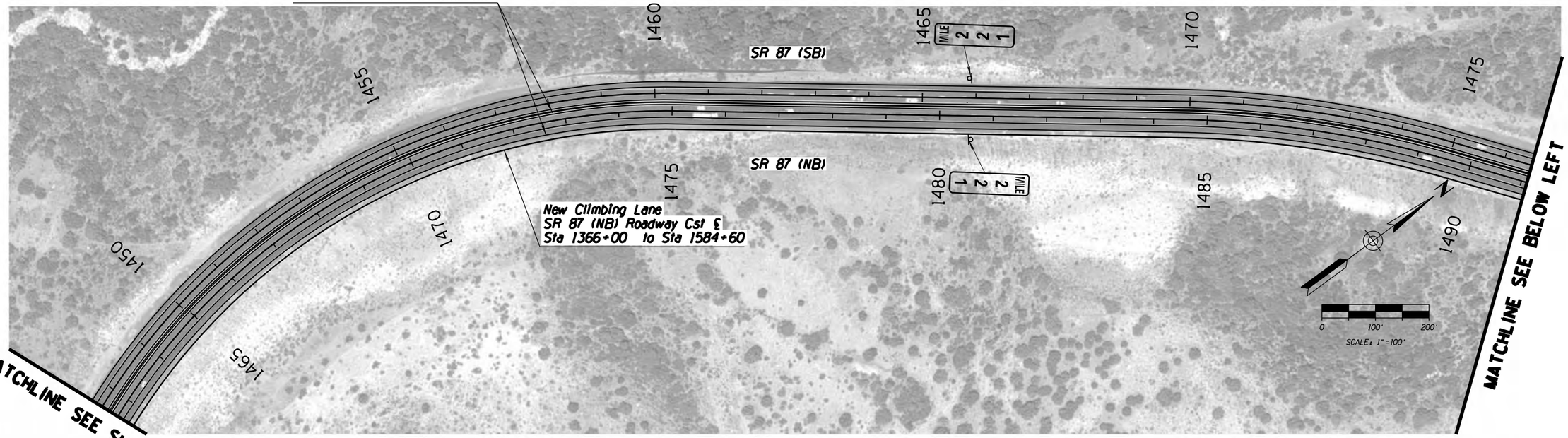
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

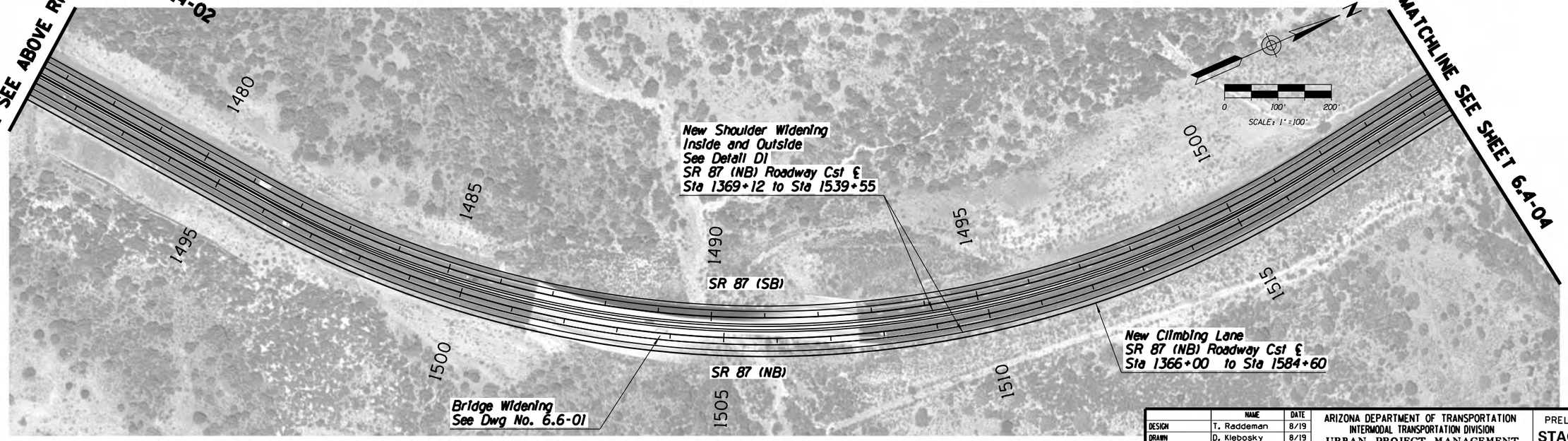
ROUTE	LOCATION	DWG NO. 6.4-02
SR 87	MP 190 TO MP 250	
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "7 NB IMPROVEMENTS
MP 218.5 TO 226

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

TRACS NO. XXXXX XXX | XXX-X(XXX)X

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

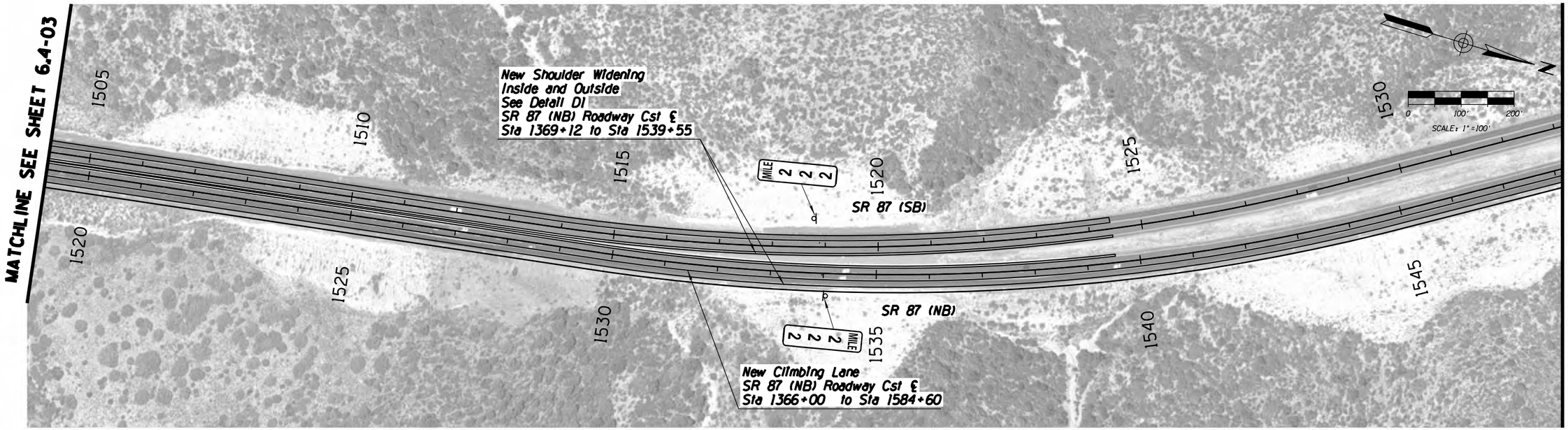
DWG NO. 6.4-03

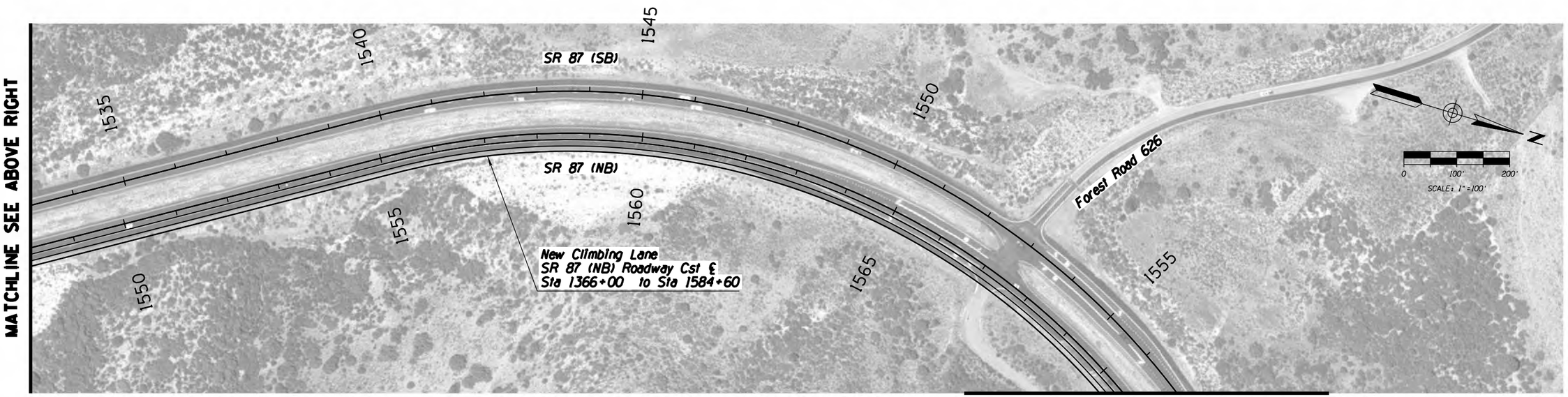
___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





MATCHLINE SEE SHEET 6.4-05

	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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INTERMODAL TRANSPORTATION DIVISION
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PROJECT "7 NB IMPROVEMENTS
MP 218.5 TO 226

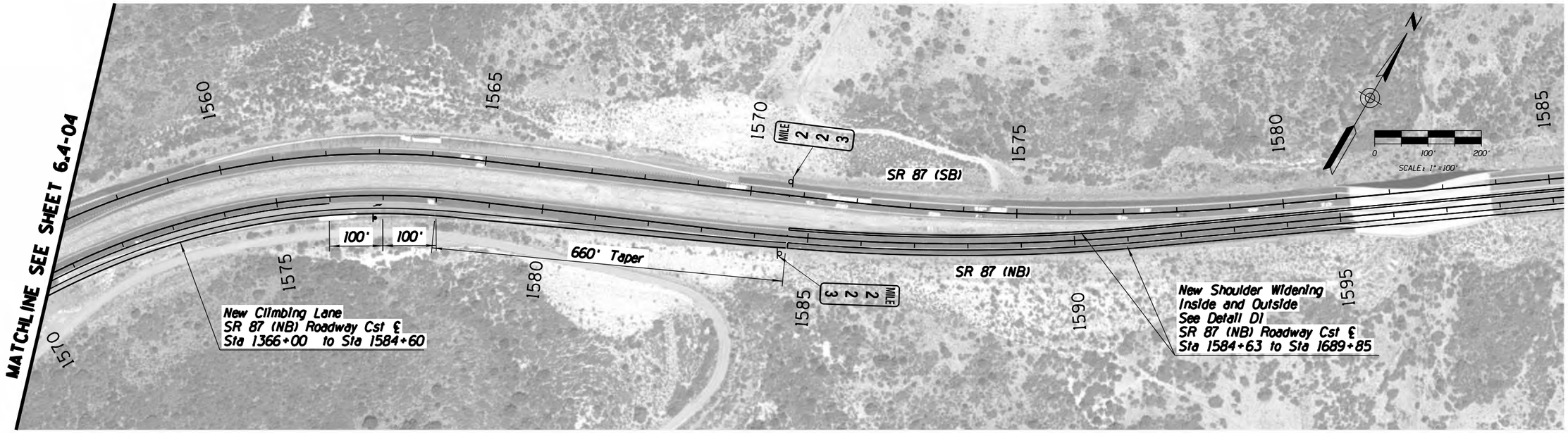
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	6.4-04
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "7 NB IMPROVEMENTS
MP 218.5 TO 226

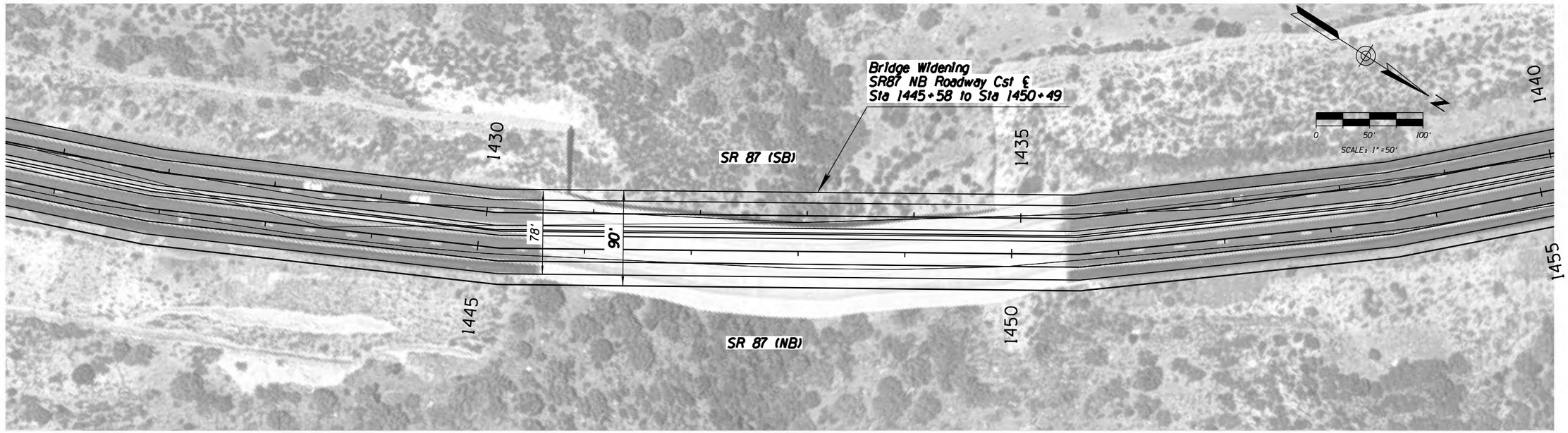
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO. 6.4-05
SR 87	MP 190 TO MP 250	
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



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

	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "7 NB IMPROVEMENTS
MP 218.5 TO 226

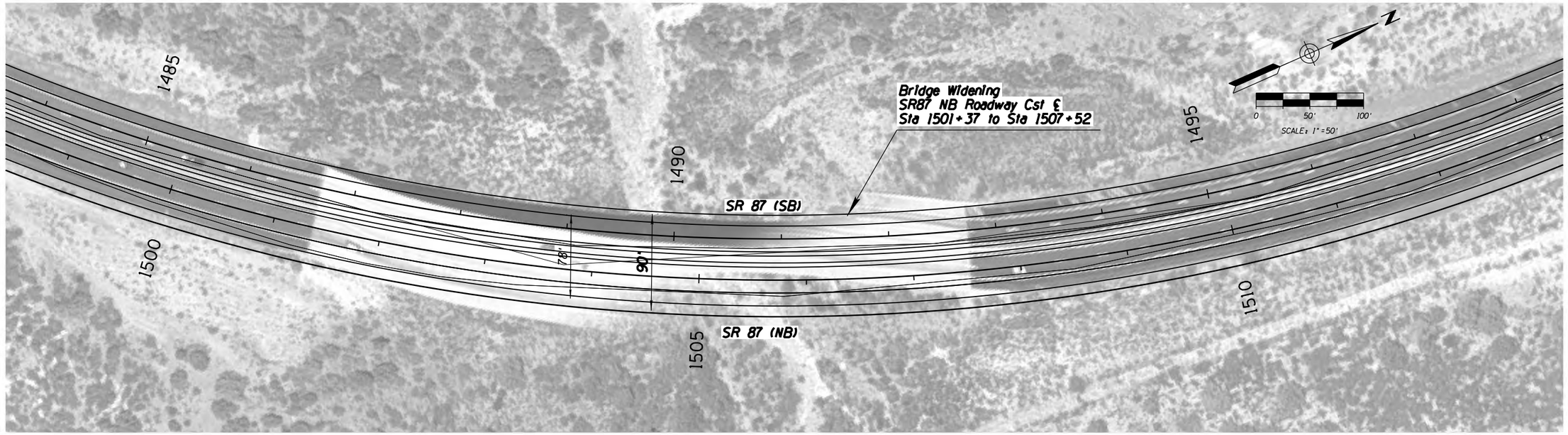
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	6.5-01

TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "7 NB IMPROVEMENTS
MP 218.5 TO 226

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO. 6.6-01
SR 87	MP 190 TO MP 250	
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

PACKAGE PROJECT 8 –

SLATE CREEK IMPROVEMENTS

(MP 226-232)

ADOT SR 87 Corridor Development Study

PRELIMINARY SCOPING REPORT

GENERAL PROJECT INFORMATION	
Date: 8/20/2019	**ADOT Project Manager:**
Project Name: Slate Creek Improvements (MP 226-232)	
City/Town: N/A	**County:** Gila
COG/MPO: CAG	**ADOT District:** Northcentral
Primary Route/Street: SR 87	
Beginning Limit: 226	
End Limit: 232	
Project Length: 6 Miles	
Right of Way Ownership(s) (where proposed project would occur): *(check all that apply)* ☐City/Town ☐County ☒ADOT ☐Private ☐Federal ☐Tribal ☐Other	
Adjacent Land Ownership(s): *(Check all that apply)* ☐City/Town ☐County ☐ADOT ☐Private ☒Federal ☐Tribal ☐Other	

PROJECT NEED
Shoulder widths are substandard and are in poor condition in some areas causing safety and emergency response issues.

PROJECT PURPOSE			
What is the Primary Purpose of the Project?	☐Preservation	☒Modernization	☐Expansion
Widen shoulders, where they are substandard, and rehabilitate shoulders, where needed, to create a consistent recovery area and aid in emergency response.			

PROJECT RISKS	
Check any risks identified that may impact the project's scope, schedule, or budget:	
☐Access/Traffic Control/Detour Issues	☐Right-of-Way
☐Constructability/Construction Window Issues	☐Environmental
☐Stakeholder Issues	☐Utilities
☐Structures & Geotech	☐Other:
Risk Description: *(if a box is checked above, briefly explain the risk)*	

Click or tap here to enter text.

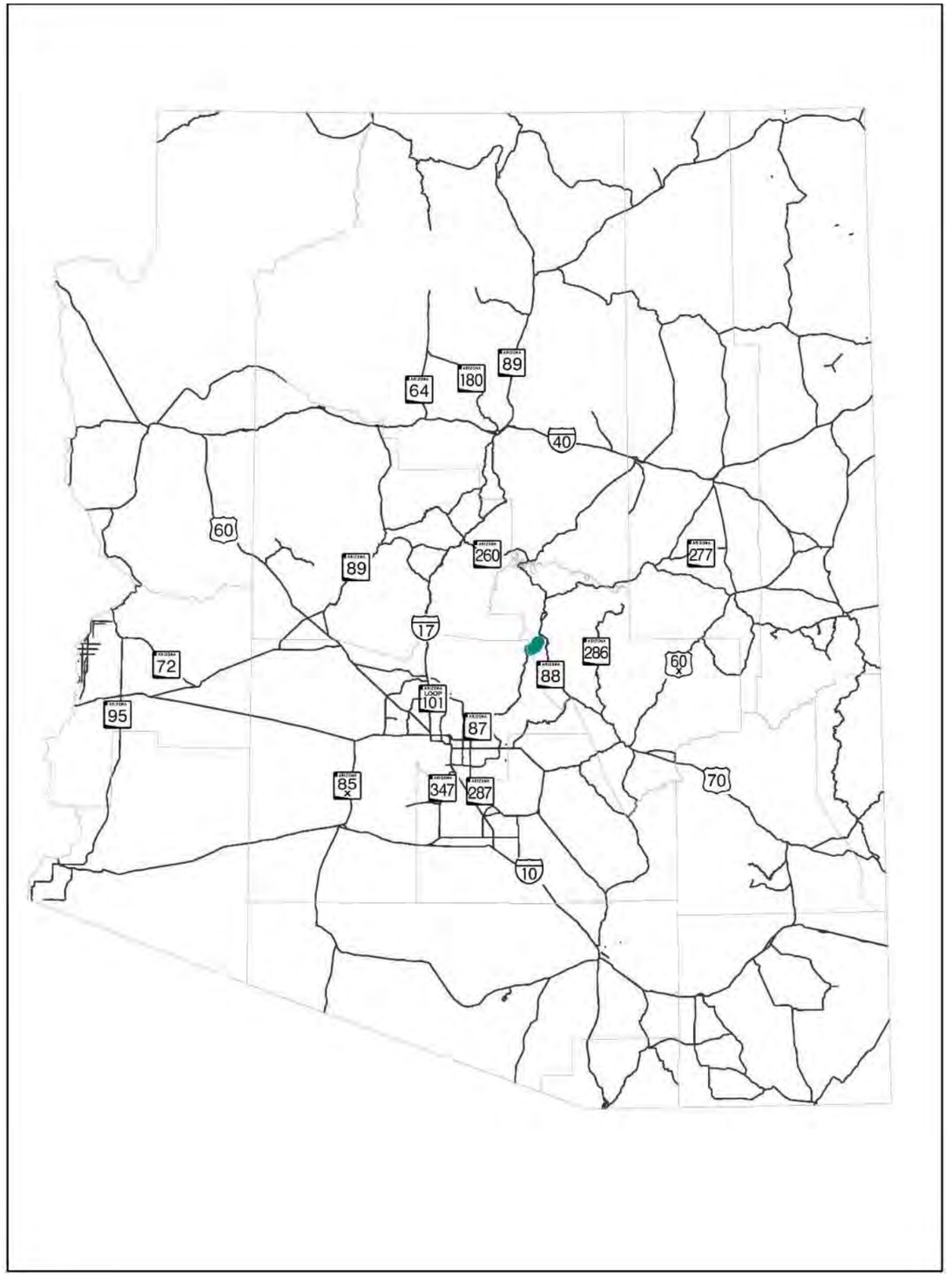
POTENTIAL FUNDING SOURCE(S)				
Anticipated Project Design/Construction Funding Type: *(Check all that applied)*	☐STBG	☐TAP	☒HSIP	☒State
	☐Local	☐Private	☒Tribal	☐Other

COST ESTIMATE			
Design	Right-of-Way	Construction	Total
$1,257,900.00	$0.00	$16,354,900.00	$17,612,800

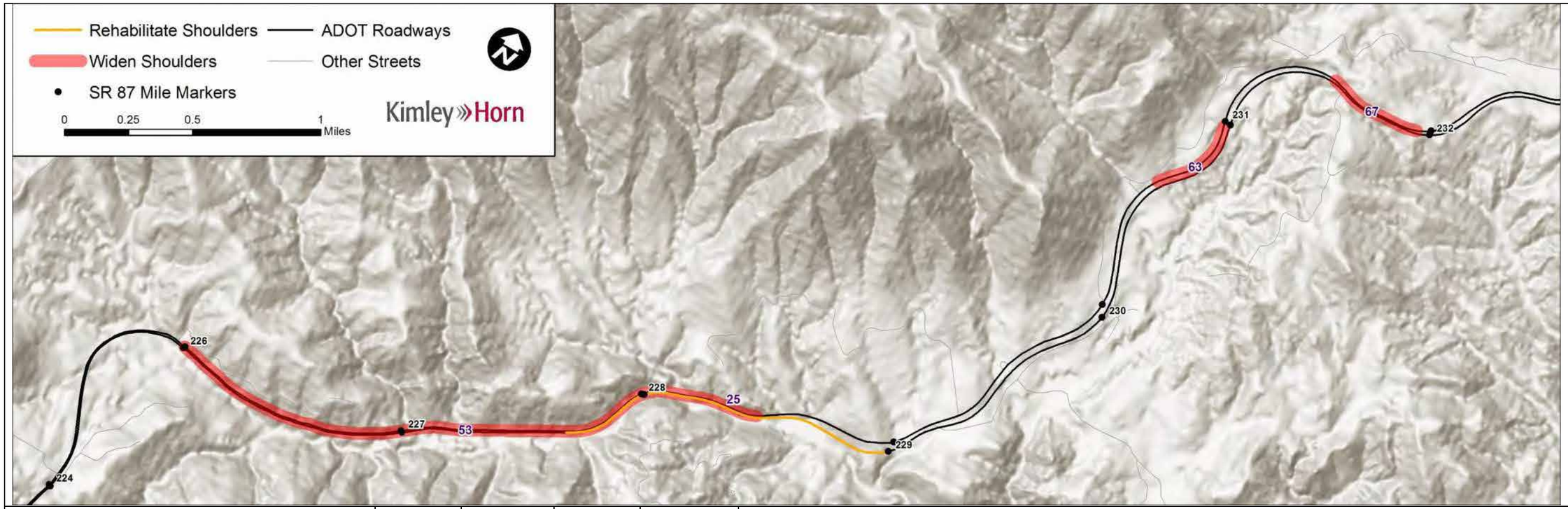
RECOMMENDED PROJECT DELIVERY
Delivery: ☐Design-Bid-Build ☐Design-Build ☒Other:
Design Program Year: Click or tap here to enter text.
Construction Program Year: Click or tap here to enter text.
ATTACHMENTS
1. **Project Scope of Work** 2. **State Location Map** 3. **Project Vicinity Map** 4. **Itemized Cost Estimate** 5. **Conceptual Design Plans**

ATTACHMENT 1: SCOPE OF WORK
(Provide a detailed breakdown of the project's scope of work using bullet form) • Rehabilitate northbound shoulder (MP 227.8-229) • Widen inside shoulders to four feet and outside shoulders to ten feet (Northbound: MP 226-227.8, Southbound: MP 226-228.5) • Widen southbound inside shoulders to four feet (MP 230.8-230.9) • Widen inside shoulder to four feet in both directions (MP 231.5-232)

ATTACHMENT 2: STATE LOCATION MAP



ATTACHMENT 3: PROJECT VICINITY MAP



Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. Rehabilitate NB shoulders	25	227.8	229	$666,700	The shoulders in this location are in poor condition, with significant cracking and vegetation growing.
2. Widen inside shoulders to 4’ and outside shoulders to 10’	53	NB: 226 SB: 226	NB: 227.8 SB: 228.5	$15,448,300	The current shoulders are of insufficient widths per current safety standards and for effective emergency response.
3. Widen SB inside shoulders to 4’	63	230.8	230.9	$196,700	The current shoulders are of insufficient widths per current safety standards and for effective emergency response.
4. Widen inside shoulder to 4’ in both directions	67	231.5	232	$1,301,100	The current shoulders are of insufficient widths per current safety standards and for effective emergency response.
			Total:	**$17,612,800**	

ATTACHMENT 4: ITEMIZED COST ESTIMATE

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

25. Rehabilitate northbound shoulders (MP 227.8-229)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2020053	REMOVE (GR TERMINAL)	EACH	1	$400.00	$400
2020071	REMOVE GUARD RAIL	L.FT.	686	$5.00	$3,430
2020085	REMOVE BITUMINOUS PAVEMENT (MILLING) (3")	SQ.YD.	8,248	$3.00	$24,744
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	1,510	$120.00	$181,200
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	244	$100.00	$24,400
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$5,301.70	$5,302
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	1,326	$30.00	$39,780
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	1	$2,500.00	$2,500
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	1	$800.00	$800
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	10,604	$0.75	$7,953
				Roadway Construction Subtotal	**$300,509**
	Unidentified Item Allowance (15%)				$ 45,077
				Subtotal	**$345,586**
	Water Supply/Dust Palliative (3%)				$ 10,368
	Maintenance And Protection Of Traffic (15%)				$ 51,838
	Erosion Control (1%)				$ 3,456
	Contractor Quality Control (2%)				$ 6,912
	Construction Surveying And Layout (2%)				$ 6,912
				Other Item Subtotal	**$425,072**
	Mobilization (12%)				$ 51,009
				Construction Subtotal	**$ 476,081**
	Engineering Design (10%)				$ 47,609
	Construction Engineering and Contingencies (20%)				$ 95,217
	Indirect Cost Allocation (10.02%)				$ 47,704
				Construction Total	**$ 666,611**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

53. Widen northbound inside and outside shoulders (MP 226 – 227.8)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	11	$5,000.00	$55,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	3,286	$20.00	$65,720
2020053	REMOVE (GR TERMINAL)	EACH	4	$400.00	$1,600
2020071	REMOVE GUARD RAIL	L.FT.	3,697	$5.00	$18,485
2020201	SAW CUTTING	L.FT.	29,569	$2.50	$73,923
2030301	ROADWAY EXCAVATION	CU.YD.	164,270	$7.00	$1,149,890
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	10,952	$50.00	$547,600
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	5,977	$80.00	$478,160
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	388	$90.00	$34,920
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$14,784.00	$14,784
8050003	SEEDING (CLASS II)	ACRE	11	$3,500.00	$38,500
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	3,697	$30.00	$110,910
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	4	$2,500.00	$10,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	4	$800.00	$3,200
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	29,569	$0.75	$22,177
				Roadway Construction Subtotal	**$2,634,868**
	Unidentified Item Allowance (15%)				$ 395,231
				Subtotal	**$3,030,099**
	Water Supply/Dust Palliative (3%)				$ 90,903
	Maintenance And Protection Of Traffic (15%)				$ 454,515
	Erosion Control (1%)				$ 30,301
	Contractor Quality Control (2%)				$ 60,602
	Construction Surveying And Layout (2%)				$ 60,602
				Other Item Subtotal	**$3,727,022**
	Mobilization (12%)				$ 447,243
				Construction Subtotal	**$ 4,174,265**
	Engineering Design (10%)				$ 417,427
	Construction Engineering and Contingencies (20%)				$ 834,854
	Indirect Cost Allocation (10.02%)				$ 418,262
				Construction Total	**$ 5,844,809**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

53. Widen southbound inside and outside shoulders (MP 226 - 228.5)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	17	$5,000.00	$85,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	5,432	$20.00	$108,640
2020053	REMOVE (GR TERMINAL)	EACH	4	$400.00	$1,600
2020071	REMOVE GUARD RAIL	L.FT.	6,110	$5.00	$30,550
2020201	SAW CUTTING	L.FT.	48,880	$2.50	$122,200
2030301	ROADWAY EXCAVATION	CU.YD.	271,560	$7.00	$1,900,920
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	18,104	$50.00	$905,200
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	9,880	$80.00	$790,400
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	641	$90.00	$57,690
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$24,440.00	$24,440
8050003	SEEDING (CLASS II)	ACRE	17	$3,500.00	$59,500
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	6,110	$30.00	$183,300
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	4	$2,500.00	$10,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	4	$800.00	$3,200
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	48,880	$0.75	$36,660
				Roadway Construction Subtotal	**$4,329,300**
	Unidentified Item Allowance (15%)			$	649,395
				Subtotal	**$4,978,695**
	Water Supply/Dust Palliative (3%)			$	149,361
	Maintenance And Protection Of Traffic (15%)			$	746,805
	Erosion Control (1%)			$	49,787
	Contractor Quality Control (2%)			$	99,574
	Construction Surveying And Layout (2%)			$	99,574
				Other Item Subtotal	**$6,123,796**
	Mobilization (12%)			$	734,856
				Construction Subtotal	**$ 6,858,652**
	Engineering Design (10%)			$	685,866
	Construction Engineering and Contingencies (20%)			$	1,371,731
	Indirect Cost Allocation (10.02%)			$	687,237
				Construction Total	**$ 9,603,486**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

63. Widen southbound inside shoulder to 4' (MP 230.8-230.9)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	63	$35.00	$2,205
2020053	REMOVE (GR TERMINAL)	EACH	2	$400.00	$800
2020071	REMOVE GUARD RAIL	L.FT.	561	$5.00	$2,805
2020201	SAW CUTTING	L.FT.	561	$2.50	$1,403
2030301	ROADWAY EXCAVATION	CU.YD.	840	$10.00	$8,400
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	187	$120.00	$22,440
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	93	$160.00	$14,880
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	6	$120.00	$720
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$561.00	$561
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	561	$30.00	$16,830
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	1	$2,500.00	$2,500
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	1	$800.00	$800
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	561	$1.50	$842
				Roadway Construction Subtotal	**$88,685**
	Unidentified Item Allowance (15%)			$	13,303
				Subtotal	**$101,988**
	Water Supply/Dust Palliative (3%)			$	3,060
	Maintenance And Protection Of Traffic (15%)			$	15,299
	Erosion Control (1%)			$	1,020
	Contractor Quality Control (2%)			$	2,040
	Construction Surveying And Layout (2%)			$	2,040
				Other Item Subtotal	**$125,447**
	Mobilization (12%)			$	15,054
				Construction Subtotal	**$ 140,501**
	Engineering Design (10%)			$	14,051
	Construction Engineering and Contingencies (20%)			$	28,101
	Indirect Cost Allocation (10.02%)			$	14,079
				Construction Total	**$ 196,732**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

67. Widen inside shoulder to 4' (MP 231.5-232)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	2	$5,000.00	$10,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	281	$20.00	$5,620
2020201	SAW CUTTING	L.FT.	2,527	$2.50	$6,318
2030301	ROADWAY EXCAVATION	CU.YD.	3,750	$10.00	$37,500
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	843	$120.00	$101,160
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	418	$160.00	$66,880
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	25	$120.00	$3,000
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$2,527.00	$2,527
8050003	SEEDING (CLASS II)	ACRE	2	$3,500.00	$7,000
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	2,527	$0.75	$1,895
				Roadway Construction Subtotal	**$246,900**
	Unidentified Item Allowance (15%)				$ 37,035
				Subtotal	**$283,935**
	Water Supply/Dust Palliative (3%)				$ 8,519
	Maintenance And Protection Of Traffic (15%)				$ 42,591
	Erosion Control (1%)				$ 2,840
	Contractor Quality Control (2%)				$ 5,679
	Construction Surveying And Layout (2%)				$ 5,679
				Other Item Subtotal	**$349,243**
	Mobilization (12%)				$ 41,910
				Construction Subtotal	**$ 391,153**
	Engineering Design (10%)				$ 39,116
	Construction Engineering and Contingencies (20%)				$ 78,231
	Indirect Cost Allocation (10.02%)				$ 39,194
				Construction Total	**$ 547,694**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

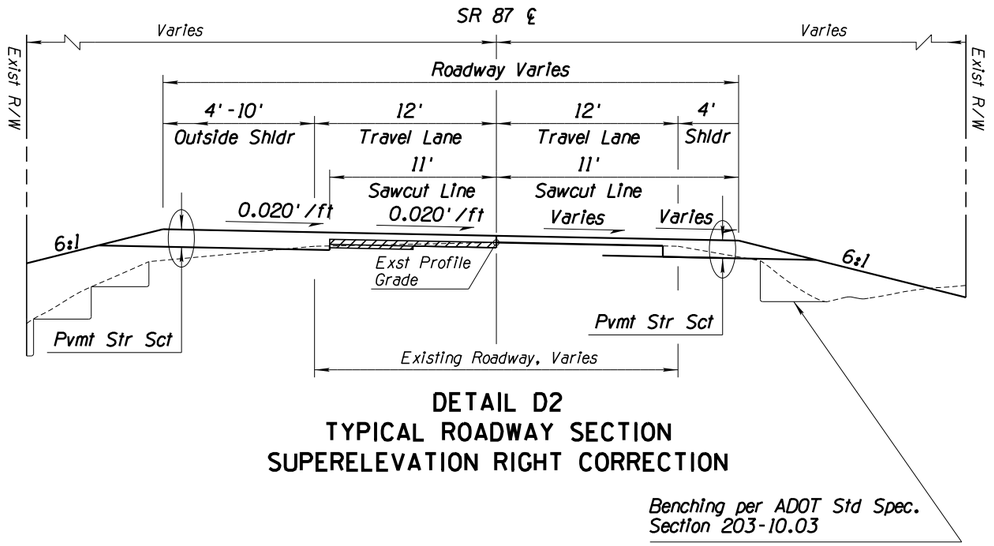
67. Widen southbound inside shoulder to 4' (MP 231.5-232)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	2	$5,000.00	$10,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	281	$20.00	$5,620
2020053	REMOVE (GR TERMINAL)	EACH	2	$400.00	$800
2020071	REMOVE GUARD RAIL	L.FT.	2,528	$5.00	$12,640
2020201	SAW CUTTING	L.FT.	2,528	$2.50	$6,320
2030301	ROADWAY EXCAVATION	CU.YD.	3,750	$10.00	$37,500
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	843	$120.00	$101,160
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	419	$160.00	$67,040
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	25	$120.00	$3,000
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$2,528.00	$2,528
8050003	SEEDING (CLASS II)	ACRE	2	$3,500.00	$7,000
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	2,528	$30.00	$75,840
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	1	$2,500.00	$2,500
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	1	$800.00	$800
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	2,528	$0.75	$1,896
				Roadway Construction Subtotal	**$339,644**
	Unidentified Item Allowance (15%)				$ 50,947
				Subtotal	**$390,591**
	Water Supply/Dust Palliative (3%)				$ 11,718
	Maintenance And Protection Of Traffic (15%)				$ 58,589
	Erosion Control (1%)				$ 3,906
	Contractor Quality Control (2%)				$ 7,812
	Construction Surveying And Layout (2%)				$ 7,812
				Other Item Subtotal	**$480,428**
	Mobilization (12%)				$ 57,652
				Construction Subtotal	**$ 538,080**
	Engineering Design (10%)				$ 53,808
	Construction Engineering and Contingencies (20%)				$ 107,616
	Indirect Cost Allocation (10.02%)				$ 53,916
				Construction Total	**$ 753,420**

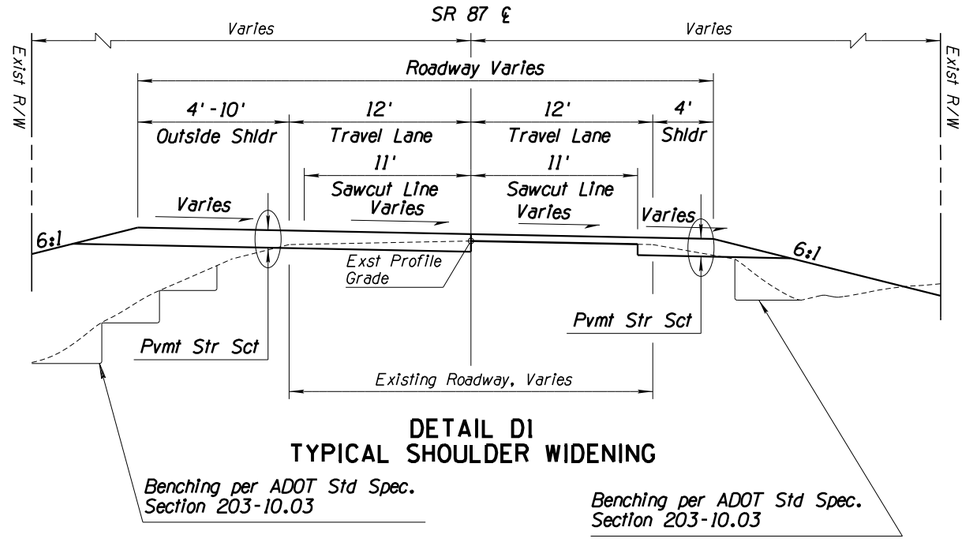
ATTACHMENT 5: PRELIMINARY PLANS

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

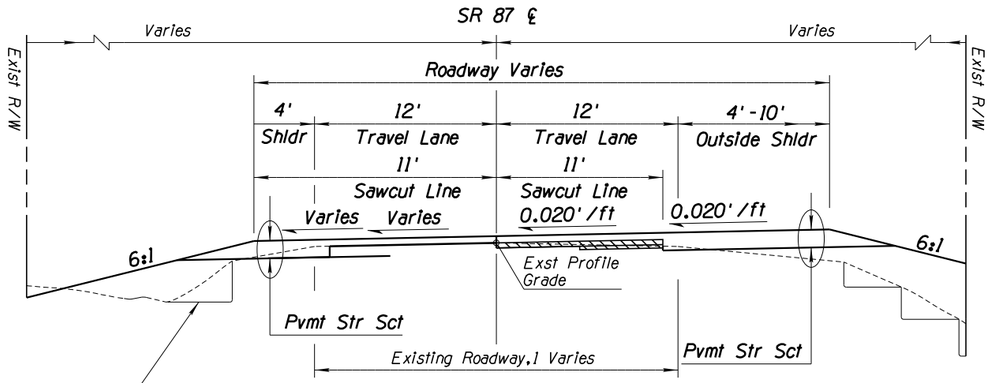
SR 87 MILE POST STATION			
MP NB	STATION	MP SB	STATION
196	101+73	196	101+18
197	155+53	197	154+02
198	207+69	198	207+94
199	261+02	199	259+13
200	314+21	200	311+72
201	367+73	201	364+06
202	419+18	202	417+81
203	471+36	203	470+65
204	526+28	204	523+10
205	577+70	205	575+84
206	630+73	206	628+30
207	682+81	207	680+28
208	736+47	208	734+12
209	788+55	209	786+62
210	842+08	210	839+50
211	894+91	211	890+40
212	942+20	212	939+42
213	998+65	213	995+55
214	1051+86	214	1050+06
215	1105+38	215	1095+77
216	1158+68	216	1147+95
217	1213+92	217	1199+48
218	1268+31	218	1250+20
219	1318+19	219	1304+12
220	1374+67	220	1359+76
221	1427+95	221	1412+99
222	1480+60	222	1465+84
223	1533+97	223	1518+89
224	1584+61	224	1570+72
225	1639+50	225	1625+29
226	1689+86	226	1676+32
227	1740+23	227	1726+14
228	1792+50	228	1778+04
229	1845+24	229	1831+98
230	1898+50	230	1884+70
231	1949+61	231	1933+71
232	1999+33	232	1985+29
233	2047+74	233	2033+06
234	2101+13	234	2085+05
235	2154+59	235	2137+29
236	2207+09	236	2189+44
237	2259+88	237	2240+86
238	2311+66	238	2293+85
239	2364+28	239	2344+91
240	2416+01	240	2397+41
241	2467+79	241	2448+96
242	2518+51	242	2496+68
243	2571+26	243	2549+70
244	2620+38	244	2601+82
245	2677+47	245	2655+01
246	2729+53	246	2703+04
247	2741+30	247	2747+68
248	2794+18	248	2801+15
249	2847+25	249	2854+41
250	2899+69	250	2906+58



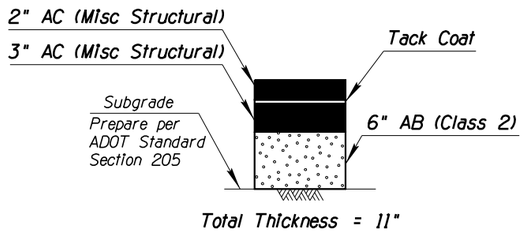
DETAIL D2
TYPICAL ROADWAY SECTION SUPERELEVATION RIGHT CORRECTION



DETAIL D1
TYPICAL SHOULDER WIDENING



DETAIL D3
TYPICAL ROADWAY SECTION SUPERELEVATION LEFT CORRECTION



Total Thickness = 11"

PAVEMENT STRUCTURAL SECTION

	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

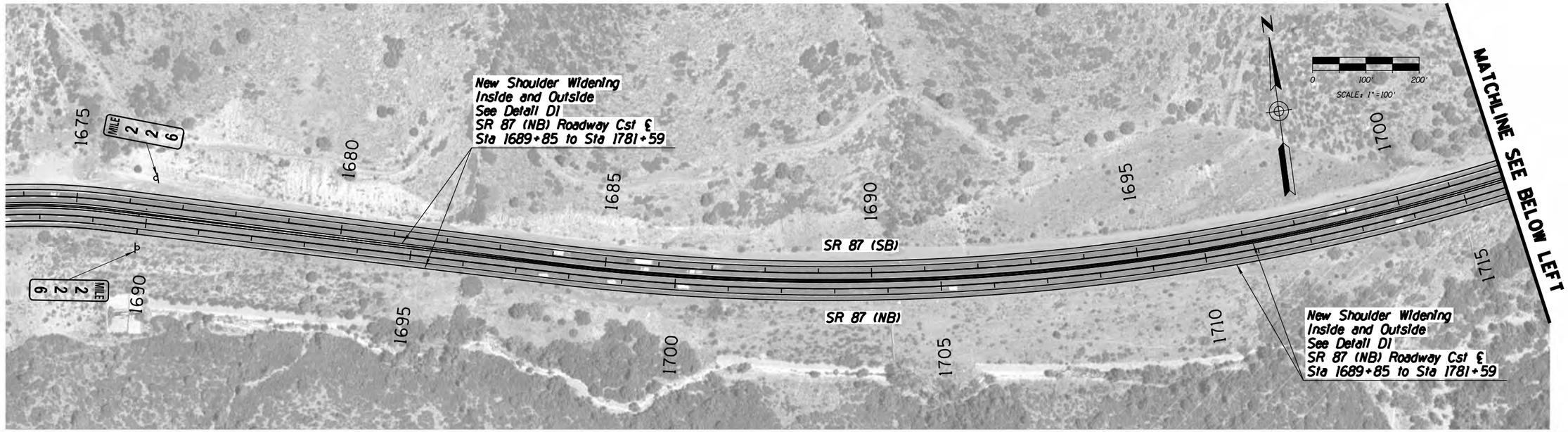
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

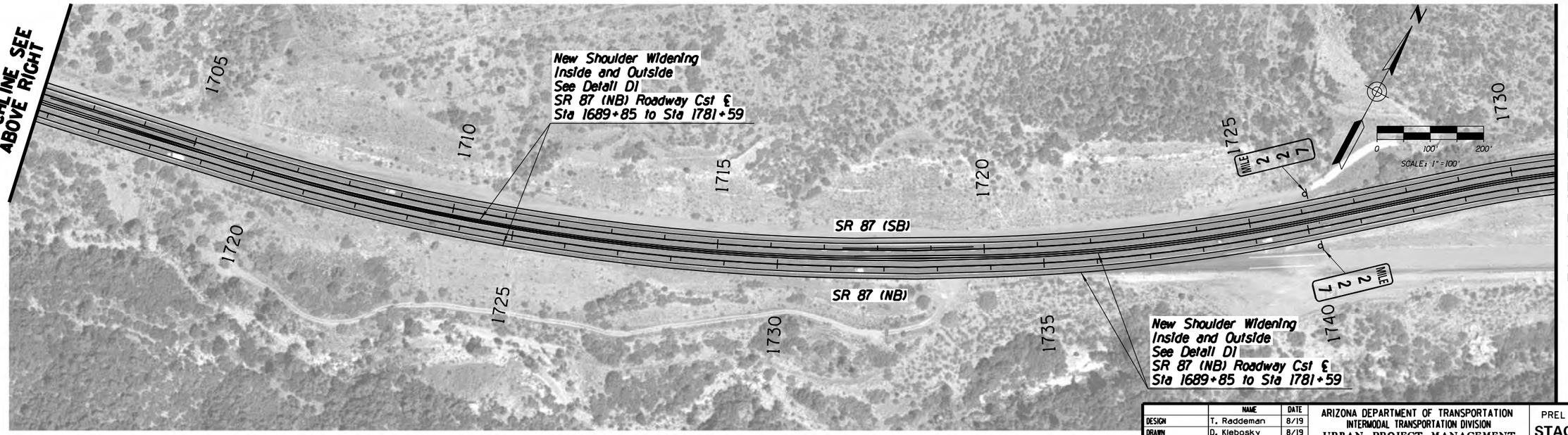
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	___ OF ___

TRACS NO. XXXXX XXX | XXX-X(XXX)X

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

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "8
SLATE CREEK IMPROVEMENTS
MP 226 TO 232

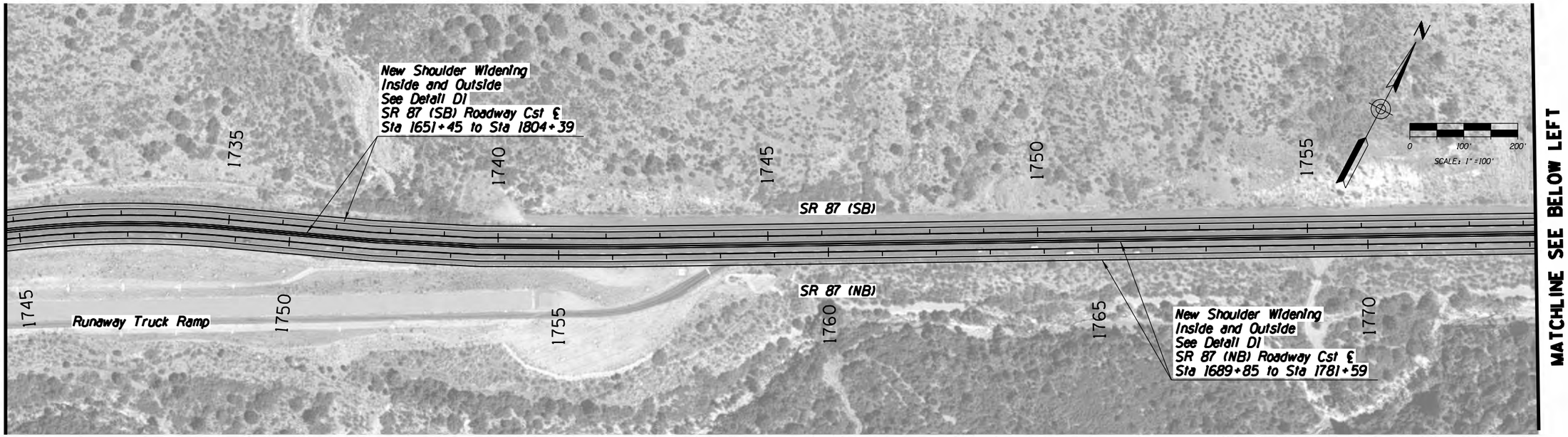
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

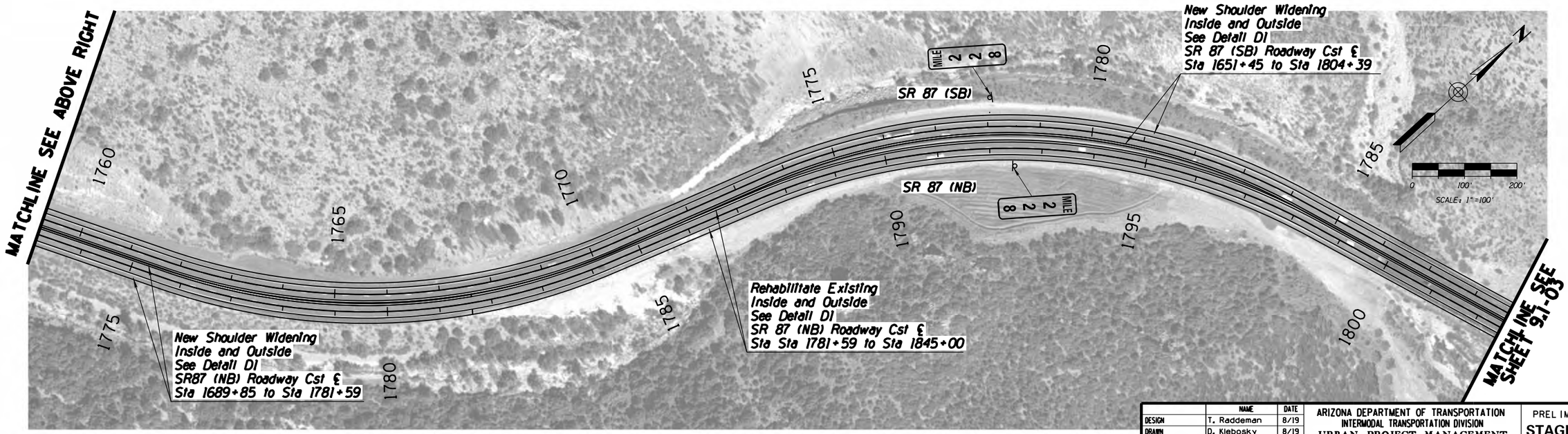
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	9.1-01
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "8
SLATE CREEK IMPROVEMENTS
MP 226 TO 232

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

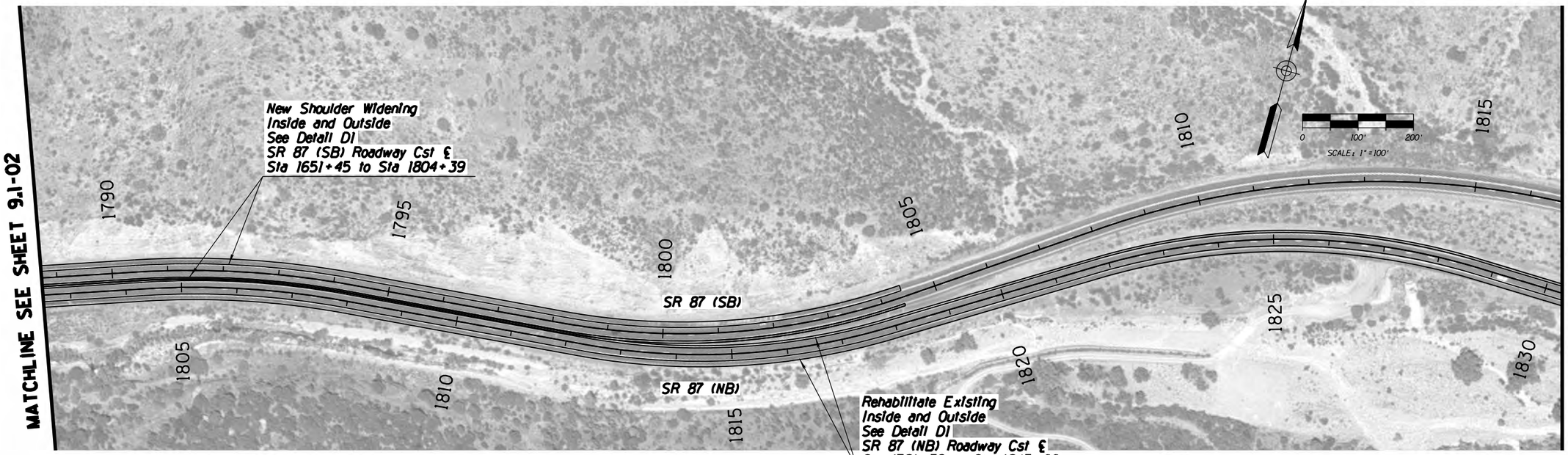
DWG NO. 9.1-02

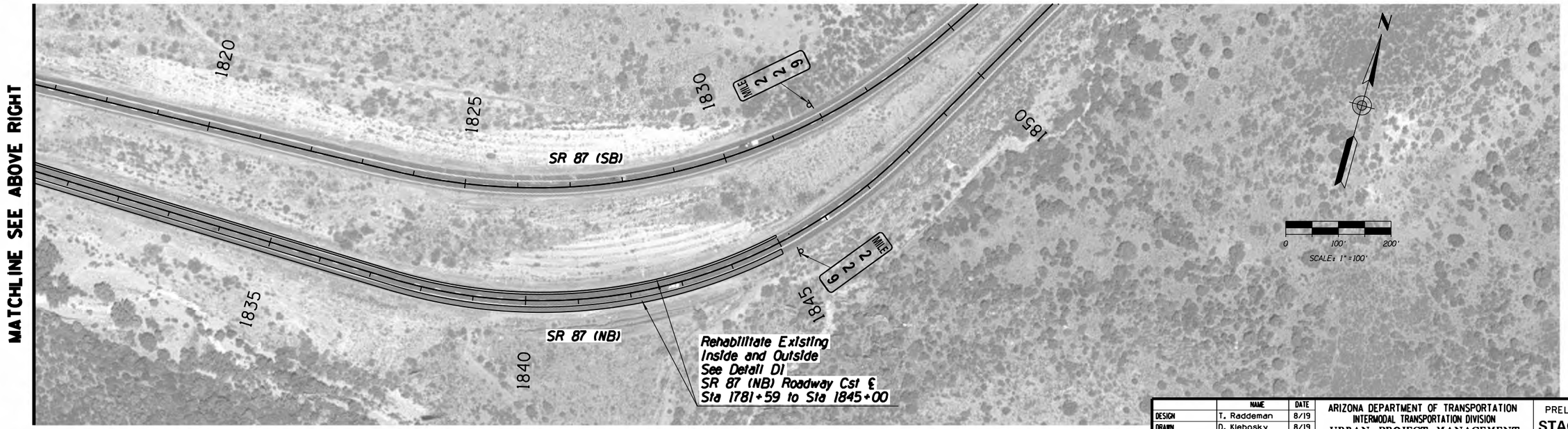
TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT #8
SLATE CREEK IMPROVEMENTS
MP 226 TO 232

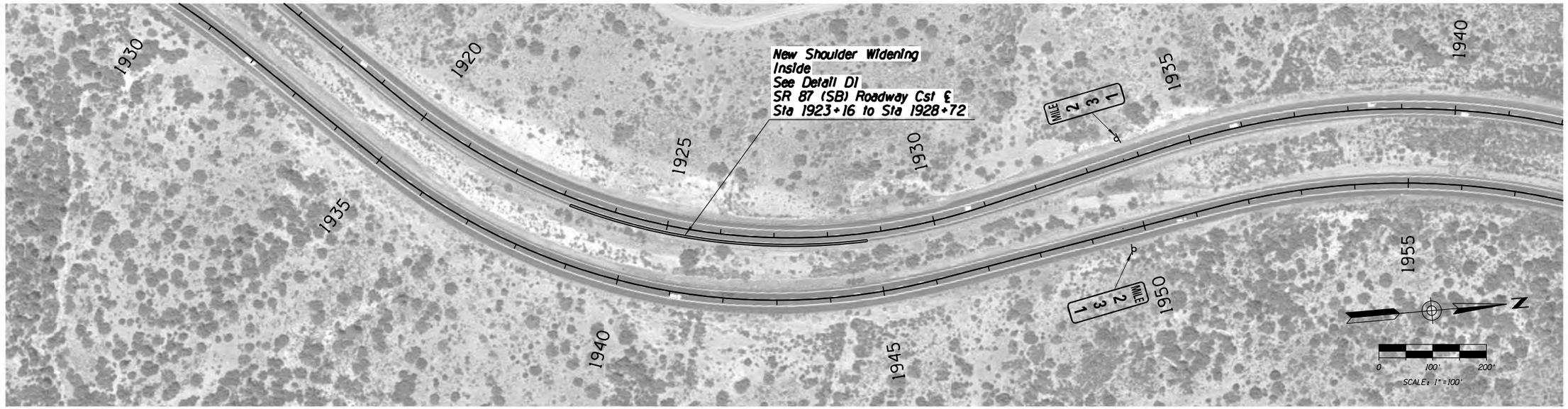
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

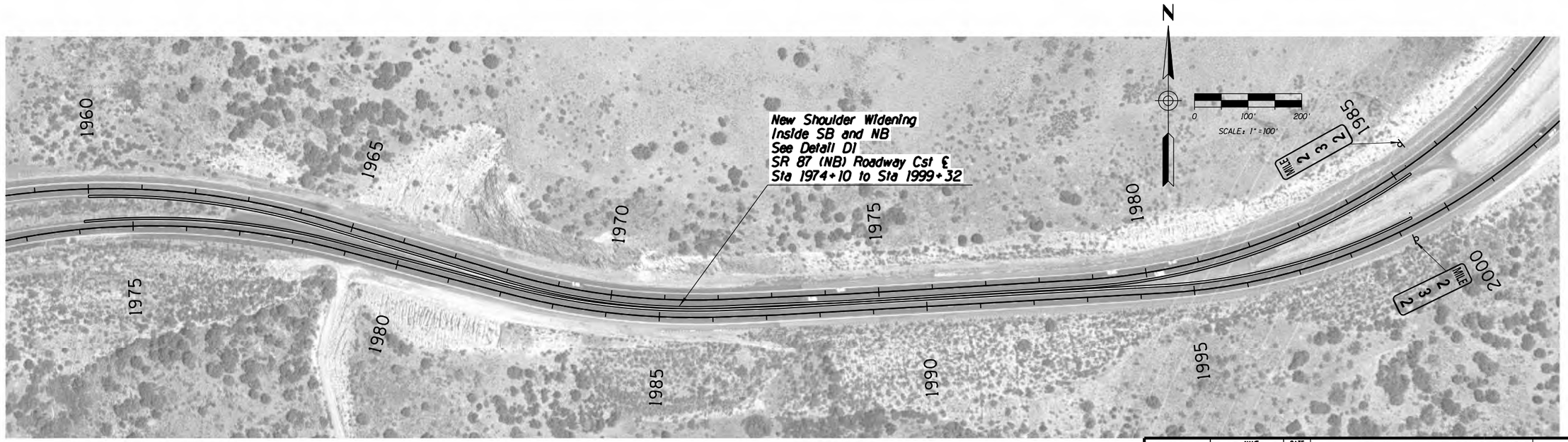
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	9.1-03
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "8
SLATE CREEK IMPROVEMENTS
MP 226 TO 232

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

TRACS NO. XXXXX XXX | XXX-X(XXX)X

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

DWG NO. 9.3-01

___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

PACKAGE PROJECT 9 –

RYE IMPROVEMENTS

(MP 239-241)

ADOT SR 87 Corridor Development Study

PRELIMINARY SCOPING REPORT

GENERAL PROJECT INFORMATION	
Date: 8/20/2019	**ADOT Project Manager:**
Project Name: Rye Improvements (MP239-241)	
City/Town: N/A	**County:** Gila
COG/MPO: CAG	**ADOT District:** Northcentral
Primary Route/Street: SR 87	
Beginning Limit: 239	
End Limit: 241	
Project Length: 2 Miles	
Right of Way Ownership(s) (where proposed project would occur): *(check all that apply)* ☐City/Town ☐County ☒ADOT ☐Private ☐Federal ☐Tribal ☐Other	
Adjacent Land Ownership(s): *(Check all that apply)* ☐City/Town ☒County ☐ADOT ☒Private ☐Federal ☐Tribal ☐Other	

PROJECT NEED
This intersection density in this area is higher than the rest of the corridor and there are locations without deceleration lanes leading to large speed differentials in the through travel lanes.

PROJECT PURPOSE			
What is the Primary Purpose of the Project?	☐Preservation	☒Modernization	☐Expansion
Supplement signage to increase awareness of the presence of intersections and cross-traffic in the area, as well as add deceleration and acceleration lanes to remove slow-moving vehicles from the through travel lanes.			

PROJECT RISKS	
Check any risks identified that may impact the project's scope, schedule, or budget:	
☐Access/Traffic Control/Detour Issues	☐Right-of-Way
☐Constructability/Construction Window Issues	☐Environmental
☐Stakeholder Issues	☐Utilities
☐Structures & Geotech	☐Other:
Risk Description: *(if a box is checked above, briefly explain the risk)* Click or tap here to enter text.	

POTENTIAL FUNDING SOURCE(S)				
Anticipated Project Design/Construction Funding Type: *(Check all that applied)*	☐STBG	☐TAP	☒HSIP	☒State
	☐Local	☐Private	☐Tribal	☐Other

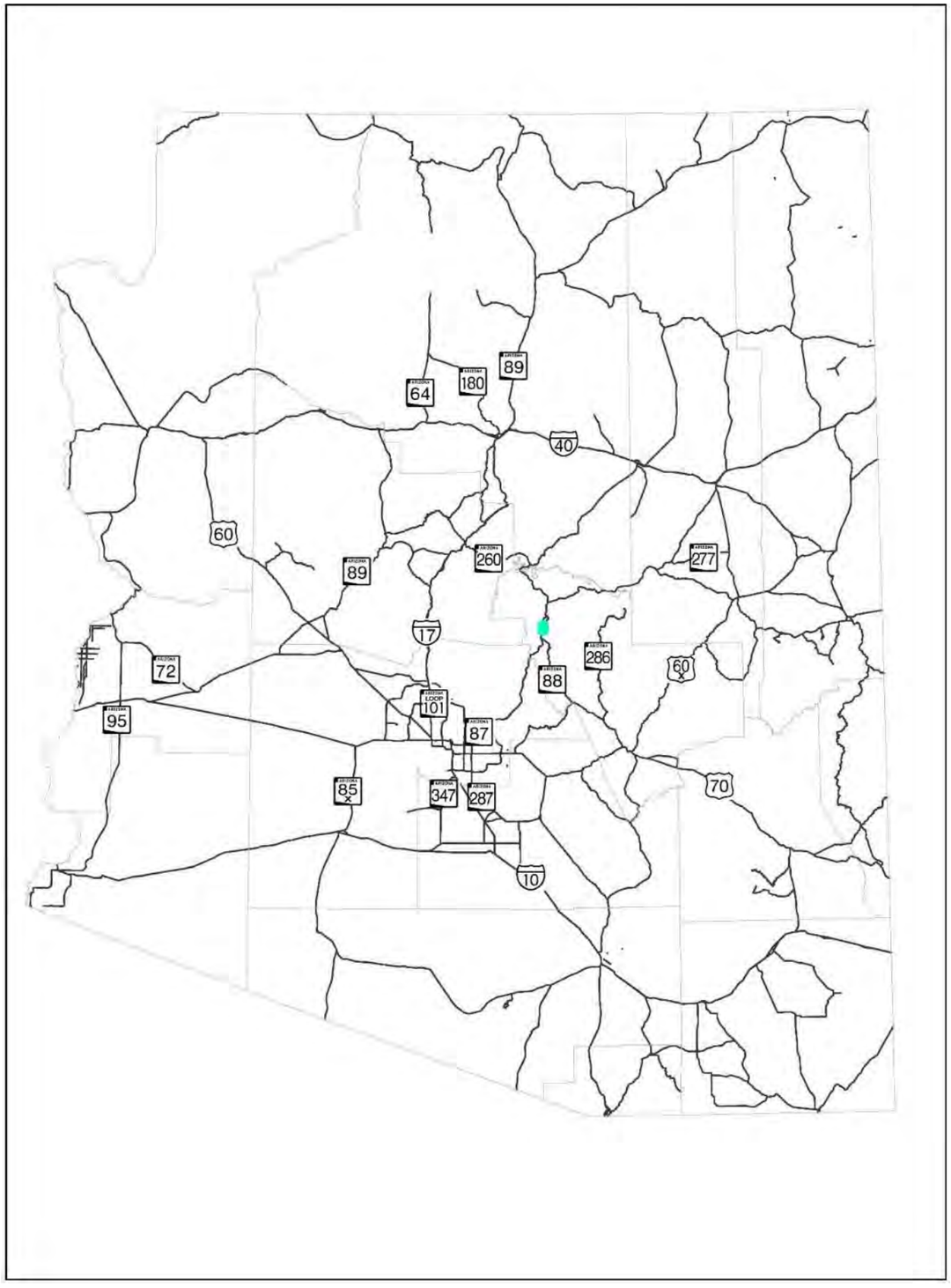
COST ESTIMATE			
Design $499,600.00	Right-of-Way $0.00	Construction $6,495,300.00	Total $6,994,900.00

RECOMMENDED PROJECT DELIVERY
Delivery: ☐Design-Bid-Build ☐Design-Build ☒Other:
Design Program Year: Click or tap here to enter text.
Construction Program Year: Click or tap here to enter text.

ATTACHMENTS
1. **Project Scope of Work**
2. **State Location Map**
3. **Project Vicinity Map**
4. **Itemized Cost Estimate**
5. **Conceptual Design Plans**

ATTACHMENT 1: SCOPE OF WORK
(Provide a detailed breakdown of the project's scope of work using bullet form)
• Construct northbound outside acceleration lane at Gisela Rd (MP 239.5)
• Construct northbound left-turn lane, southbound right-turn lane, northbound inside acceleration lane, and southbound outside acceleration lane at Matlock Gas (MP 240)
• Construct right- and left-turn lanes, inside and outside acceleration lanes in both directions at the South Rye Crossover (MP 240.5)
• Construct southbound right-turn lane, northbound inside and outside acceleration lanes at the North Rye Crossover (240.9)

ATTACHMENT 2: STATE LOCATION MAP



ATTACHMENT 3: PROJECT VICINITY MAP

Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. NB outside acceleration lane at Gisela Rd.	83	239.5	239.5	$591,800	Remove slow-moving vehicles from through travel lanes.
2. NB left-turn lane, SB right-turn lane, NB inside acceleration lane, and SB outside acceleration lane at Matlock Gas	85	240	240	$1,593,600	Provide turn/deceleration and acceleration lanes where they do not currently exist, particularly because of the slow-moving vehicles at this location.
3. Right- and left-turn lanes, inside and outside acceleration lanes in both directions at the S. Rye Crossover	87	240.5	240.5	$3,477,800	Provide turn/deceleration lanes where they do not currently exist, two crashes were reported in the crash analysis at this location.
4. SB right-turn lane, NB inside and outside acceleration lanes at the N Rye Crossover	89	240.9	240.9	$1,331,700	Provide turn/deceleration lane where it does not currently exist, especially because of the high speeds measured at this location.
			Total:	**$6,994,900**	

ATTACHMENT 4: ITEMIZED COST ESTIMATE

Kimley»Horn

SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

83. NB outside accel lane at Gisela Rd (MP 248.4)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	292	$20.00	$5,840
2020201	SAW CUTTING	L.FT.	1,310	$2.50	$3,275
2030301	ROADWAY EXCAVATION	CU.YD.	1,170	$10.00	$11,700
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	922	$120.00	$110,640
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	699	$160.00	$111,840
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	56	$120.00	$6,720
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$1,310.00	$1,310
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	1,310	$1.50	$1,965
				Roadway Construction Subtotal	**$266,790**
	Unidentified Item Allowance (15%)			$	40,019
				Subtotal	**$306,809**
	Water Supply/Dust Palliative (3%)			$	9,205
	Maintenance And Protection Of Traffic (15%)			$	46,022
	Erosion Control (1%)			$	3,069
	Contractor Quality Control (2%)			$	6,137
	Construction Surveying And Layout (2%)			$	6,137
				Other Item Subtotal	**$377,379**
	Mobilization (12%)			$	45,286
				Construction Subtotal	**$ 422,665**
	Engineering Design (10%)			$	42,267
	Construction Engineering and Contingencies (20%)			$	84,533
	Indirect Cost Allocation (10.02%)			$	42,352
				Construction Total	**$ 591,817**

Kimley»Horn

SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

85. Northbound left-turn lane at Matlock Gas (MP 240)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	55	$35.00	$1,925
2020201	SAW CUTTING	L.FT.	490	$2.50	$1,225
2030301	ROADWAY EXCAVATION	CU.YD.	440	$10.00	$4,400
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	345	$120.00	$41,400
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	262	$160.00	$41,920
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	21	$120.00	$2,520
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$490.00	$490
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	490	$1.50	$735
				Roadway Construction Subtotal	**$108,115**
	Unidentified Item Allowance (15%)			$	16,218
				Subtotal	**$124,333**
	Water Supply/Dust Palliative (3%)			$	3,730
	Maintenance And Protection Of Traffic (15%)			$	18,650
	Erosion Control (1%)			$	1,244
	Contractor Quality Control (2%)			$	2,487
	Construction Surveying And Layout (2%)			$	2,487
				Other Item Subtotal	**$152,931**
	Mobilization (12%)			$	18,352
				Construction Subtotal	**$ 171,283**
	Engineering Design (10%)			$	17,129
	Construction Engineering and Contingencies (20%)			$	34,257
	Indirect Cost Allocation (10.02%)			$	17,163
				Construction Total	**$ 239,832**

Kimley»Horn

SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

85. Northbound inside acceleration lane at Matlock Gas (MP 240)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	292	$20.00	$5,840
2020201	SAW CUTTING	L.FT.	1,310	$2.50	$3,275
2030301	ROADWAY EXCAVATION	CU.YD.	1,170	$10.00	$11,700
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	922	$120.00	$110,640
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	699	$160.00	$111,840
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	56	$120.00	$6,720
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$1,310.00	$1,310
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	1,310	$1.50	$1,965
				Roadway Construction Subtotal	**$266,790**
	Unidentified Item Allowance (15%)				$ 40,019
				Subtotal	**$306,809**
	Water Supply/Dust Palliative (3%)				$ 9,205
	Maintenance And Protection Of Traffic (15%)				$ 46,022
	Erosion Control (1%)				$ 3,069
	Contractor Quality Control (2%)				$ 6,137
	Construction Surveying And Layout (2%)				$ 6,137
				Other Item Subtotal	**$377,379**
	Mobilization (12%)				$ 45,286
				Construction Subtotal	**$ 422,665**
	Engineering Design (10%)				$ 42,267
	Construction Engineering and Contingencies (20%)				$ 84,533
	Indirect Cost Allocation (10.02%)				$ 42,352
				Construction Total	**$ 591,817**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

85. Southbound right-turn lane at Matlock Gas (MP 240)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	55	$35.00	$1,925
2020201	SAW CUTTING	L.FT.	490	$2.50	$1,225
2030301	ROADWAY EXCAVATION	CU.YD.	440	$10.00	$4,400
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	236	$120.00	$28,320
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	154	$160.00	$24,640
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	12	$120.00	$1,440
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$490.00	$490
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	490	$1.50	$735
				Roadway Construction Subtotal	**$76,675**
	Unidentified Item Allowance (15%)				$ 11,502
				Subtotal	**$88,177**
	Water Supply/Dust Palliative (3%)				$ 2,646
	Maintenance And Protection Of Traffic (15%)				$ 13,227
	Erosion Control (1%)				$ 882
	Contractor Quality Control (2%)				$ 1,764
	Construction Surveying And Layout (2%)				$ 1,764
				Other Item Subtotal	**$108,460**
	Mobilization (12%)				$ 13,016
				Construction Subtotal	**$ 121,476**
	Engineering Design (10%)				$ 12,148
	Construction Engineering and Contingencies (20%)				$ 24,296
	Indirect Cost Allocation (10.02%)				$ 12,172
				Construction Total	**$ 170,092**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

85. Southbound outside accel lane at Matlock Gas (MP 240)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	292	$20.00	$5,840
2020201	SAW CUTTING	L.FT.	1,310	$2.50	$3,275
2030301	ROADWAY EXCAVATION	CU.YD.	1,170	$10.00	$11,700
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	922	$120.00	$110,640
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	699	$160.00	$111,840
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	56	$120.00	$6,720
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$1,310.00	$1,310
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	1,310	$1.50	$1,965
				Roadway Construction Subtotal	**$266,790**
	Unidentified Item Allowance (15%)				$ 40,019
				Subtotal	**$306,809**
	Water Supply/Dust Palliative (3%)				$ 9,205
	Maintenance And Protection Of Traffic (15%)				$ 46,022
	Erosion Control (1%)				$ 3,069
	Contractor Quality Control (2%)				$ 6,137
	Construction Surveying And Layout (2%)				$ 6,137
				Other Item Subtotal	**$377,379**
	Mobilization (12%)				$ 45,286
				Construction Subtotal	**$ 422,665**
	Engineering Design (10%)				$ 42,267
	Construction Engineering and Contingencies (20%)				$ 84,533
	Indirect Cost Allocation (10.02%)				$ 42,352
				Construction Total	**$ 591,817**

Kimley»Horn

SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

87. NB right- and left-turn lanes at S Rye Crossover (MP 240.5)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	218	$35.00	$7,630
2020201	SAW CUTTING	L.FT.	980	$2.50	$2,450
2030301	ROADWAY EXCAVATION	CU.YD.	880	$10.00	$8,800
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	927	$120.00	$111,240
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	674	$160.00	$107,840
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	53	$120.00	$6,360
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$980.00	$980
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	980	$1.50	$1,470
				Roadway Construction Subtotal	**$260,270**
	Unidentified Item Allowance (15%)				$ 39,041
				Subtotal	**$299,311**
	Water Supply/Dust Palliative (3%)				$ 8,980
	Maintenance And Protection Of Traffic (15%)				$ 44,897
	Erosion Control (1%)				$ 2,994
	Contractor Quality Control (2%)				$ 5,987
	Construction Surveying And Layout (2%)				$ 5,987
				Other Item Subtotal	**$368,156**
	Mobilization (12%)				$ 44,179
				Construction Subtotal	**$ 412,335**
	Engineering Design (10%)				$ 41,234
	Construction Engineering and Contingencies (20%)				$ 82,467
	Indirect Cost Allocation (10.02%)				$ 41,316
				Construction Total	**$ 577,352**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

89. Northbound inside and outside acceleration lanes at N Rye Crossover (MP 240.5)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	2	$5,000.00	$10,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	1,165	$20.00	$23,300
2020201	SAW CUTTING	L.FT.	2,620	$2.50	$6,550
2030301	ROADWAY EXCAVATION	CU.YD.	4,660	$10.00	$46,600
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	3,106	$60.00	$186,360
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	2,648	$80.00	$211,840
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	224	$100.00	$22,400
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$2,620.00	$2,620
8050003	SEEDING (CLASS II)	ACRE	2	$3,500.00	$7,000
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	2,620	$0.75	$1,965
				Roadway Construction Subtotal	**$523,635**
	Unidentified Item Allowance (15%)				$ 78,546
				Subtotal	**$602,181**
	Water Supply/Dust Palliative (3%)				$ 18,066
	Maintenance And Protection Of Traffic (15%)				$ 90,328
	Erosion Control (1%)				$ 6,022
	Contractor Quality Control (2%)				$ 12,044
	Construction Surveying And Layout (2%)				$ 12,044
				Other Item Subtotal	**$740,685**
	Mobilization (12%)				$ 88,883
				Construction Subtotal	**$ 829,568**
	Engineering Design (10%)				$ 82,957
	Construction Engineering and Contingencies (20%)				$ 165,914
	Indirect Cost Allocation (10.02%)				$ 83,123
				Construction Total	**$ 1,161,562**

Kimley»Horn

SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

87. Southbound right- and left-turn lanes at the South Rye Crossover (MP 240.5)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	218	$35.00	$7,630
2020201	SAW CUTTING	L.FT.	980	$2.50	$2,450
2030301	ROADWAY EXCAVATION	CU.YD.	880	$10.00	$8,800
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	927	$120.00	$111,240
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	674	$160.00	$107,840
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	53	$120.00	$6,360
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$980.00	$980
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	980	$1.50	$1,470
				Roadway Construction Subtotal	**$260,270**
	Unidentified Item Allowance (15%)				$ 39,041
				Subtotal	**$299,311**
	Water Supply/Dust Palliative (3%)				$ 8,980
	Maintenance And Protection Of Traffic (15%)				$ 44,897
	Erosion Control (1%)				$ 2,994
	Contractor Quality Control (2%)				$ 5,987
	Construction Surveying And Layout (2%)				$ 5,987
				Other Item Subtotal	**$368,156**
	Mobilization (12%)				$ 44,179
				Construction Subtotal	**$ 412,335**
	Engineering Design (10%)				$ 41,234
	Construction Engineering and Contingencies (20%)				$ 82,467
	Indirect Cost Allocation (10.02%)				$ 41,316
				Construction Total	**$ 577,352**

Kimley»Horn

SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

87. Southbound inside and outside acceleration lanes at S Rye Crossover (MP 240)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	2	$5,000.00	$10,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	1,165	$20.00	$23,300
2020201	SAW CUTTING	L.FT.	2,620	$2.50	$6,550
2030301	ROADWAY EXCAVATION	CU.YD.	4,660	$10.00	$46,600
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	3,106	$60.00	$186,360
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	2,648	$80.00	$211,840
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	224	$100.00	$22,400
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$2,620.00	$2,620
8050003	SEEDING (CLASS II)	ACRE	2	$3,500.00	$7,000
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	2,620	$0.75	$1,965
				Roadway Construction Subtotal	**$523,635**
	Unidentified Item Allowance (15%)				$ 78,546
				Subtotal	**$602,181**
	Water Supply/Dust Palliative (3%)				$ 18,066
	Maintenance And Protection Of Traffic (15%)				$ 90,328
	Erosion Control (1%)				$ 6,022
	Contractor Quality Control (2%)				$ 12,044
	Construction Surveying And Layout (2%)				$ 12,044
				Other Item Subtotal	**$740,685**
	Mobilization (12%)				$ 88,883
				Construction Subtotal	**$ 829,568**
	Engineering Design (10%)				$ 82,957
	Construction Engineering and Contingencies (20%)				$ 165,914
	Indirect Cost Allocation (10.02%)				$ 83,123
				Construction Total	**$ 1,161,562**

Kimley»Horn

SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

89. Northbound inside and outside acceleration lanes at N Rye Crossover (MP 240.9)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	2	$5,000.00	$10,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	1,165	$20.00	$23,300
2020201	SAW CUTTING	L.FT.	2,620	$2.50	$6,550
2030301	ROADWAY EXCAVATION	CU.YD.	4,660	$10.00	$46,600
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	3,106	$60.00	$186,360
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	2,648	$80.00	$211,840
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	224	$100.00	$22,400
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$2,620.00	$2,620
8050003	SEEDING (CLASS II)	ACRE	2	$3,500.00	$7,000
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	2,620	$0.75	$1,965
				Roadway Construction Subtotal	**$523,635**
	Unidentified Item Allowance (15%)				$ 78,546
				Subtotal	**$602,181**
	Water Supply/Dust Palliative (3%)				$ 18,066
	Maintenance And Protection Of Traffic (15%)				$ 90,328
	Erosion Control (1%)				$ 6,022
	Contractor Quality Control (2%)				$ 12,044
	Construction Surveying And Layout (2%)				$ 12,044
				Other Item Subtotal	**$740,685**
	Mobilization (12%)				$ 88,883
				Construction Subtotal	**$ 829,568**
	Engineering Design (10%)				$ 82,957
	Construction Engineering and Contingencies (20%)				$ 165,914
	Indirect Cost Allocation (10.02%)				$ 83,123
				Construction Total	**$ 1,161,562**

Kimley»Horn

SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

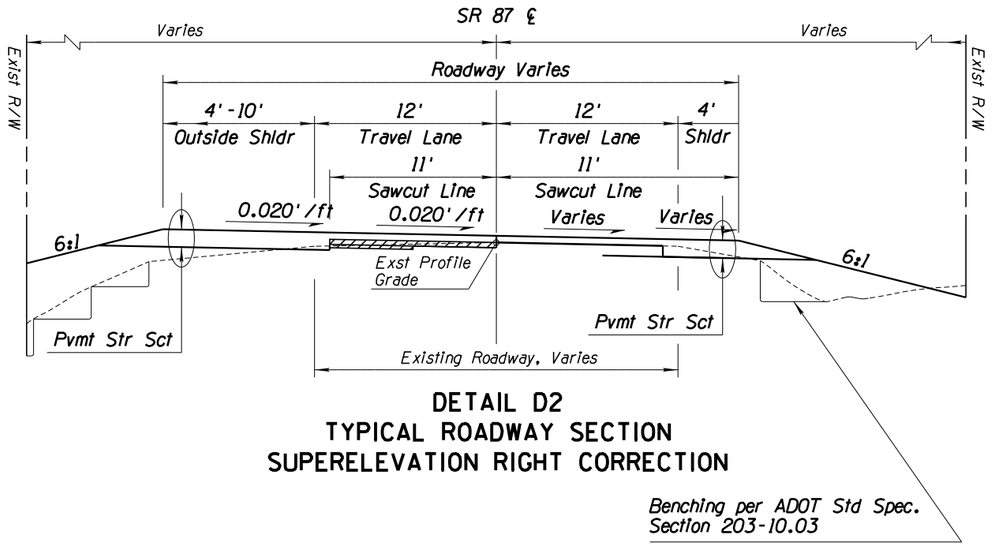
89. Southbound right-turn lane at the North Rye Crossover (MP 240.9)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	55	$35.00	$1,925
2020201	SAW CUTTING	L.FT.	490	$2.50	$1,225
2030301	ROADWAY EXCAVATION	CU.YD.	440	$10.00	$4,400
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	236	$120.00	$28,320
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	154	$160.00	$24,640
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	12	$120.00	$1,440
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$490.00	$490
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	490	$1.50	$735
			Roadway Construction Subtotal		**$76,675**
	Unidentified Item Allowance (15%)				$ 11,502
				Subtotal	**$88,177**
	Water Supply/Dust Palliative (3%)				$ 2,646
	Maintenance And Protection Of Traffic (15%)				$ 13,227
	Erosion Control (1%)				$ 882
	Contractor Quality Control (2%)				$ 1,764
	Construction Surveying And Layout (2%)				$ 1,764
				Other Item Subtotal	**$108,460**
	Mobilization (12%)				$ 13,016
				Construction Subtotal	**$ 121,476**
	Engineering Design (10%)				$ 12,148
	Construction Engineering and Contingencies (20%)				$ 24,296
	Indirect Cost Allocation (10.02%)				$ 12,172
				Construction Total	**$ 170,092**

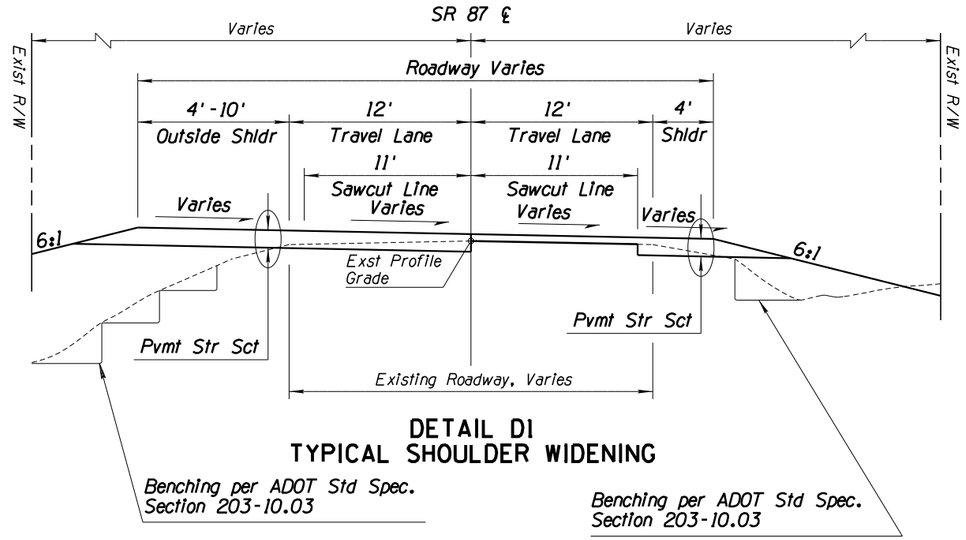
ATTACHMENT 5: PRELIMINARY PLANS

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

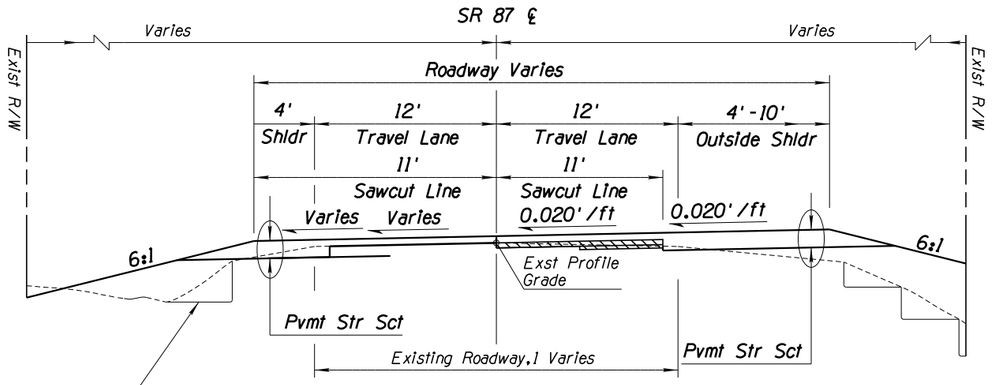
SR 87 MILE POST STATION			
MP NB	STATION	MP SB	STATION
196	101+73	196	101+18
197	155+53	197	154+02
198	207+69	198	207+94
199	261+02	199	259+13
200	314+21	200	311+72
201	367+73	201	364+06
202	419+18	202	417+81
203	471+36	203	470+65
204	526+28	204	523+10
205	577+70	205	575+84
206	630+73	206	628+30
207	682+81	207	680+28
208	736+47	208	734+12
209	788+55	209	786+62
210	842+08	210	839+50
211	894+91	211	890+40
212	942+20	212	939+42
213	998+65	213	995+55
214	1051+86	214	1050+06
215	1105+38	215	1095+77
216	1158+68	216	1147+95
217	1213+92	217	1199+48
218	1268+31	218	1250+20
219	1318+19	219	1304+12
220	1374+67	220	1359+76
221	1427+95	221	1412+99
222	1480+60	222	1465+84
223	1533+97	223	1518+89
224	1584+61	224	1570+72
225	1639+50	225	1625+29
226	1689+86	226	1676+32
227	1740+23	227	1726+14
228	1792+50	228	1778+04
229	1845+24	229	1831+98
230	1898+50	230	1884+70
231	1949+61	231	1933+71
232	1999+33	232	1985+29
233	2047+74	233	2033+06
234	2101+13	234	2085+05
235	2154+59	235	2137+29
236	2207+09	236	2189+44
237	2259+88	237	2240+86
238	2311+66	238	2293+85
239	2364+28	239	2344+91
240	2416+01	240	2397+41
241	2467+79	241	2448+96
242	2518+51	242	2496+68
243	2571+26	243	2549+70
244	2620+38	244	2601+82
245	2677+47	245	2655+01
246	2729+53	246	2703+04
247	2741+30	247	2747+68
248	2794+18	248	2801+15
249	2847+25	249	2854+41
250	2899+69	250	2906+58



DETAIL D2
TYPICAL ROADWAY SECTION SUPERELEVATION RIGHT CORRECTION



DETAIL D1
TYPICAL SHOULDER WIDENING



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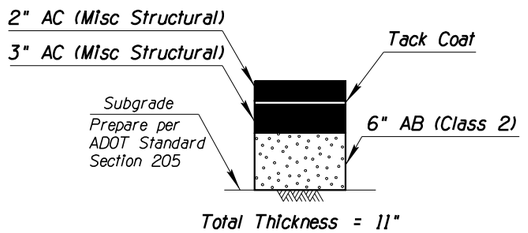
TYPICAL ROADWAY SECTION SUPERELEVATION LEFT CORRECTION



Total Thickness = 11"

PAVEMENT STRUCTURAL SECTION

	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

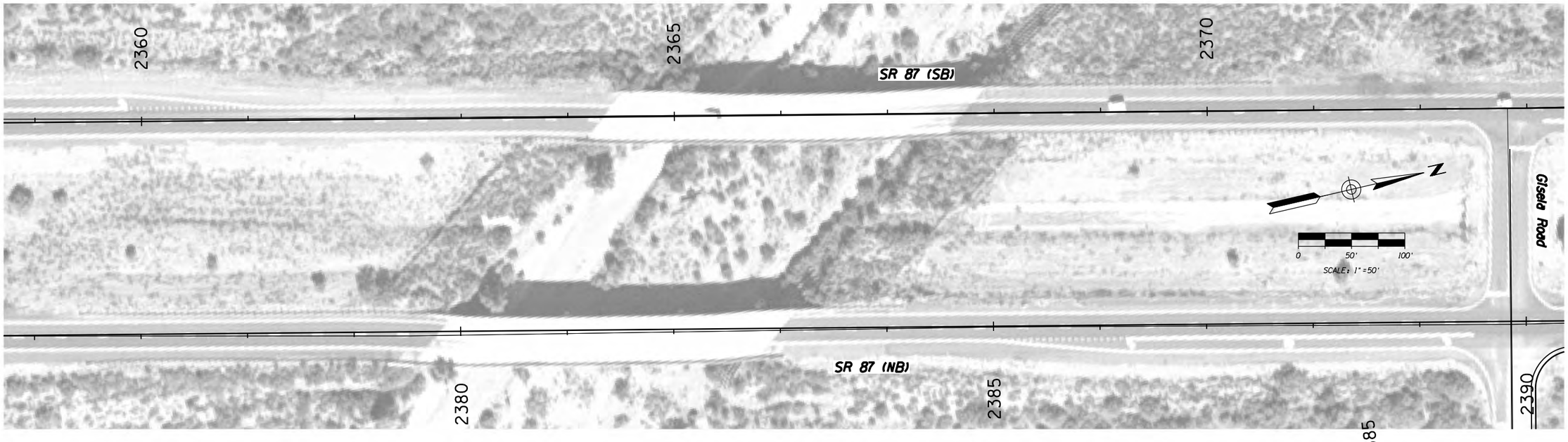
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	___ OF ___

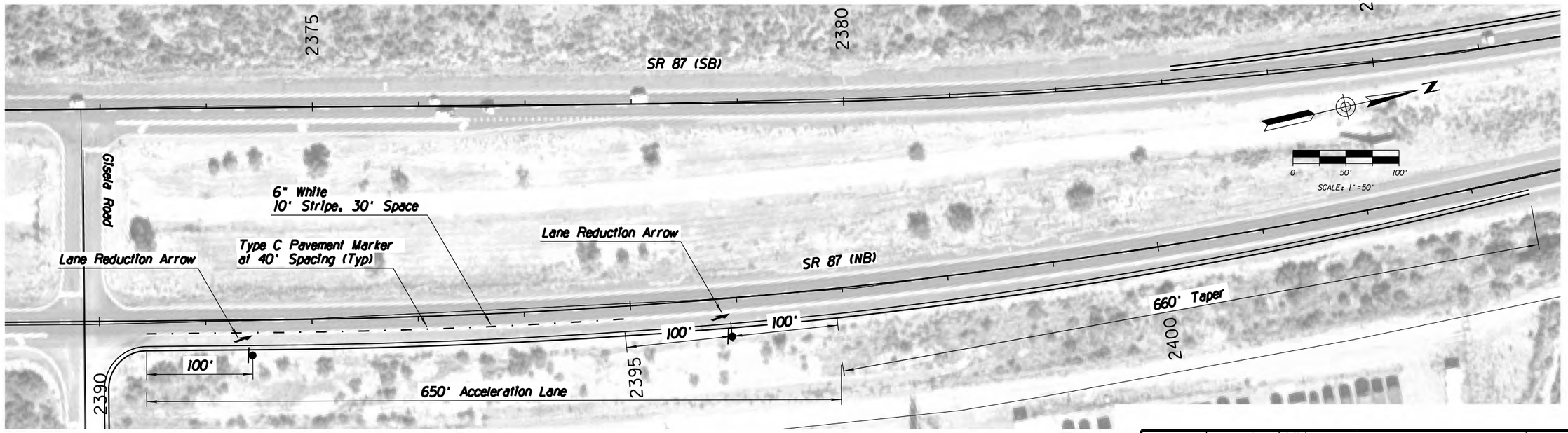
TRACS NO. XXXXX XXX | XXX-X(XXX)X

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

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

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





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "9 RYE IMPROVEMENTS
MP 239 TO 241

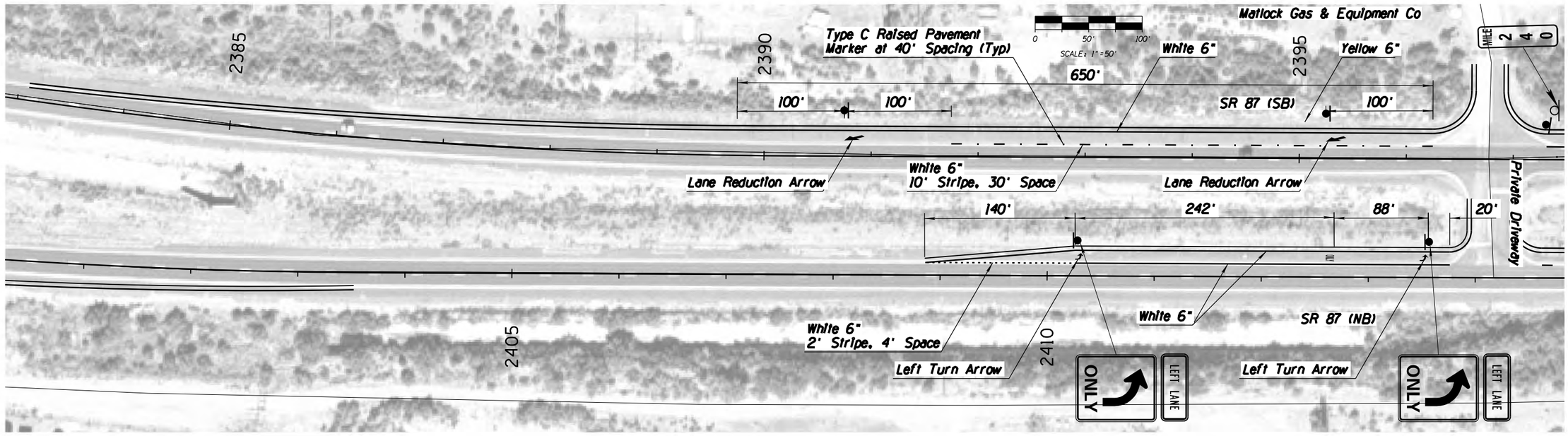
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

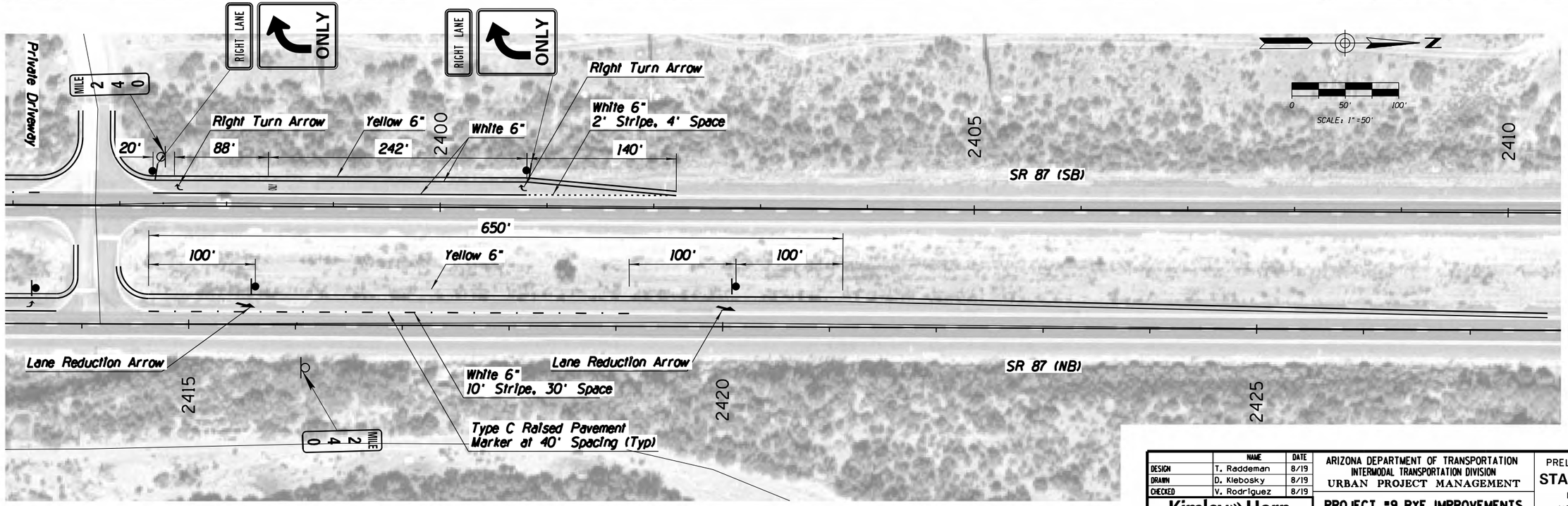
ROUTE: SR 87
LOCATION: MP 190 TO MP 250
DWG NO. 8.1-01

TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "9 RYE IMPROVEMENTS
MP 239 TO 241

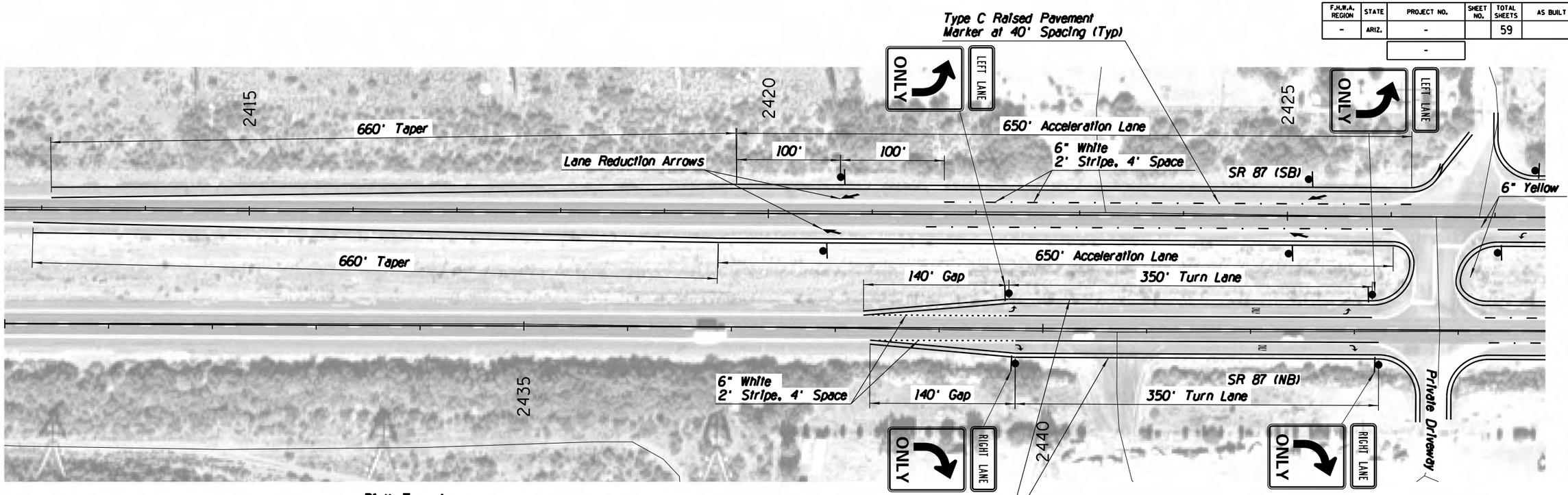
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	8.2-01
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



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DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "9 RYE IMPROVEMENTS
MP 239 TO 241

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

TRACS NO. XXXXX XXX | XXX-X(XXX)X

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

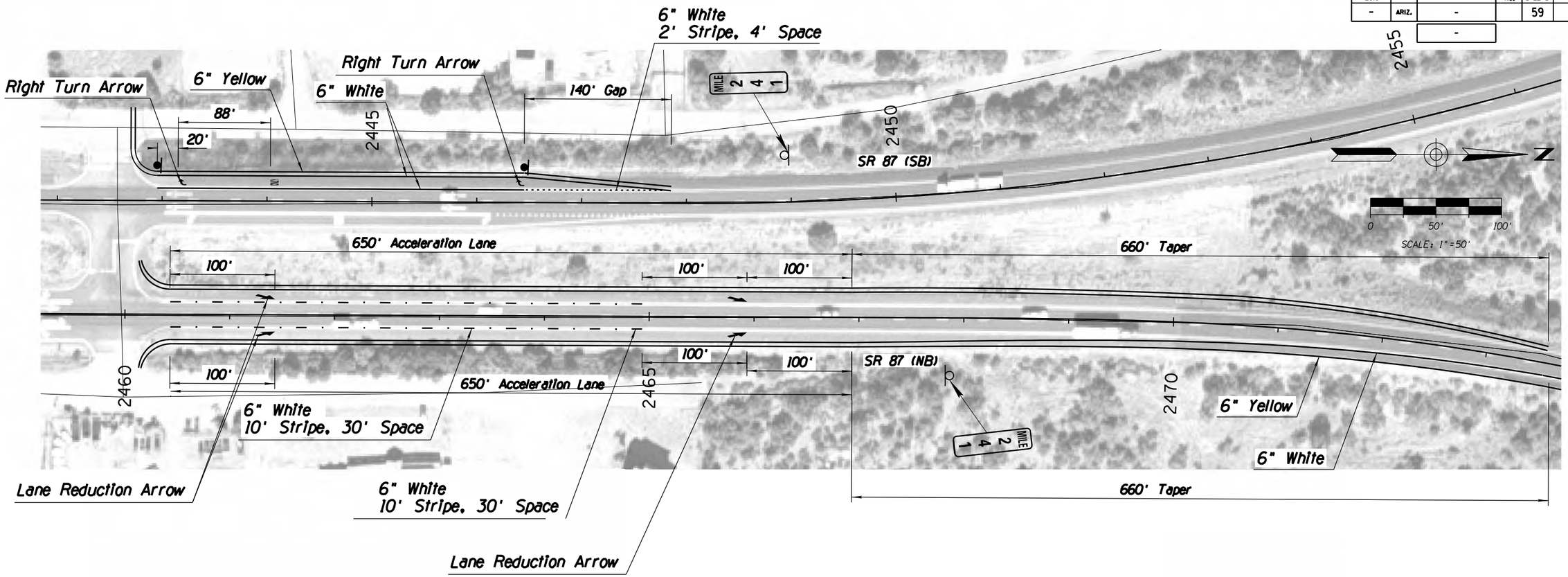
DWG NO. 8.3-01

___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "9 RYE IMPROVEMENTS
MP 239 TO 241

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	8.4-01

TRACS NO.			SHEET
XXXXX XXX		XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

PACKAGE PROJECT 10 –
NORTHBOUND IMPROVEMENTS
(MP 241-248)

ADOT SR 87 Corridor Development Study

PRELIMINARY SCOPING REPORT

GENERAL PROJECT INFORMATION	
Date: 8/20/2019	**ADOT Project Manager:**
Project Name: Northbound Improvements (MP 241-248)	
City/Town: N/A	**County:** Gila
COG/MPO: CAG	**ADOT District:** Northcentral
Primary Route/Street: SR 87	
Beginning Limit: 241	
End Limit: 248	
Project Length: 8 Miles	
Right of Way Ownership(s) (where proposed project would occur): *(check all that apply)* ☐City/Town ☐County ☒ADOT ☐Private ☐Federal ☐Tribal ☐Other	
Adjacent Land Ownership(s): *(Check all that apply)* ☐City/Town ☐County ☐ADOT ☐Private ☒Federal ☐Tribal ☐Other	

PROJECT NEED
Shoulder widths are insufficient and slow-moving trucks on the uphill grade cause large speed differentials.

PROJECT PURPOSE			
What is the Primary Purpose of the Project?	☐Preservation	☒Modernization	☒Expansion
Increase shoulder widths to current standards to create a consistent recovery area and provide access for emergency vehicles. Construct a climbing lane to remove slow-moving truck traffic from the through travel lanes.			

PROJECT RISKS	
Check any risks identified that may impact the project's scope, schedule, or budget:	
☐Access/Traffic Control/Detour Issues	☐Right-of-Way
☐Constructability/Construction Window Issues	☐Environmental
☐Stakeholder Issues	☐Utilities
☐Structures & Geotech	☐Other:

Risk Description: *(if a box is checked above, briefly explain the risk)* Click or tap here to enter text.				
POTENTIAL FUNDING SOURCE(S)				
Anticipated Project Design/Construction Funding Type: *(Check all that applied)*	☐STBG	☐TAP	☐HSIP	☒State
	☐Local	☐Private	☐Tribal	☐Other

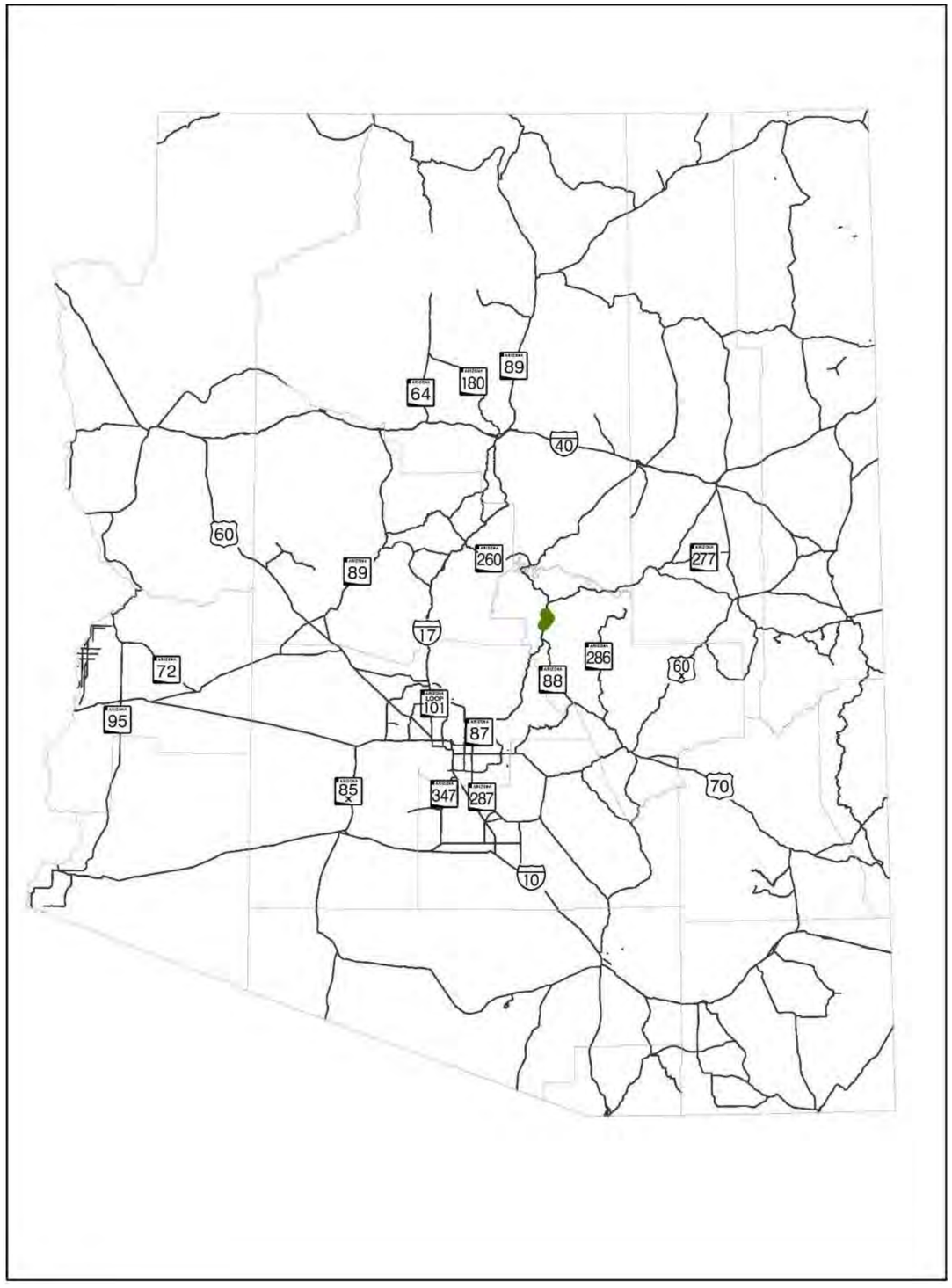
COST ESTIMATE			
Design	Right-of-Way	Construction	Total
$944,000.00	$0.00	$12,273,800.00	$13,217,800.00

RECOMMENDED PROJECT DELIVERY
Delivery: ☐Design-Bid-Build ☐Design-Build ☒Other:
Design Program Year: Click or tap here to enter text.
Construction Program Year: Click or tap here to enter text.

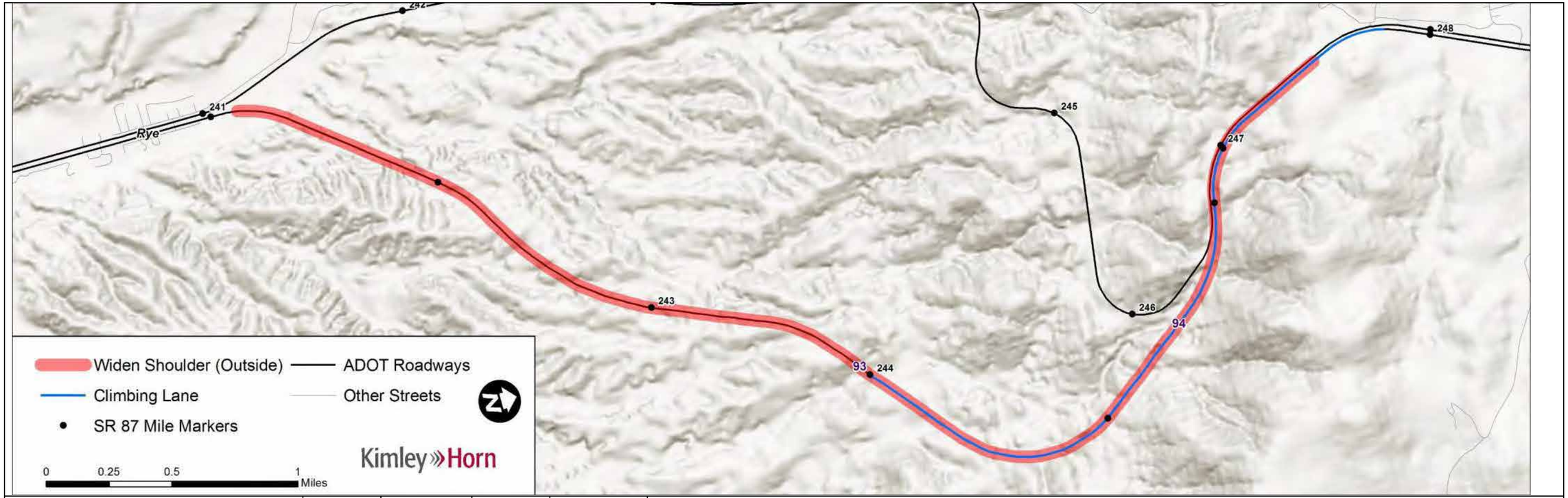
ATTACHMENTS
1. **Project Scope of Work**
2. **State Location Map**
3. **Project Vicinity Map**
4. **Itemized Cost Estimates**
5. **Conceptual Design Plans**

ATTACHMENT 1: SCOPE OF WORK
(Provide a detailed breakdown of the project's scope of work using bullet form)
• Widen northbound outside shoulder to ten feet (MP 241.1-247.5)
• Construct a northbound climbing lane (MP 244-2247.8)

ATTACHMENT 2: STATE LOCATION MAP



ATTACHMENT 3: PROJECT VICINITY MAP



Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. Widen NB outside shoulders to 10’	93	241.1	247.5	$4,249,200	Existing shoulders are of an insufficient width for current highway standards and limit effective emergency response.
2. Construct NB climbing lane	94	244	247.8	$8,968,600	Approximately 12% of traffic on this segment is heavy commercial vehicles, average speeds are 16 mph under the speed limit, 92% of vehicles are traveling greater than 10 mph under the speed limit, the northern portion of the climbing lane is within an identified crash hot spot.
			Total:	**$13,217,800**	

ATTACHMENT 4: ITEMIZED COST ESTIMATES

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

93. Widen outside shoulder to 10' – 241.1-247.5
Project Location: SR87 Corridor Development Study

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	8	$5,000.00	$40,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	3,593	$20.00	$71,860
2020053	REMOVE (GR TERMINAL)	EACH	4	$400.00	$1,600
2020071	REMOVE GUARD RAIL	L.FT.	8,083	$5.00	$40,415
2020201	SAW CUTTING	L.FT.	32,332	$2.50	$80,830
2030301	ROADWAY EXCAVATION	CU.YD.	47,900	$7.00	$335,300
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	10,778	$50.00	$538,900
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	5,347	$80.00	$427,760
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	318	$90.00	$28,620
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$32,332.00	$32,332
8050003	SEEDING (CLASS II)	ACRE	8	$3,500.00	$28,000
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	8,083	$30.00	$242,490
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	4	$2,500.00	$10,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	4	$800.00	$3,200
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	32,332	$0.75	$24,249
				Roadway Construction Subtotal	**$1,915,556**
	Unidentified Item Allowance (15%)				$ 287,334
				Subtotal	**$2,202,890**
	Water Supply/Dust Palliative (3%)				$ 66,087
	Maintenance And Protection Of Traffic (15%)				$ 330,434
	Erosion Control (1%)				$ 22,029
	Contractor Quality Control (2%)				$ 44,058
	Construction Surveying And Layout (2%)				$ 44,058
				Other Item Subtotal	**$2,709,556**
	Mobilization (12%)				$ 325,147
				Construction Subtotal	**$ 3,034,703**
	Engineering Design (10%)				$ 303,471
	Construction Engineering and Contingencies (20%)				$ 606,941
	Indirect Cost Allocation (10.02%)				$ 304,078
				Construction Total	**$ 4,249,193**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

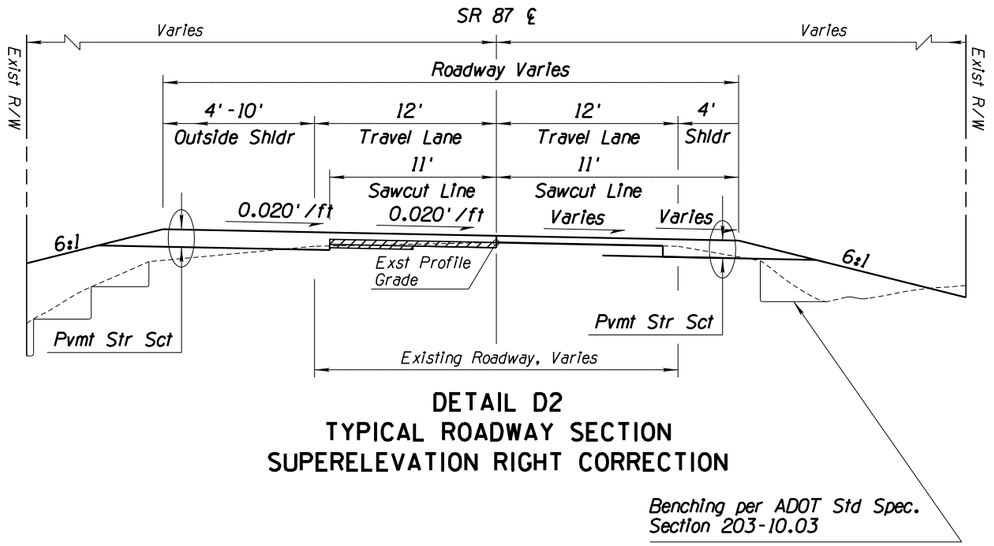
94. Construct climbing lane – (MP 244-247.8)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	14	$5,000.00	$70,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	2,230	$20.00	$44,600
2020053	REMOVE (GR TERMINAL)	EACH	4	$400.00	$1,600
2020071	REMOVE GUARD RAIL	L.FT.	5,017	$5.00	$25,085
2020201	SAW CUTTING	L.FT.	20,065	$2.50	$50,163
2030301	ROADWAY EXCAVATION	CU.YD.	1,490	$10.00	$14,900
2030901	BORROW	CU.YD.	148,630	$12.00	$1,783,560
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	14,120	$50.00	$706,000
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	10,692	$80.00	$855,360
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	855	$90.00	$76,950
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$20,064.00	$20,064
8050003	SEEDING (CLASS II)	ACRE	14	$3,500.00	$49,000
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	10,032	$30.00	$300,960
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	6	$2,500.00	$15,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	6	$800.00	$4,800
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	20,065	$0.75	$15,049
				Roadway Construction Subtotal	**$4,043,090**
	Unidentified Item Allowance (15%)				$ 606,464
				Subtotal	**$4,649,554**
	Water Supply/Dust Palliative (3%)				$ 139,487
	Maintenance And Protection Of Traffic (15%)				$ 697,434
	Erosion Control (1%)				$ 46,496
	Contractor Quality Control (2%)				$ 92,992
	Construction Surveying And Layout (2%)				$ 92,992
				Other Item Subtotal	**$5,718,955**
	Mobilization (12%)				$ 686,275
				Construction Subtotal	**$ 6,405,230**
	Engineering Design (10%)				$ 640,524
	Construction Engineering and Contingencies (20%)				$ 1,281,047
	Indirect Cost Allocation (10.02%)				$ 641,805
				Construction Total	**$ 8,968,607**

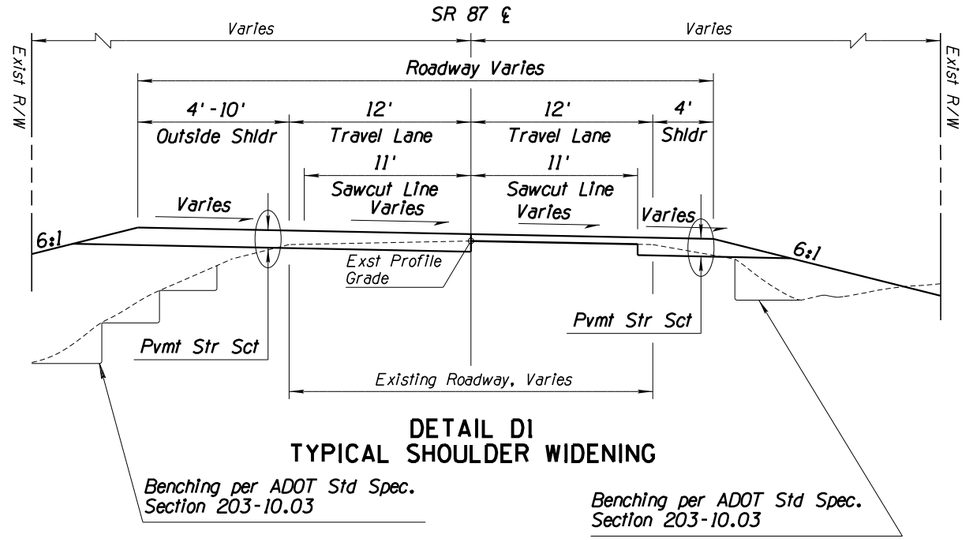
ATTACHMENT 5: PRELIMINARY PLANS

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

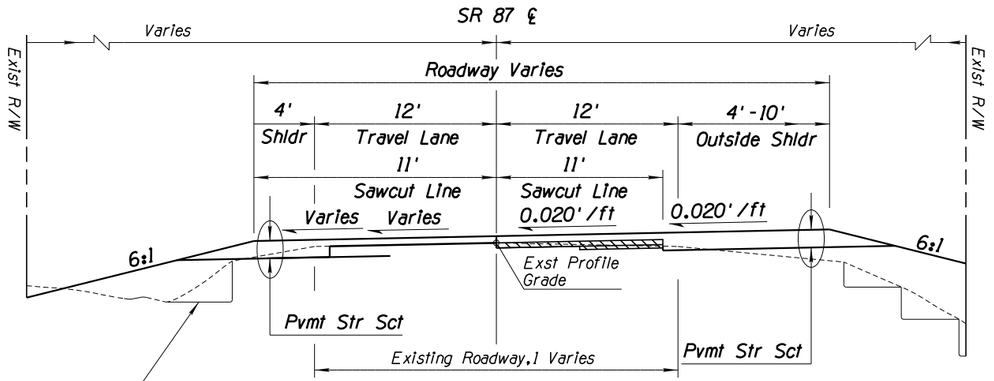
SR 87 MILE POST STATION			
MP NB	STATION	MP SB	STATION
196	101+73	196	101+18
197	155+53	197	154+02
198	207+69	198	207+94
199	261+02	199	259+13
200	314+21	200	311+72
201	367+73	201	364+06
202	419+18	202	417+81
203	471+36	203	470+65
204	526+28	204	523+10
205	577+70	205	575+84
206	630+73	206	628+30
207	682+81	207	680+28
208	736+47	208	734+12
209	788+55	209	786+62
210	842+08	210	839+50
211	894+91	211	890+40
212	942+20	212	939+42
213	998+65	213	995+55
214	1051+86	214	1050+06
215	1105+38	215	1095+77
216	1158+68	216	1147+95
217	1213+92	217	1199+48
218	1268+31	218	1250+20
219	1318+19	219	1304+12
220	1374+67	220	1359+76
221	1427+95	221	1412+99
222	1480+60	222	1465+84
223	1533+97	223	1518+89
224	1584+61	224	1570+72
225	1639+50	225	1625+29
226	1689+86	226	1676+32
227	1740+23	227	1726+14
228	1792+50	228	1778+04
229	1845+24	229	1831+98
230	1898+50	230	1884+70
231	1949+61	231	1933+71
232	1999+33	232	1985+29
233	2047+74	233	2033+06
234	2101+13	234	2085+05
235	2154+59	235	2137+29
236	2207+09	236	2189+44
237	2259+88	237	2240+86
238	2311+66	238	2293+85
239	2364+28	239	2344+91
240	2416+01	240	2397+41
241	2467+79	241	2448+96
242	2518+51	242	2496+68
243	2571+26	243	2549+70
244	2620+38	244	2601+82
245	2677+47	245	2655+01
246	2729+53	246	2703+04
247	2741+30	247	2747+68
248	2794+18	248	2801+15
249	2847+25	249	2854+41
250	2899+69	250	2906+58



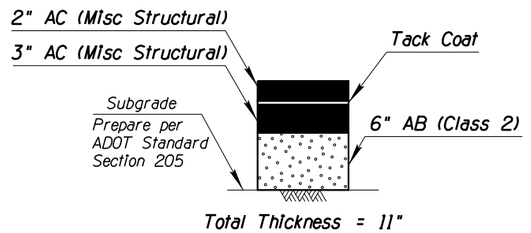
DETAIL D2
TYPICAL ROADWAY SECTION SUPERELEVATION RIGHT CORRECTION



DETAIL D1
TYPICAL SHOULDER WIDENING



DETAIL D3
TYPICAL ROADWAY SECTION SUPERELEVATION LEFT CORRECTION



Total Thickness = 11"

PAVEMENT STRUCTURAL SECTION

	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

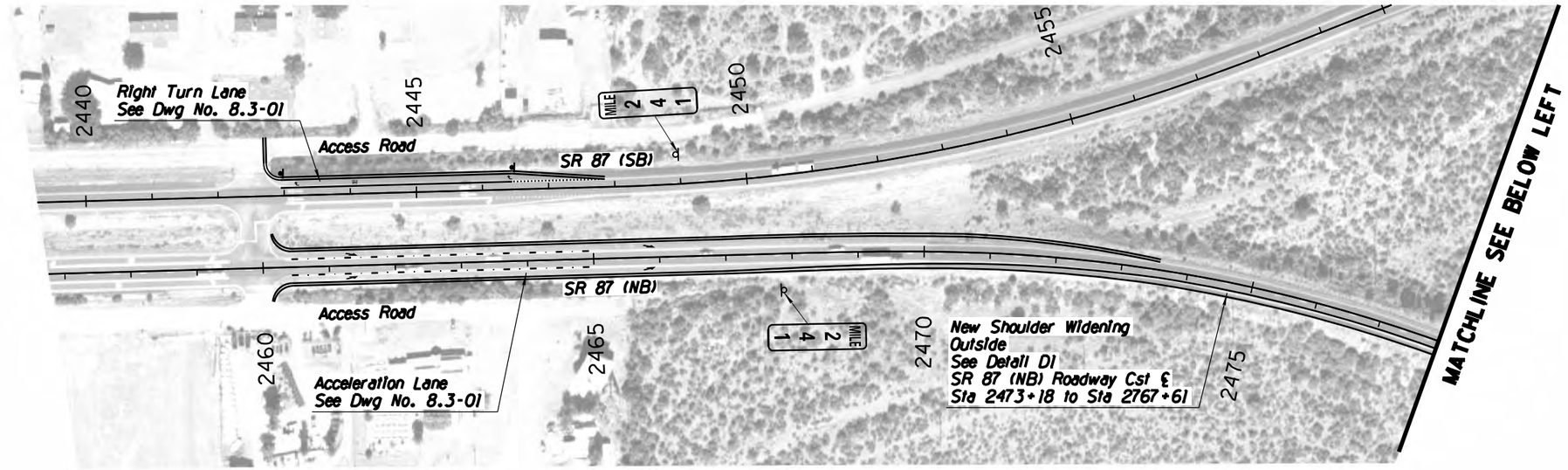
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

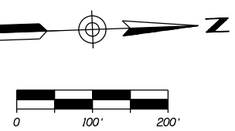
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	___ OF ___

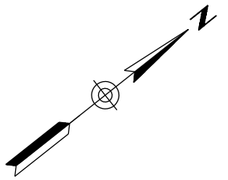
TRACS NO. XXXXX XXX | XXX-X(XXX)X

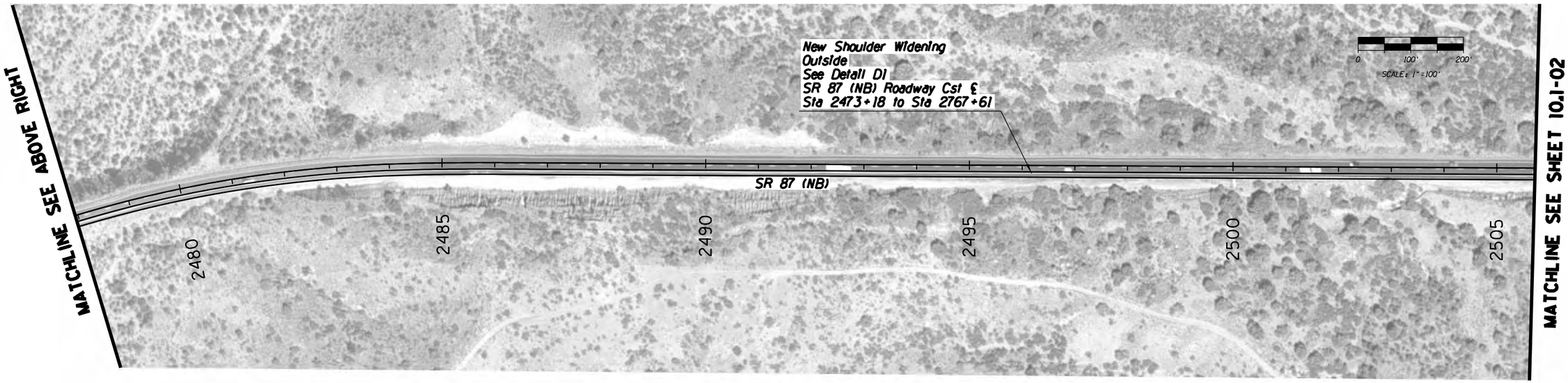
SURVEY NO. | FINISHED PLANS- | REVISIONS- | LOCATION- | DATE-

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			









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DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "10 NB IMPROVEMENTS
MP 241 TO 247.8

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

TRACS NO. XXXXX XXX | XXX-X(XXX)X

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

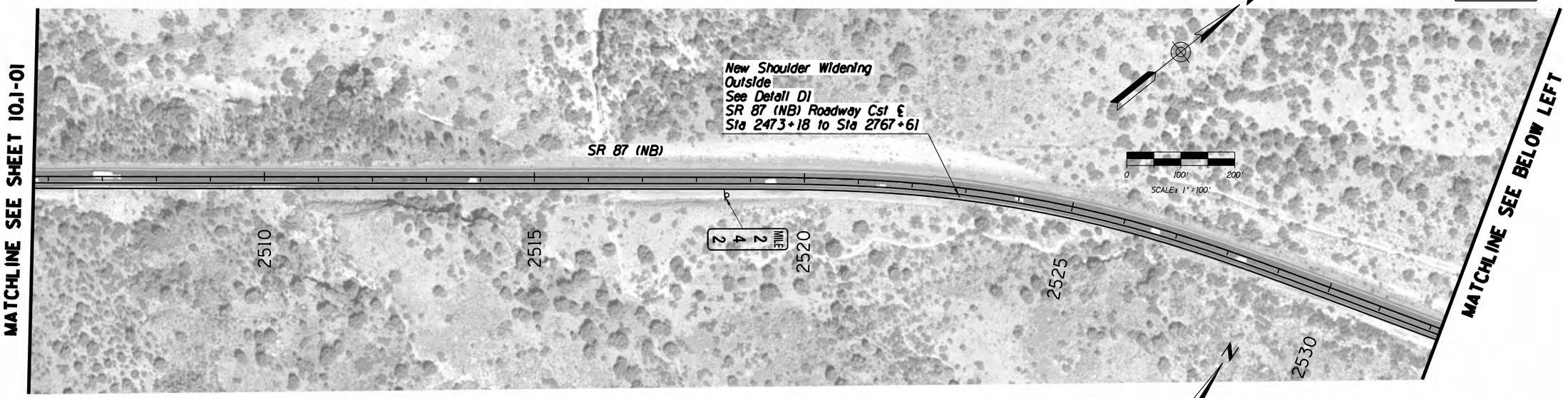
DWG NO. 10.1-01

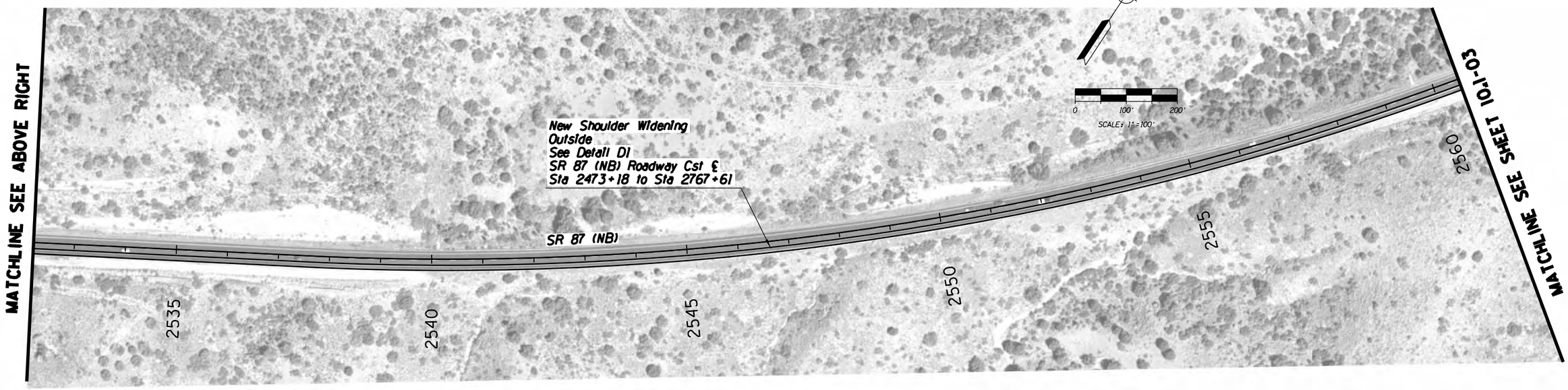
___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "10 NB IMPROVEMENTS
MP 241 TO 247.8

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

TRACS NO. XXXXX XXX | XXX-X(XXX)X

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

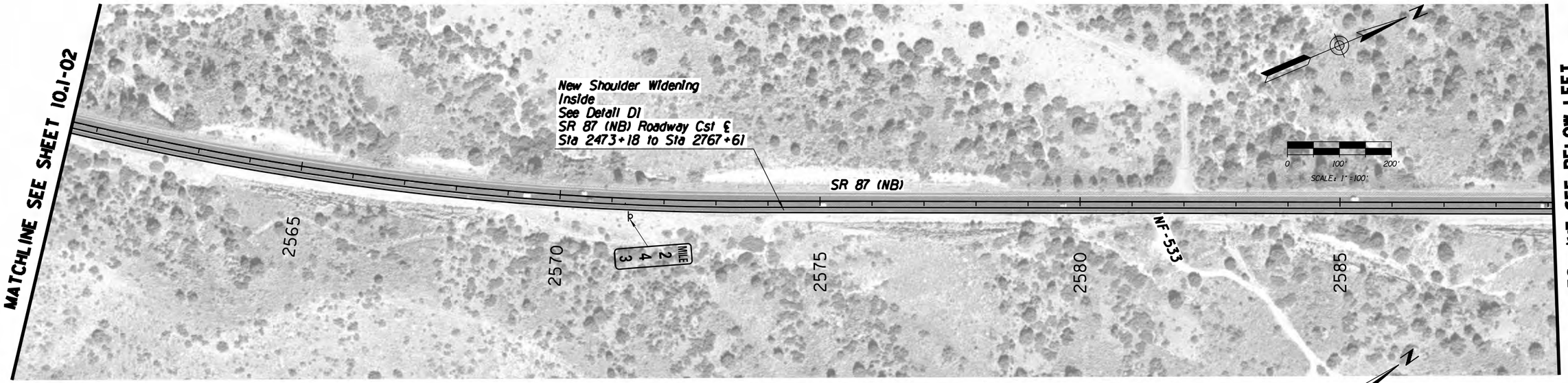
DWG NO. 10.1-02

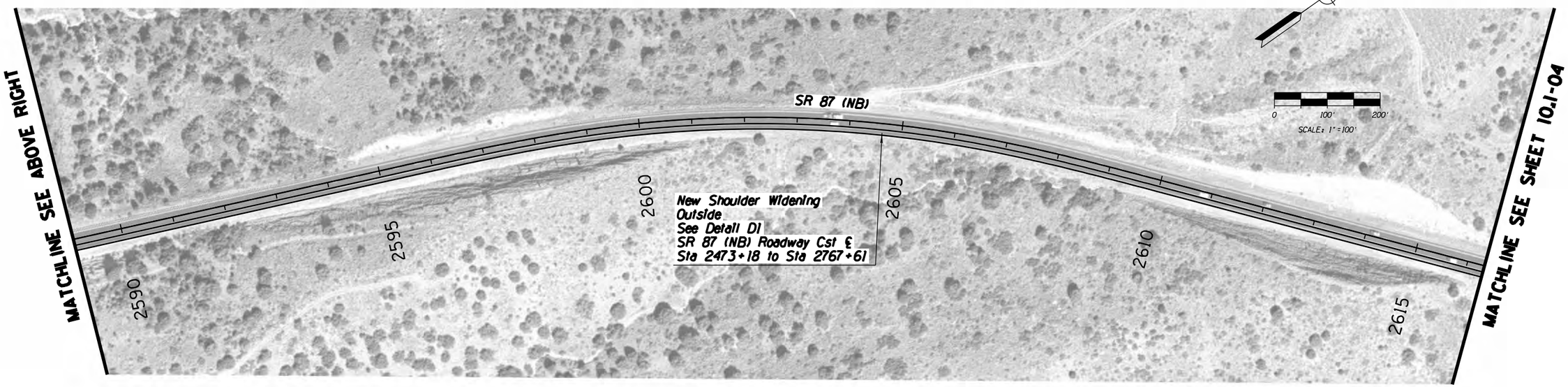
___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "10 NB IMPROVEMENTS
MP 241 TO 247.8

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

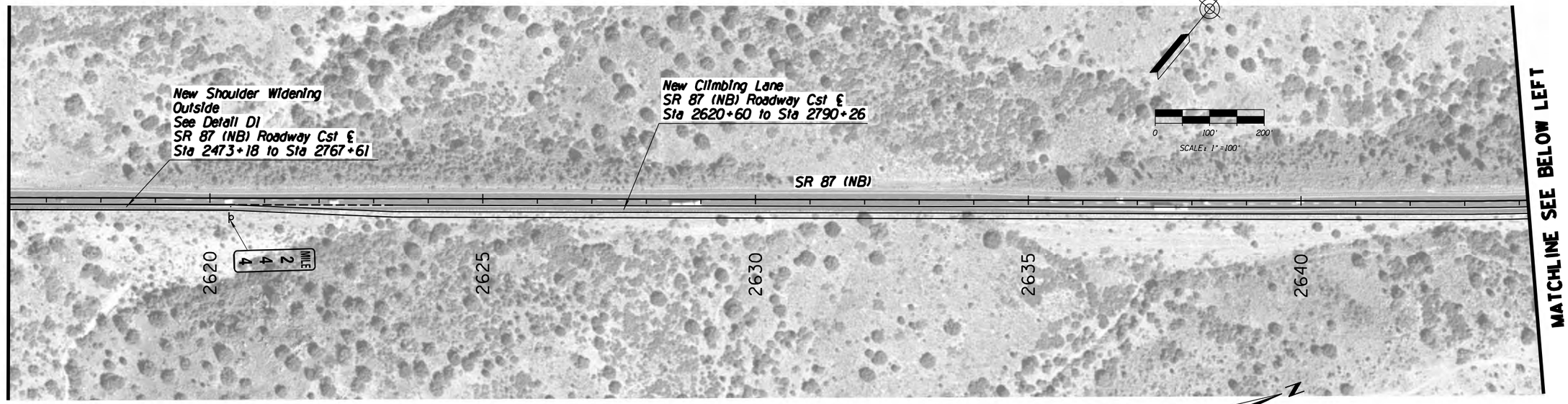
DWG NO. 10.1-03

TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "10 NB IMPROVEMENTS
MP 241 TO 247.8

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

TRACS NO. XXXXX XXX | XXX-X(XXX)X

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

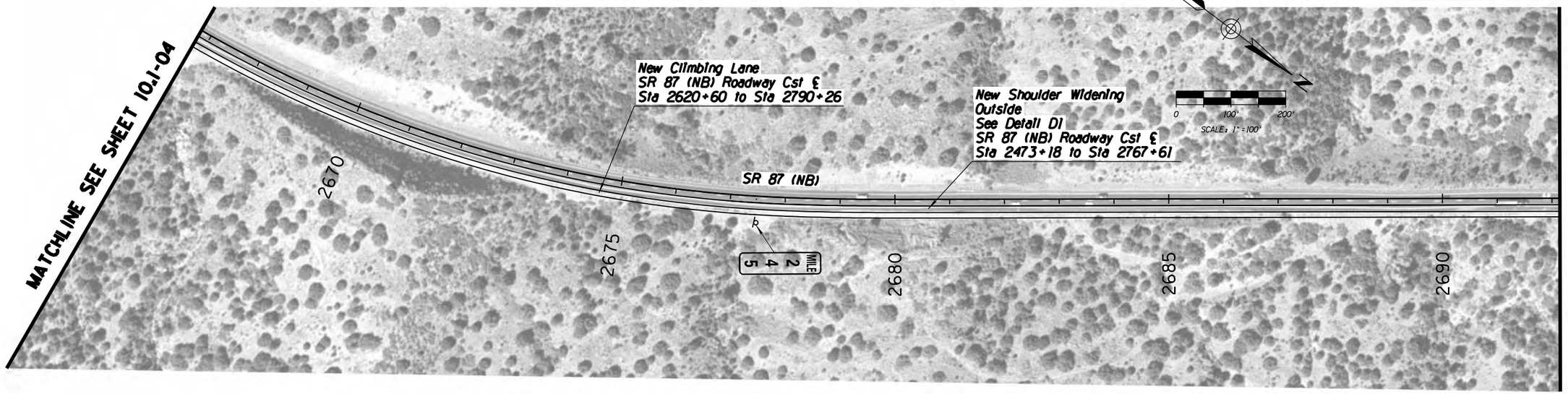
DWG NO. 10.1-04

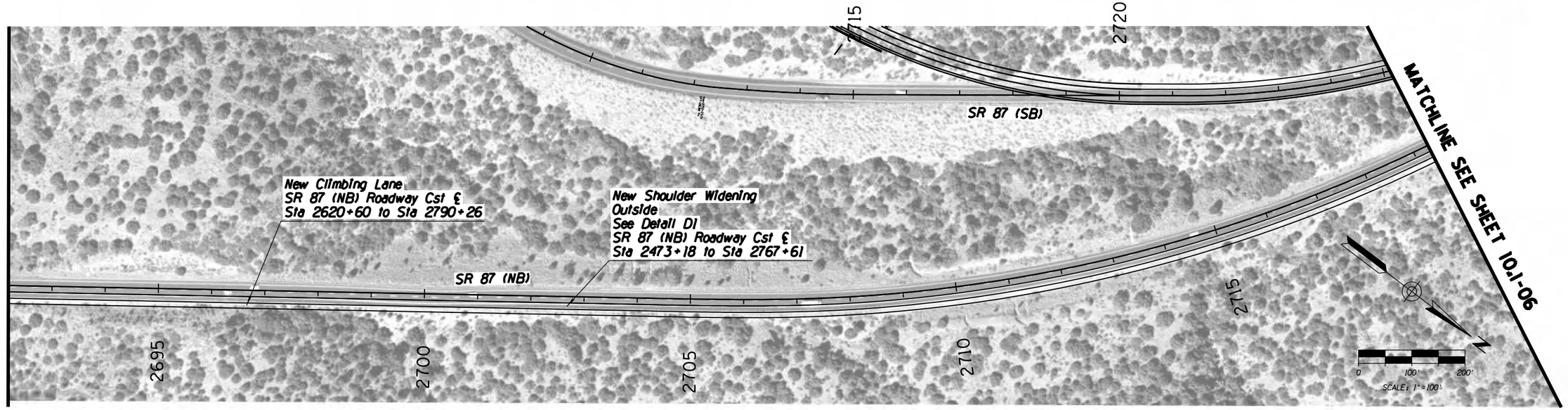
___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "10 NB IMPROVEMENTS
MP 241 TO 247.8

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

TRACS NO. XXXXX XXX | XXX-X(XXX)X

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

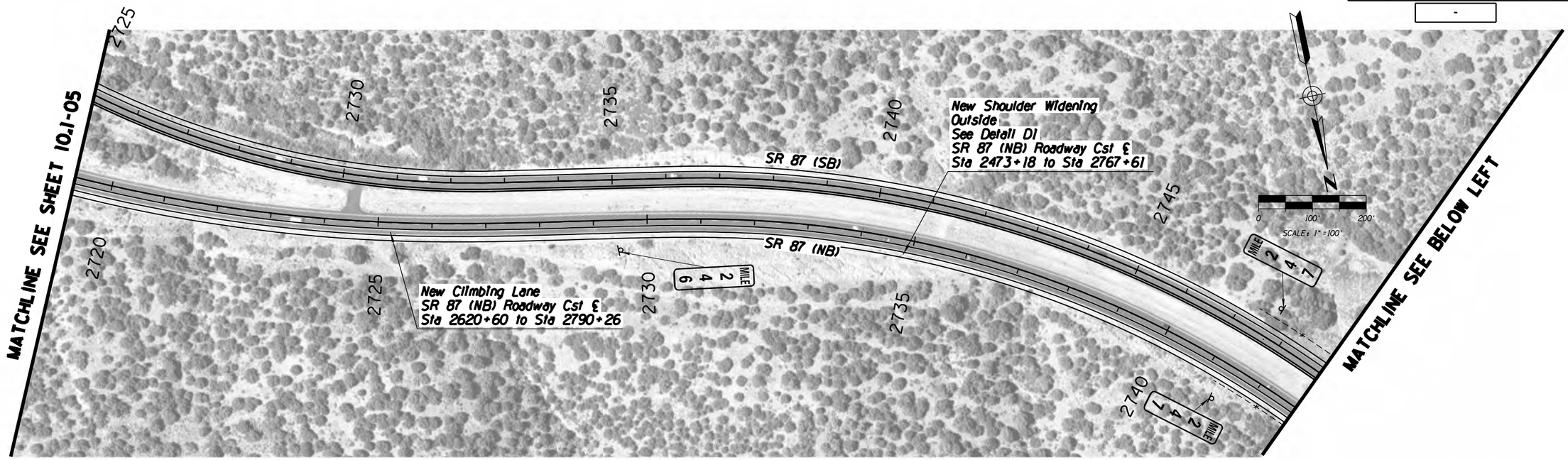
DWG NO. 10.1-05

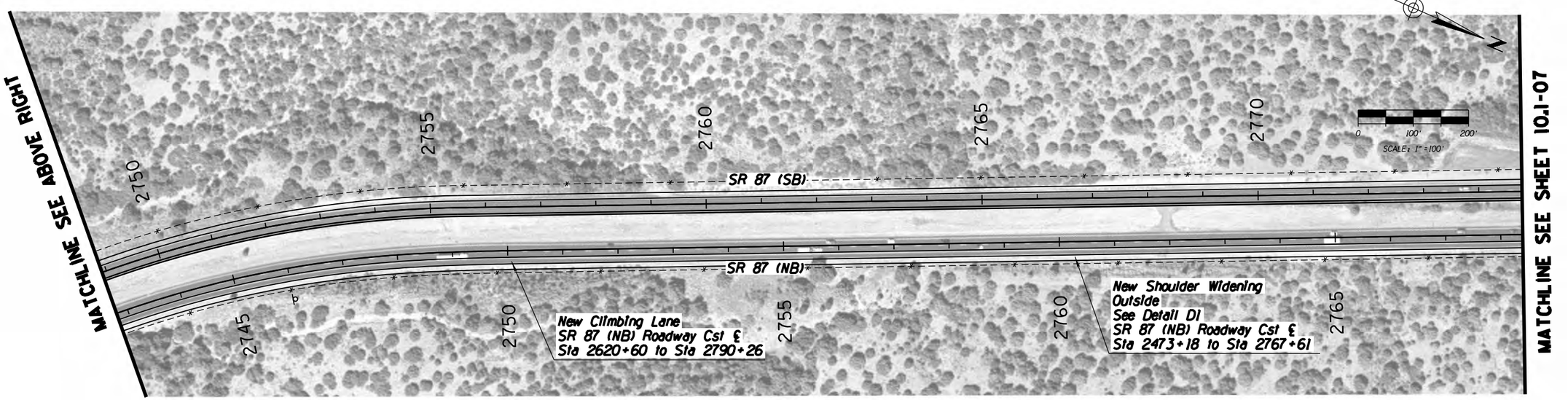
___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "10 NB IMPROVEMENTS
MP 241 TO 247.8

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

TRACS NO. XXXXX XXX | XXX-X(XXX)X

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

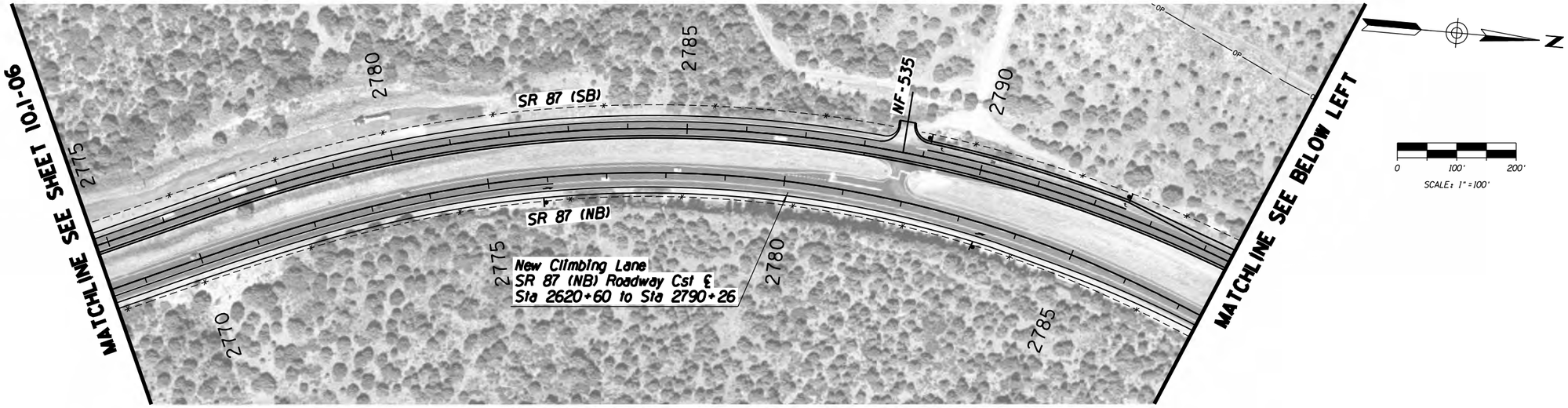
DWG NO. 10.1-06

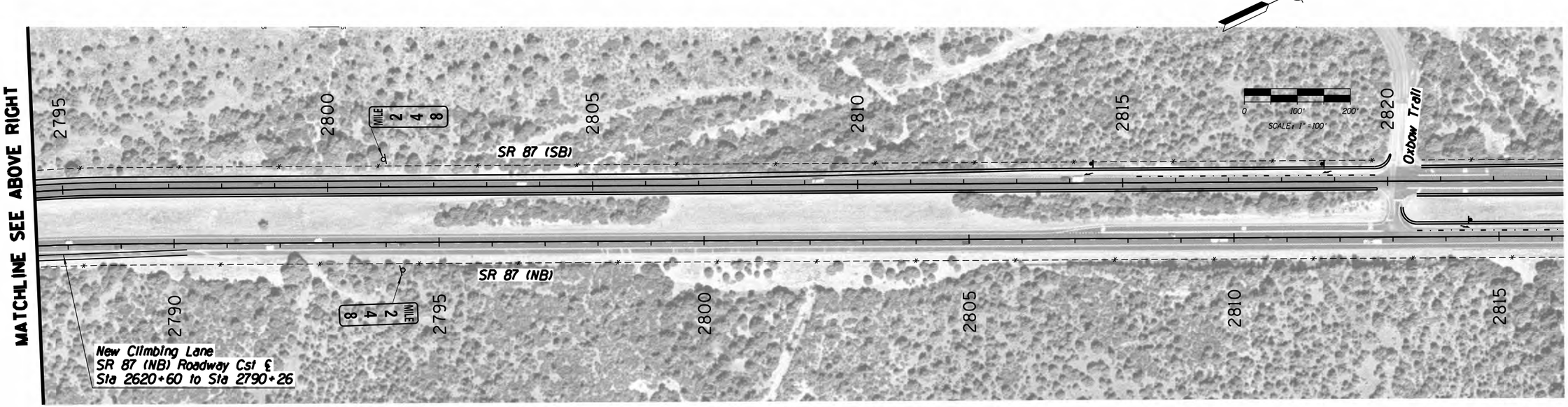
___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





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CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "10 NB IMPROVEMENTS
MP 241 TO 247.8

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	10.1-07
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

PACKAGE PROJECT 11 –
SOUTHBOUND IMPROVEMENTS
(MP 244-250)

ADOT SR 87 Corridor Development Study

PRELIMINARY SCOPING REPORT

GENERAL PROJECT INFORMATION	
Date: 8/20/2019	**Project Manager:**
Project Name: Southbound Improvements (MP 244-250)	
City/Town: N/A	**County:** Gila
COG/MPO: CAG	**ADOT District:** Northcentral
Primary Route/Street: SR 87	
Beginning Limit: 241	
End Limit: 250	
Project Length: 9 Miles	
Right of Way Ownership(s) (where proposed project would occur): *(check all that apply)* ☐City/Town ☐County ☒ADOT ☐Private ☐Federal ☐Tribal ☐Other	
Adjacent Land Ownership(s): *(Check all that apply)* ☐City/Town ☒County ☐ADOT ☒Private ☒Federal ☐Tribal ☐Other	

PROJECT NEED
Improve safety and emergency access through roadway and shoulder improvements.

PROJECT PURPOSE			
What is the Primary Purpose of the Project?	☐Preservation	☒Modernization	☒Expansion
Improve shoulders and roadway safety features to improve safety and emergency response times.			

PROJECT RISKS	
Check any risks identified that may impact the project's scope, schedule, or budget:	
☐Access/Traffic Control/Detour Issues	☐Right-of-Way
☐Constructability/Construction Window Issues	☐Environmental
☐Stakeholder Issues	☐Utilities
☐Structures & Geotech	☐Other:
Risk Description: *(if a box is checked above, briefly explain the risk)* Click or tap here to enter text.	

POTENTIAL FUNDING SOURCE(S)

Anticipated Project Design/Construction Funding Type: *(Check all that applied)*	☐STBG	☐TAP	☒HSIP	☒State
	☐Local	☐Private	☐Tribal	☐Other

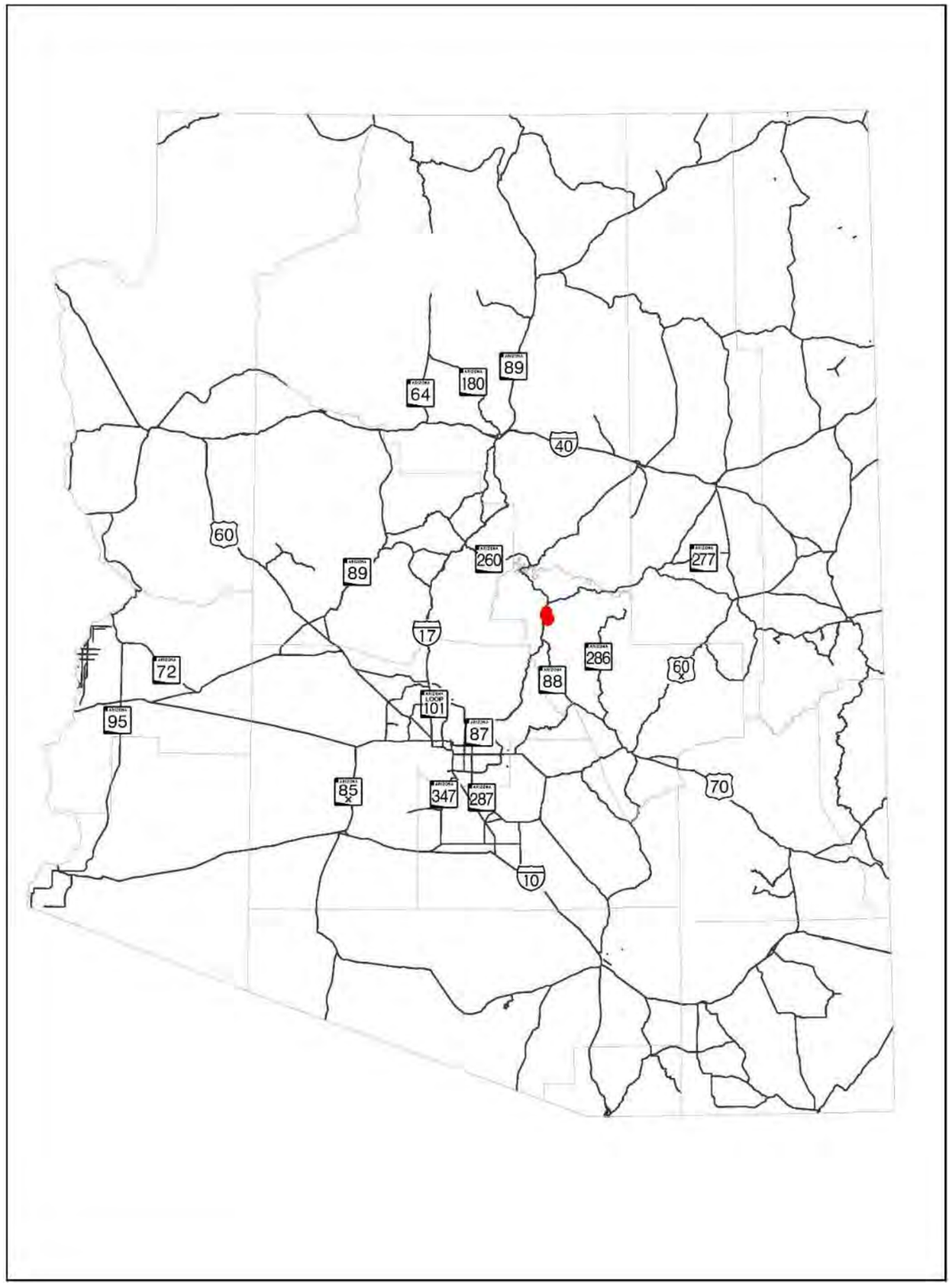
COST ESTIMATE			
Design	Right-of-Way	Construction	Total
$1,170,000.00	$0.00	$15,211,900.00	$16,381,900.00

RECOMMENDED PROJECT DELIVERY
Delivery: ☐Design-Bid-Build ☐Design-Build ☒Other:
Design Program Year: Click or tap here to enter text.
Construction Program Year: Click or tap here to enter text.

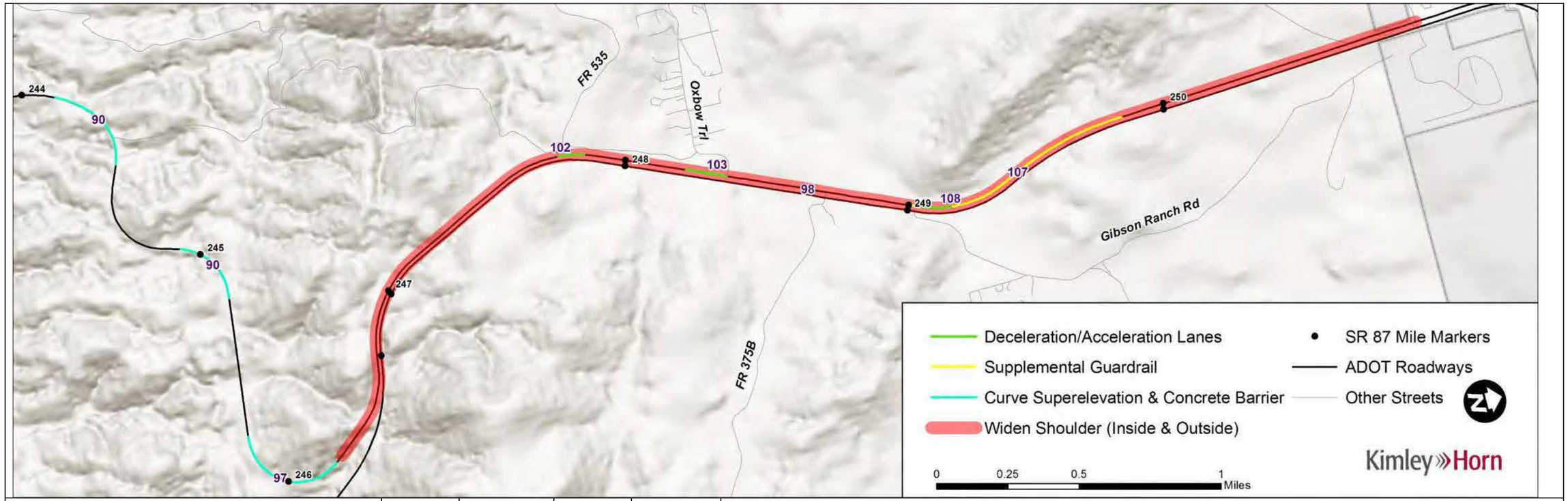
ATTACHMENTS
1. **Project Scope of Work**
2. **State Location Map**
3. **Project Vicinity Map**
4. **Itemized Cost Estimates**
5. **Conceptual Design Plans**

ATTACHMENT 1: SCOPE OF WORK
(Provide a detailed breakdown of the project's scope of work using bullet form)
• Address curve superelevation (MP 244.1-244.3 2, MP 244.9-245.2)
• Cut back slope and realign Corvair Curve as well as construct a concrete barrier on the east side of the curve (MP 245.8-246.2)
• Widen southbound inside and outside shoulders to 4 feet and 10 feet, respectively (MP 246.2-250.9)
• Southbound right-turn lane – FR 535 (MP 247.8)
• Southbound outside acceleration lane – Oxbow Trail (MP 248.4)
• Add southbound guardrail – west side (MP 249-249.9)
• Realign southbound left-turn lane and southbound inside acceleration lane – Gibson Ranch Road (MP 249)

ATTACHMENT 2: STATE LOCATION MAP



ATTACHMENT 3: PROJECT VICINITY MAP



Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. Address curve superelevation, add concrete barrier	90	1: 244.1 2: 244.9	1: 244.3 2: 245.2	$4,276,300	Improve the superelevation of curves to reduce run off the road crashes.
2. Add superelevation to Corvair Curve, add concrete barrier.	97	245.8	246.2	$1,506,000	This location is the most significant crash hot spot within the SR 87 corridor with 63 crashes on the curve, including one fatality and one serious injury during the crash analysis period.
3. Widen SB inside and outside shoulders	98	246.2	250.9	$8,849,000	Existing shoulders are of an insufficient width for current highway standards and limit effective emergency response.
4. SB right-turn lane at FR 535	102	247.8	247.8	$275,000	Provide turn/deceleration lane where it does not currently exist, especially because of the high speeds measured at this location
5. SB outside acceleration lane at Oxbow Trail	103	248.4	248.4	$591,800	Remove slow-moving traffic from through travel lanes.
6. Add SB guardrail, right side	107	249	249.9	$418,900	Unprotected drop-off along the right side of the roadway.
7. Realign SB left-turn lane at Gibson Ranch Road	108	249	249	$464,900	Realign the SB left-turn lane across the median to be adjacent to NB traffic to improve sight distance and address median grade issue. Two crashes occurred at this intersection during the crash analysis period.
			Total:	**$16,381,900**	

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

90. Improve superelevation of curves (MP 244.1-244.3 and 244.9-245.2)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	6	$5,000.00	$30,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	15,732	$20.00	$314,640
2020053	REMOVE (GR TERMINAL)	EACH	4	$400.00	$1,600
2020071	REMOVE GUARD RAIL	L.FT.	2,000	$5.00	$10,000
2030301	ROADWAY EXCAVATION	CU.YD.	82,800	$7.00	$579,600
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	6,900	$50.00	$345,000
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	5,615	$80.00	$449,200
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	465	$90.00	$41,850
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$3,726.00	$3,726
8050003	SEEDING (CLASS II)	ACRE	6	$3,500.00	$21,000
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	3,726	$30.00	$111,780
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	2	$2,500.00	$5,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	2	$800.00	$1,600
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	3,726	$0.75	$2,795
			Roadway Construction Subtotal		**$1,927,791**
	Unidentified Item Allowance (15%)				$ 289,169
				Subtotal	**$2,216,960**
	Water Supply/Dust Palliative (3%)				$ 66,509
	Maintenance And Protection Of Traffic (15%)				$ 332,544
	Erosion Control (1%)				$ 22,170
	Contractor Quality Control (2%)				$ 44,340
	Construction Surveying And Layout (2%)				$ 44,340
				Other Item Subtotal	**$2,726,863**
	Mobilization (12%)				$ 327,224
				Construction Subtotal	**$ 3,054,087**
	Engineering Design (10%)				$ 305,409
	Construction Engineering and Contingencies (20%)				$ 610,818
	Indirect Cost Allocation (10.02%)				$ 306,020
				Construction Total	**$ 4,276,334**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

97. Cut back slope and realign Corvair Curve as well as a concrete barrier (MP 245.8-246.2)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	3	$5,000.00	$15,000
2030301	ROADWAY EXCAVATION	CU.YD.	90,890	$7.00	$636,230
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$4,090.00	$4,090
8050003	SEEDING (CLASS II)	ACRE	3	$3,500.00	$10,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	4,090	$0.75	$3,068
				Roadway Construction Subtotal	**$678,888**
	Unidentified Item Allowance (15%)				$ 101,834
				Subtotal	**$780,722**
	Water Supply/Dust Palliative (3%)				$ 23,422
	Maintenance And Protection Of Traffic (15%)				$ 117,109
	Erosion Control (1%)				$ 7,808
	Contractor Quality Control (2%)				$ 15,615
	Construction Surveying And Layout (2%)				$ 15,615
				Other Item Subtotal	**$960,291**
	Mobilization (12%)				$ 115,235
				Construction Subtotal	**$ 1,075,526**
	Engineering Design (10%)				$ 107,553
	Construction Engineering and Contingencies (20%)				$ 215,106
	Indirect Cost Allocation (10.02%)				$ 107,768
				Construction Total	**$ 1,505,953**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

98. Widen inside and outside shoulders (MP 246.2-250.9)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	17	$5,000.00	$85,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	10,729	$20.00	$214,580
2020053	REMOVE (GR TERMINAL)	EACH	4	$400.00	$1,600
2020071	REMOVE GUARD RAIL	L.FT.	6,035	$5.00	$30,175
2020201	SAW CUTTING	L.FT.	48,280	$2.50	$120,700
2030301	ROADWAY EXCAVATION	CU.YD.	107,290	$7.00	$751,030
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	23,246	$50.00	$1,162,300
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	15,082	$80.00	$1,206,560
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	1,108	$90.00	$99,720
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$24,140.00	$24,140
8050003	SEEDING (CLASS II)	ACRE	17	$3,500.00	$59,500
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	6,035	$30.00	$181,050
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	2	$2,500.00	$5,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	2	$800.00	$1,600
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	48,280	$0.75	$36,210
				Roadway Construction Subtotal	**$3,989,165**
	Unidentified Item Allowance (15%)				$ 598,375
				Subtotal	**$4,587,540**
	Water Supply/Dust Palliative (3%)				$ 137,627
	Maintenance And Protection Of Traffic (15%)				$ 688,131
	Erosion Control (1%)				$ 45,876
	Contractor Quality Control (2%)				$ 91,751
	Construction Surveying And Layout (2%)				$ 91,751
				Other Item Subtotal	**$5,642,676**
	Mobilization (12%)				$ 677,122
				Construction Subtotal	**$ 6,319,798**
	Engineering Design (10%)				$ 631,980
	Construction Engineering and Contingencies (20%)				$ 1,263,960
	Indirect Cost Allocation (10.02%)				$ 633,244
				Construction Total	**$ 8,848,982**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

102. Southbound right-turn lane at FR 535 (MP 247.8)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	55	$35.00	$1,925
2020201	SAW CUTTING	L.FT.	490	$2.50	$1,225
2030301	ROADWAY EXCAVATION	CU.YD.	440	$10.00	$4,400
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	400	$120.00	$48,000
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	316	$160.00	$50,560
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	26	$120.00	$3,120
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$490.00	$490
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	490	$1.50	$735
				Roadway Construction Subtotal	**$123,955**
	Unidentified Item Allowance (15%)				$ 18,594
				Subtotal	**$142,549**
	Water Supply/Dust Palliative (3%)				$ 4,277
	Maintenance And Protection Of Traffic (15%)				$ 21,383
	Erosion Control (1%)				$ 1,426
	Contractor Quality Control (2%)				$ 2,851
	Construction Surveying And Layout (2%)				$ 2,851
				Other Item Subtotal	**$175,337**
	Mobilization (12%)				$ 21,041
				Construction Subtotal	**$ 196,378**
	Engineering Design (10%)				$ 19,638
	Construction Engineering and Contingencies (20%)				$ 39,276
	Indirect Cost Allocation (10.02%)				$ 19,678
				Construction Total	**$ 274,970**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

103. SB Outside Acceleration Lane at Oxbow Trail (MP 248.4)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	292	$20.00	$5,840
2020201	SAW CUTTING	L.FT.	1,310	$2.50	$3,275
2030301	ROADWAY EXCAVATION	CU.YD.	1,170	$10.00	$11,700
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	922	$120.00	$110,640
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	699	$160.00	$111,840
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	56	$120.00	$6,720
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$1,310.00	$1,310
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	1,310	$1.50	$1,965
				Roadway Construction Subtotal	**$266,790**
	Unidentified Item Allowance (15%)				$ 40,019
				Subtotal	**$306,809**
	Water Supply/Dust Palliative (3%)				$ 9,205
	Maintenance And Protection Of Traffic (15%)				$ 46,022
	Erosion Control (1%)				$ 3,069
	Contractor Quality Control (2%)				$ 6,137
	Construction Surveying And Layout (2%)				$ 6,137
				Other Item Subtotal	**$377,379**
	Mobilization (12%)				$ 45,286
				Construction Subtotal	**$ 422,665**
	Engineering Design (10%)				$ 42,267
	Construction Engineering and Contingencies (20%)				$ 84,533
	Indirect Cost Allocation (10.02%)				$ 42,352
				Construction Total	**$ 591,817**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

107. Add guardrail on the west side of the SB lanes (MP 249-249.9)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2030301	ROADWAY EXCAVATION	CU.YD.	2,120	$10.00	$21,200
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$4,000.00	$4,000
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	4,752	$30.00	$142,560
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	2	$2,500.00	$5,000
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	2	$800.00	$1,600
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$6,000.00	$6,000
				Roadway Construction Subtotal	**$188,860**
	Unidentified Item Allowance (15%)				$ 28,329
				Subtotal	**$217,189**
	Water Supply/Dust Palliative (3%)				$ 6,516
	Maintenance And Protection Of Traffic (15%)				$ 32,579
	Erosion Control (1%)				$ 2,172
	Contractor Quality Control (2%)				$ 4,344
	Construction Surveying And Layout (2%)				$ 4,344
				Other Item Subtotal	**$267,144**
	Mobilization (12%)				$ 32,058
				Construction Subtotal	**$ 299,202**
	Engineering Design (10%)				$ 29,921
	Construction Engineering and Contingencies (20%)				$ 59,841
	Indirect Cost Allocation (10.02%)				$ 29,981
				Construction Total	**$ 418,945**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

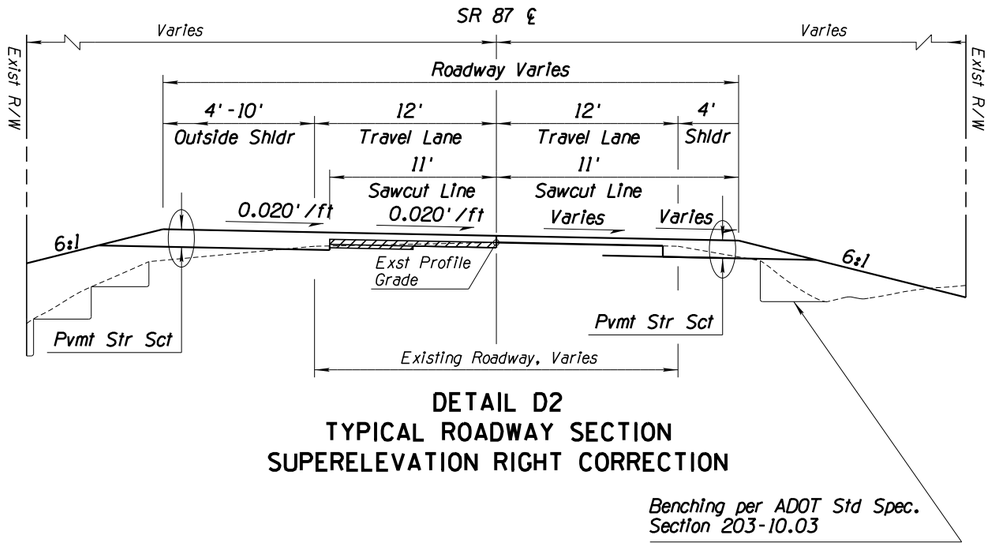
7. Realign SB left-turn lane at Gibson Ranch Road (MP 249)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	1,695	$20.00	$33,900
2030301	ROADWAY EXCAVATION	CU.YD.	910	$10.00	$9,100
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	588	$120.00	$70,560
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	482	$160.00	$77,120
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	40	$120.00	$4,800
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$610.00	$610
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
				Roadway Construction Subtotal	**$209,590**
	Unidentified Item Allowance (15%)				$ 31,439
				Subtotal	**$241,029**
	Water Supply/Dust Palliative (3%)				$ 7,231
	Maintenance And Protection Of Traffic (15%)				$ 36,155
	Erosion Control (1%)				$ 2,411
	Contractor Quality Control (2%)				$ 4,821
	Construction Surveying And Layout (2%)				$ 4,821
				Other Item Subtotal	**$296,468**
	Mobilization (12%)				$ 35,577
				Construction Subtotal	**$ 332,045**
	Engineering Design (10%)				$ 33,205
	Construction Engineering and Contingencies (20%)				$ 66,409
	Indirect Cost Allocation (10.02%)				$ 33,271
				Construction Total	**$ 464,930**

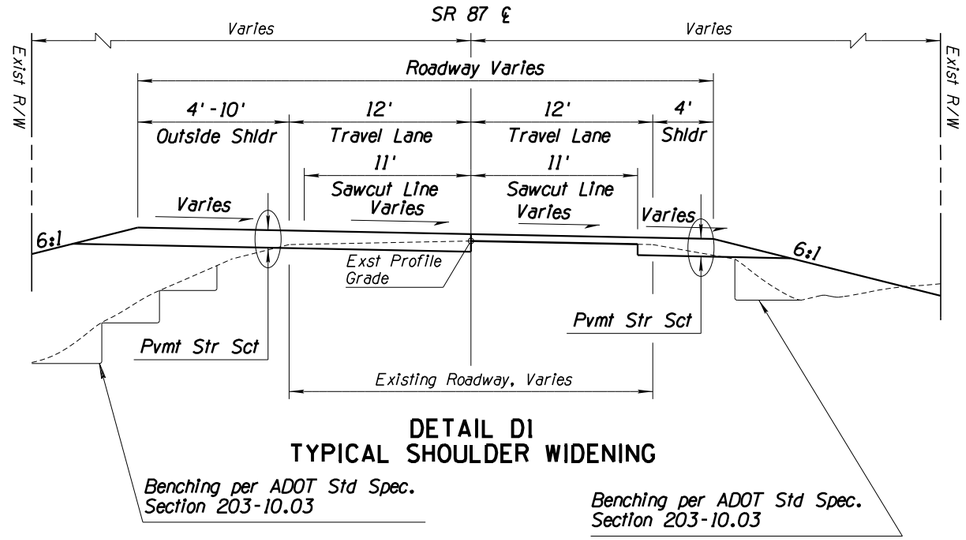
ATTACHMENT 5: PRELIMINARY PLANS

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

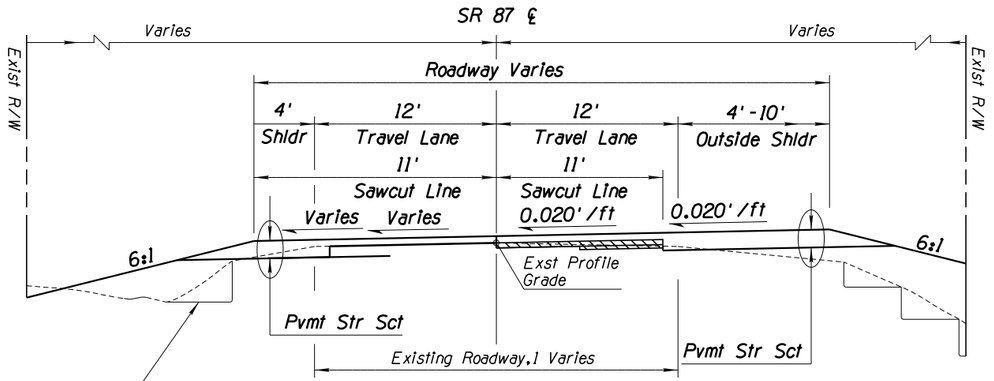
SR 87 MILE POST STATION			
MP NB	STATION	MP SB	STATION
196	101+73	196	101+18
197	155+53	197	154+02
198	207+69	198	207+94
199	261+02	199	259+13
200	314+21	200	311+72
201	367+73	201	364+06
202	419+18	202	417+81
203	471+36	203	470+65
204	526+28	204	523+10
205	577+70	205	575+84
206	630+73	206	628+30
207	682+81	207	680+28
208	736+47	208	734+12
209	788+55	209	786+62
210	842+08	210	839+50
211	894+91	211	890+40
212	942+20	212	939+42
213	998+65	213	995+55
214	1051+86	214	1050+06
215	1105+38	215	1095+77
216	1158+68	216	1147+95
217	1213+92	217	1199+48
218	1268+31	218	1250+20
219	1318+19	219	1304+12
220	1374+67	220	1359+76
221	1427+95	221	1412+99
222	1480+60	222	1465+84
223	1533+97	223	1518+89
224	1584+61	224	1570+72
225	1639+50	225	1625+29
226	1689+86	226	1676+32
227	1740+23	227	1726+14
228	1792+50	228	1778+04
229	1845+24	229	1831+98
230	1898+50	230	1884+70
231	1949+61	231	1933+71
232	1999+33	232	1985+29
233	2047+74	233	2033+06
234	2101+13	234	2085+05
235	2154+59	235	2137+29
236	2207+09	236	2189+44
237	2259+88	237	2240+86
238	2311+66	238	2293+85
239	2364+28	239	2344+91
240	2416+01	240	2397+41
241	2467+79	241	2448+96
242	2518+51	242	2496+68
243	2571+26	243	2549+70
244	2620+38	244	2601+82
245	2677+47	245	2655+01
246	2729+53	246	2703+04
247	2741+30	247	2747+68
248	2794+18	248	2801+15
249	2847+25	249	2854+41
250	2899+69	250	2906+58



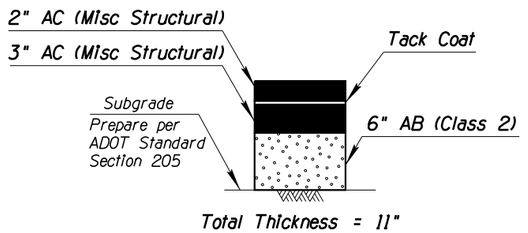
DETAIL D2
TYPICAL ROADWAY SECTION SUPERELEVATION RIGHT CORRECTION



DETAIL D1
TYPICAL SHOULDER WIDENING



DETAIL D3
TYPICAL ROADWAY SECTION SUPERELEVATION LEFT CORRECTION



Total Thickness = 11"

PAVEMENT STRUCTURAL SECTION

	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

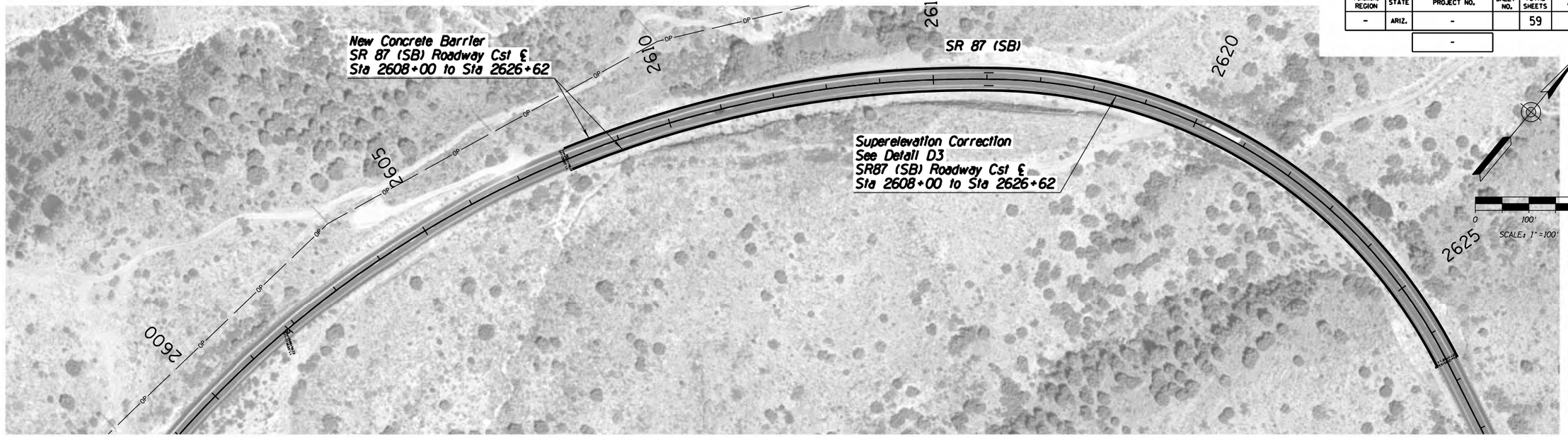
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

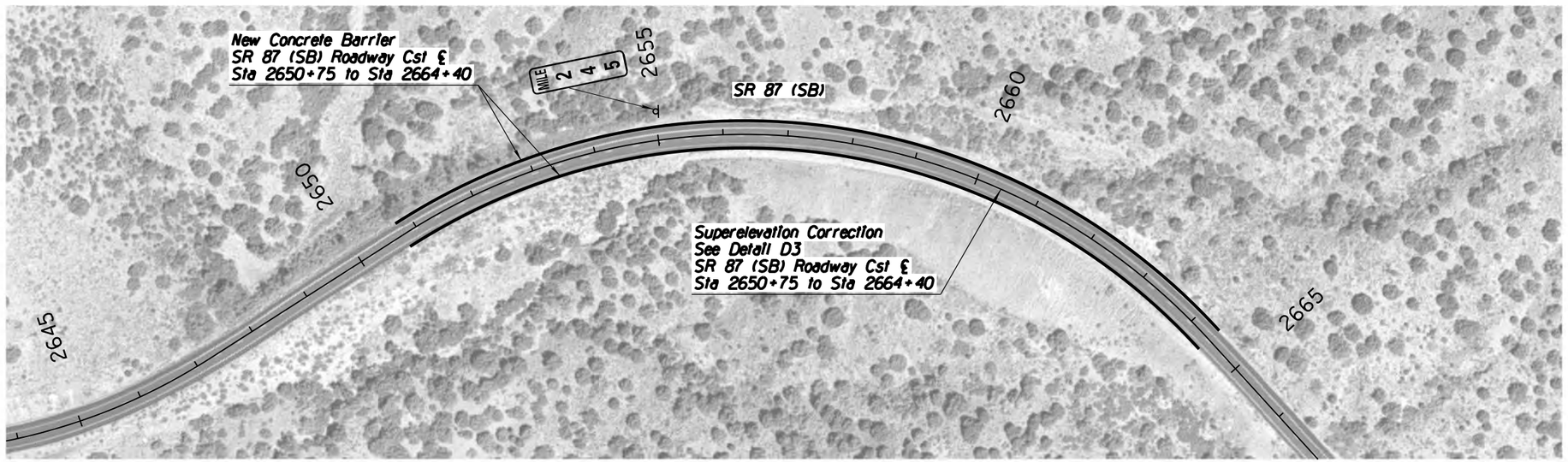
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	___ OF ___

TRACS NO. XXXXX XXX | XXX-X(XXX)X

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

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS
MP 241 TO 250

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

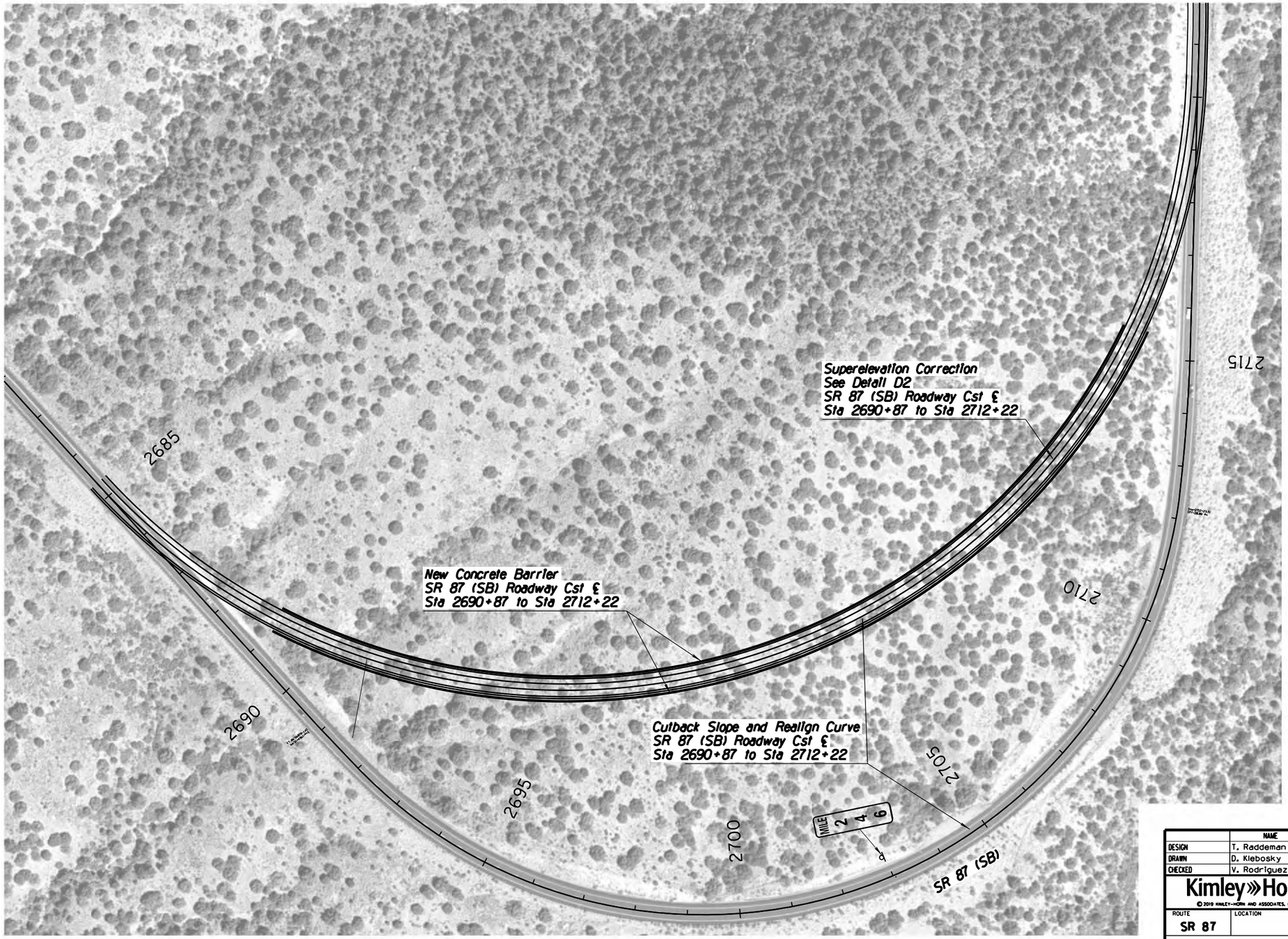
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	5.1-01

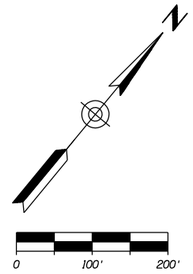
TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS
MP 241 TO 250

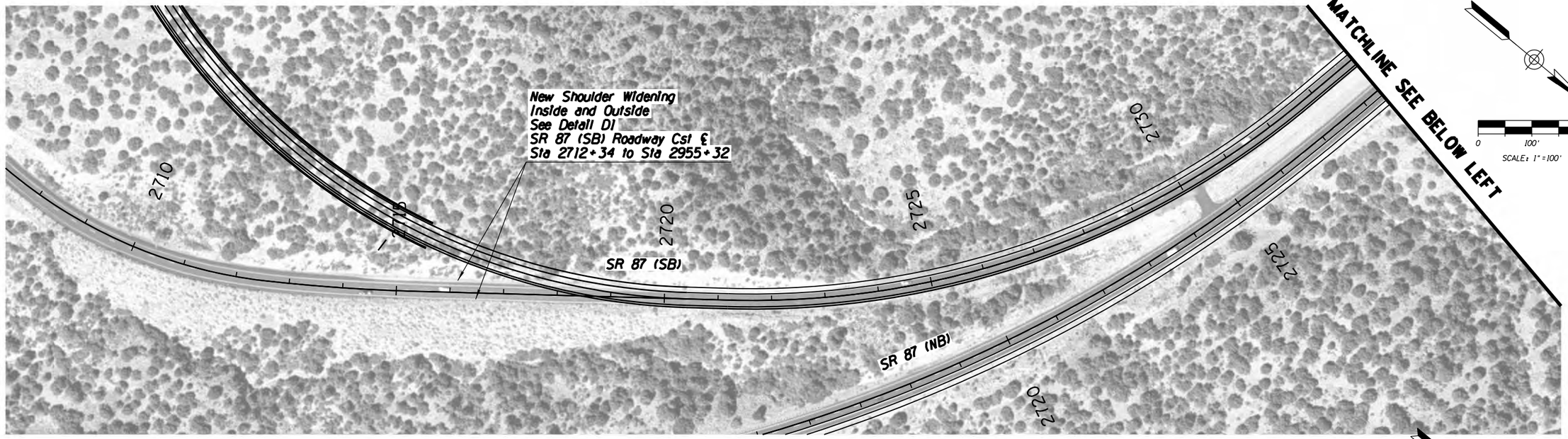
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

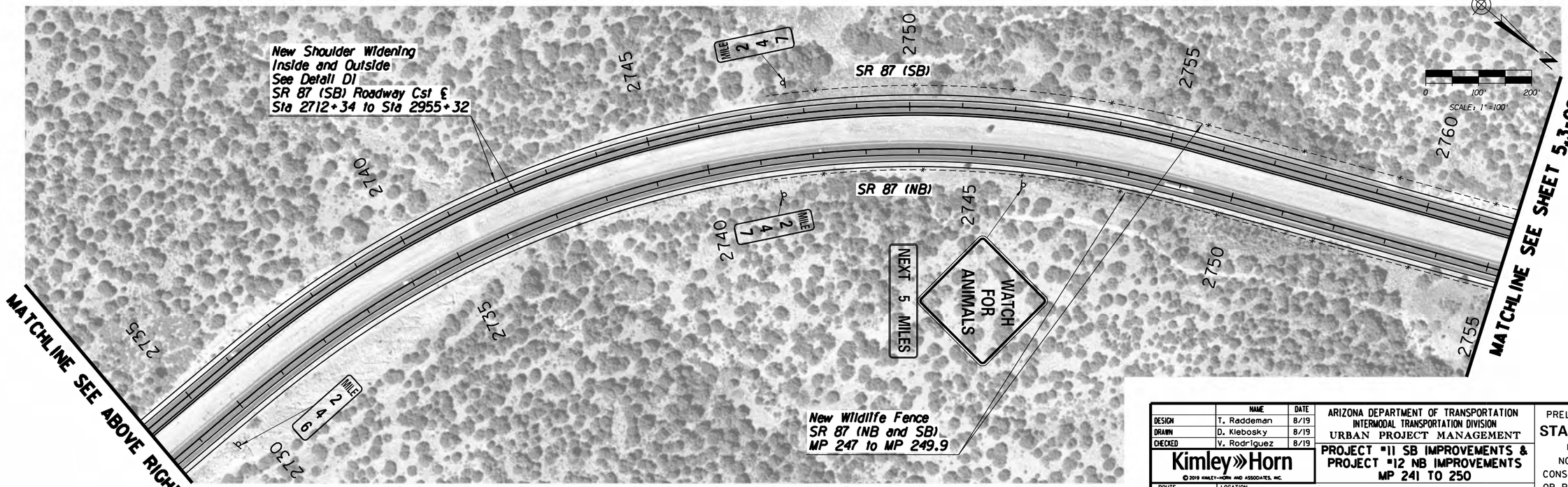
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	5.2-01
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS &
PROJECT "12 NB IMPROVEMENTS
MP 241 TO 250

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

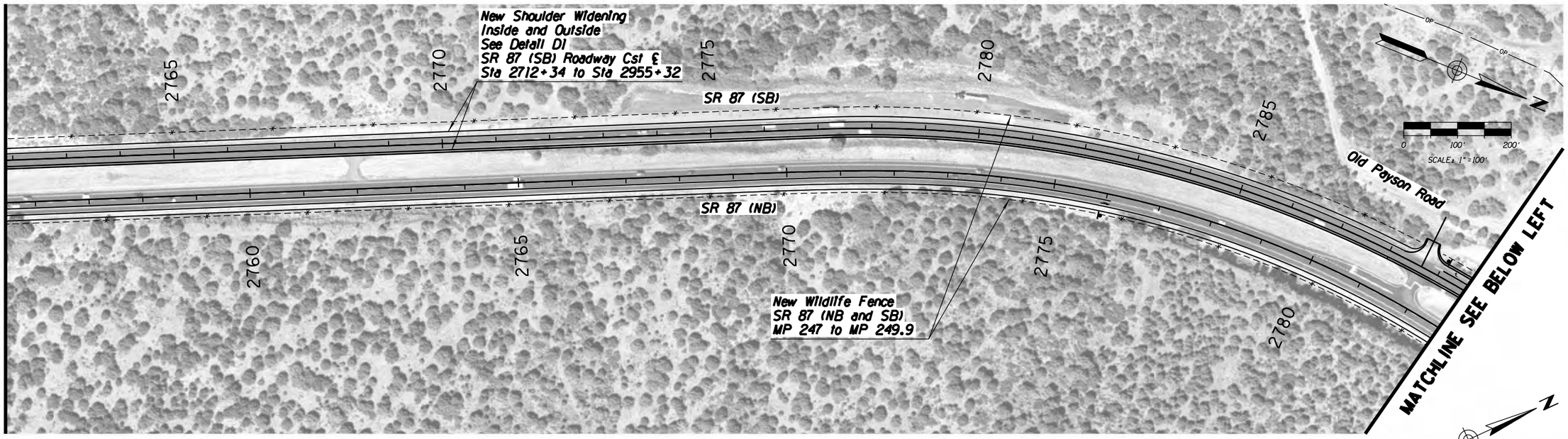
ROUTE	LOCATION	DWG NO. 5.3-01
SR 87	MP 190 TO MP 250	
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

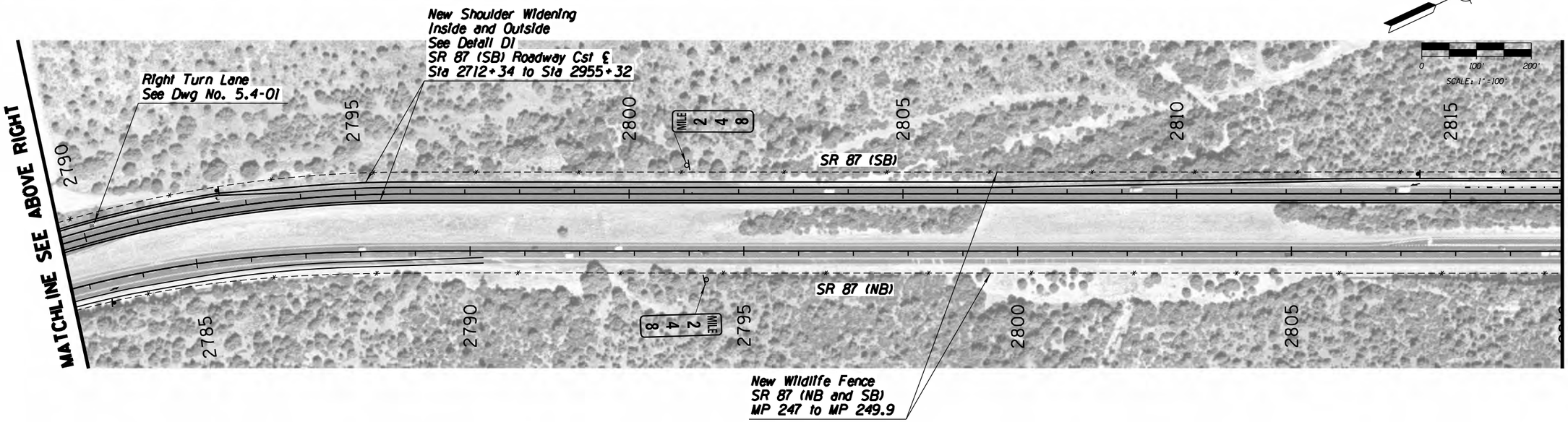
SURVEY NO. | FINISHED PLANS- | REVISIONS- | LOCATION- | DATE-

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

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





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

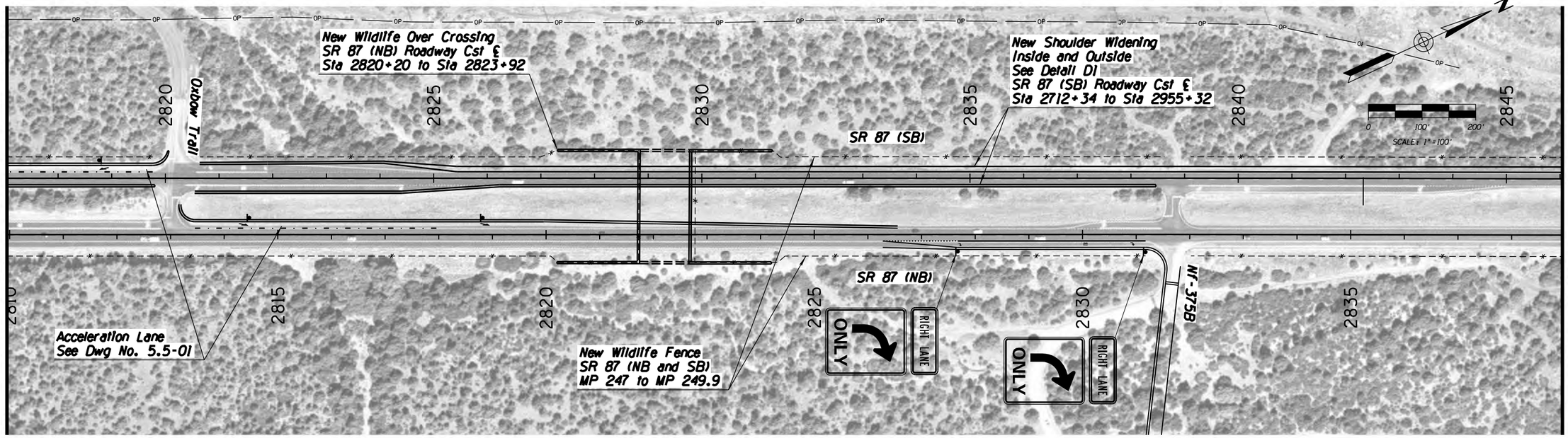
PROJECT "11 SB IMPROVEMENTS &
PROJECT "12 NB IMPROVEMENTS
MP 241 TO 250

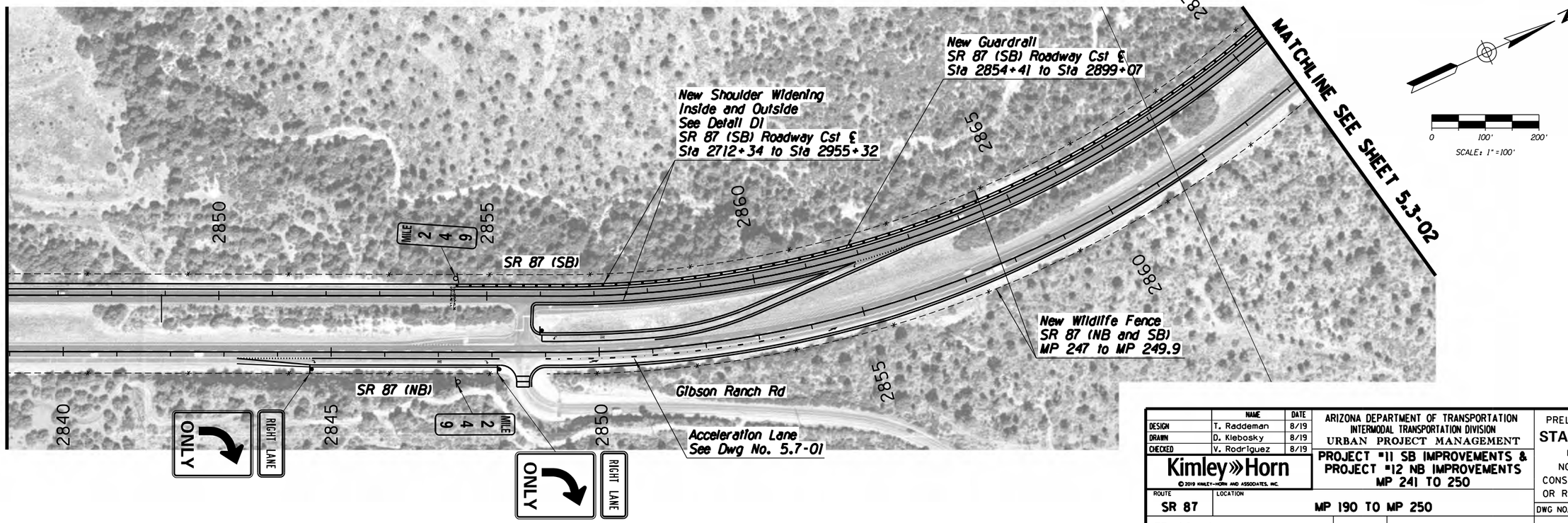
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	5.3-02
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS &
PROJECT "12 NB IMPROVEMENTS
MP 241 TO 250

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

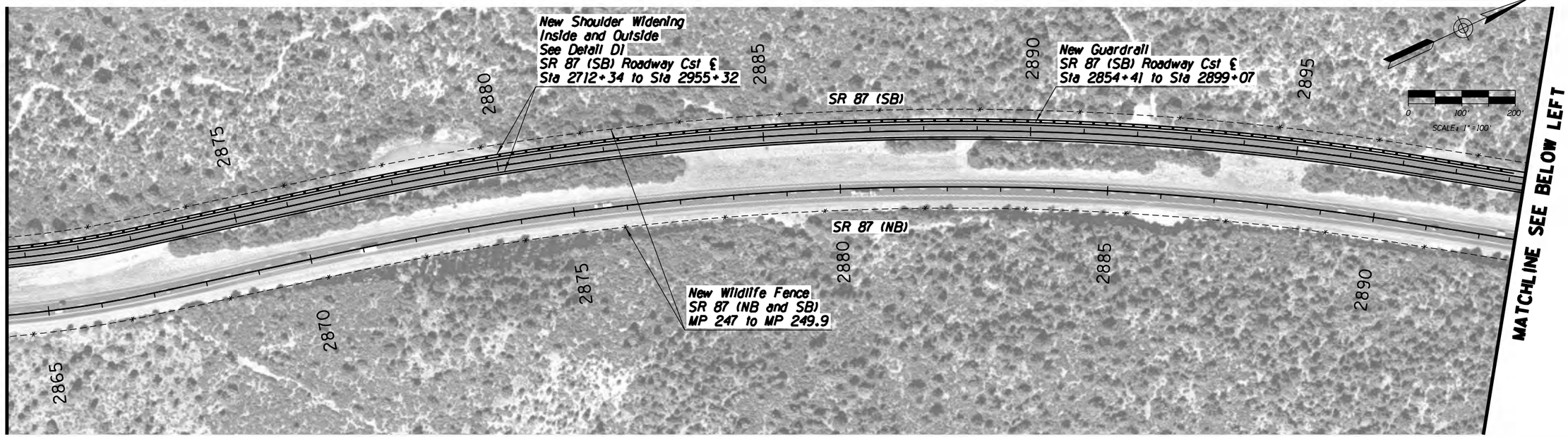
DWG NO. 5.3-03

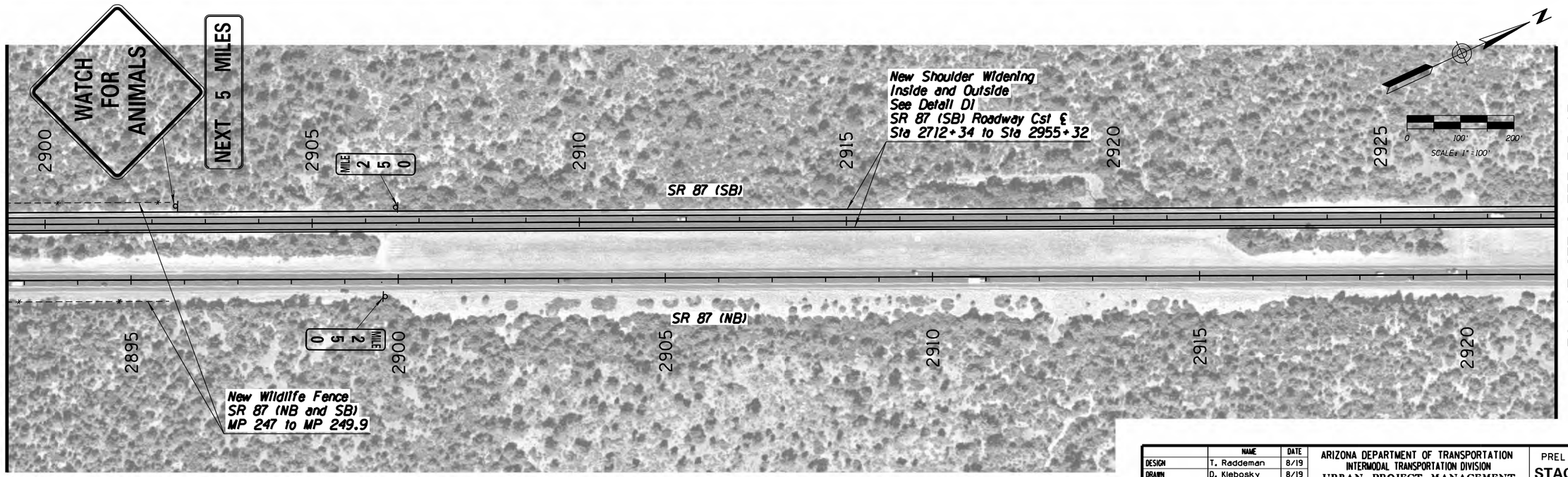
TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS &
PROJECT "12 NB IMPROVEMENTS
MP 241 TO 250

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

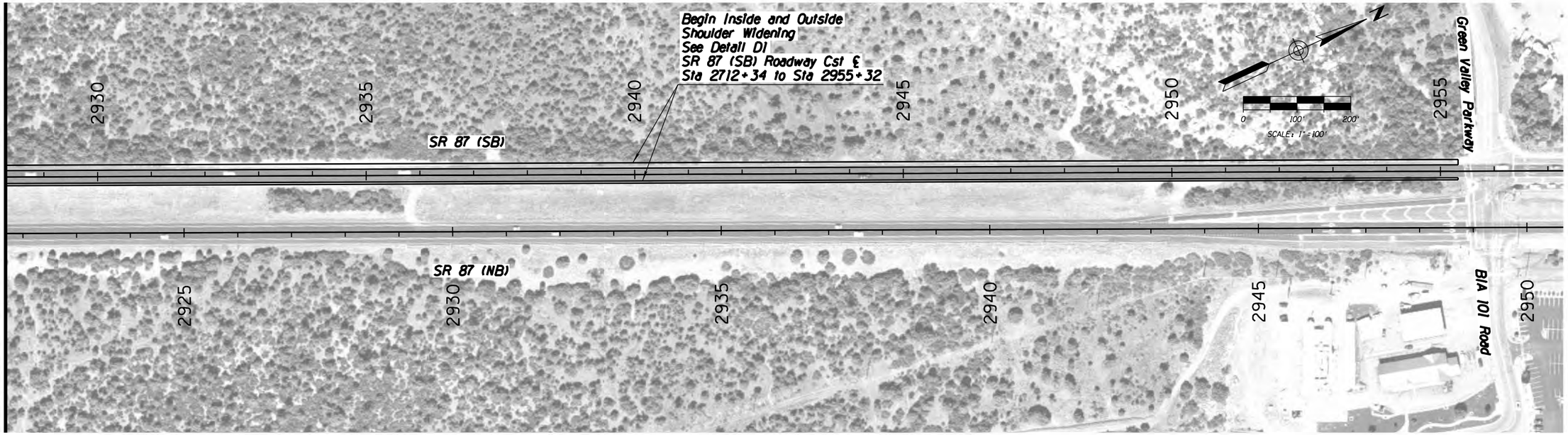
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	5.3-04
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

MATCHLINE SEE SHEET 5.3-04



	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS &
PROJECT "12 NB IMPROVEMENTS
MP 241 TO 250

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

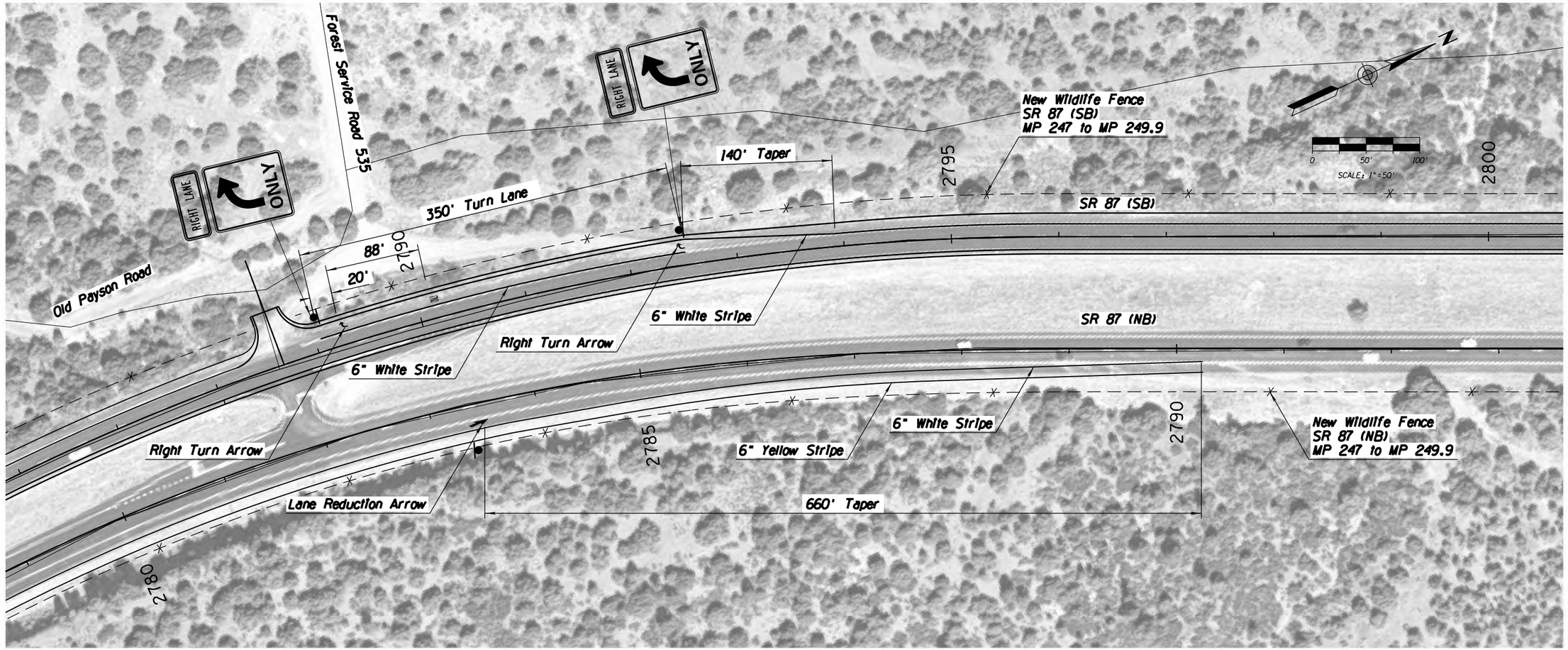
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	5.3-05

TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT #11 SB IMPROVEMENTS &
PROJECT #12 NB IMPROVEMENTS
MP 241 TO 250

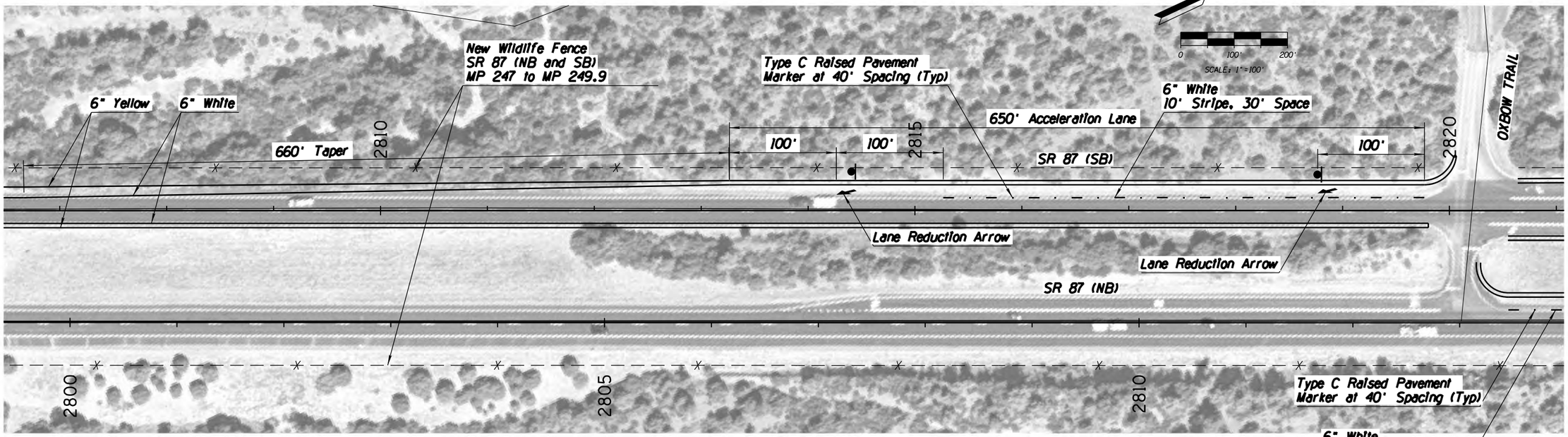
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

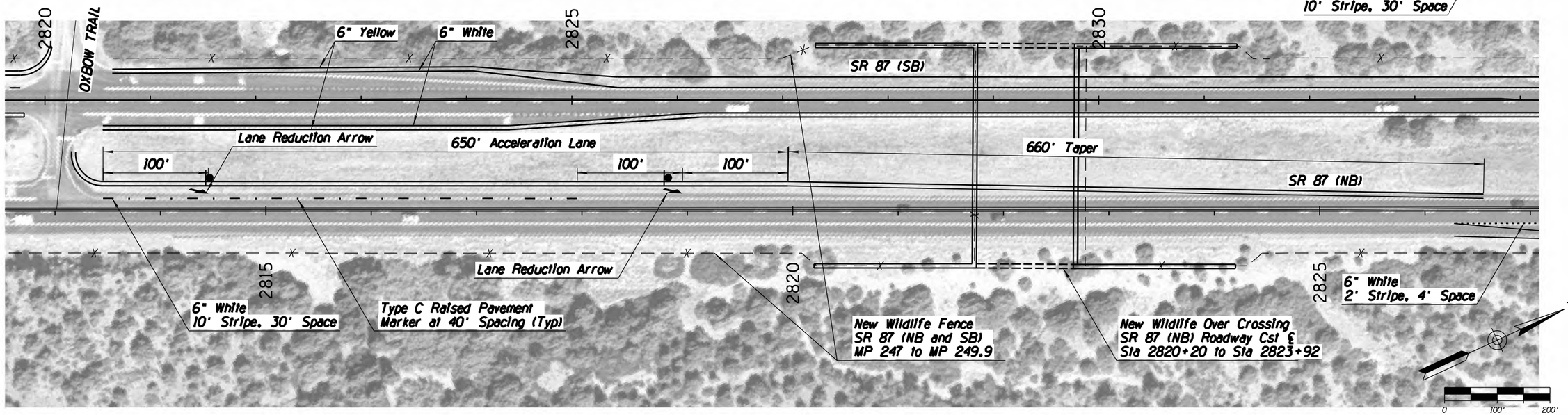
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	5.4-01
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS &
PROJECT "12 NB IMPROVEMENTS
MP 241 TO 250

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

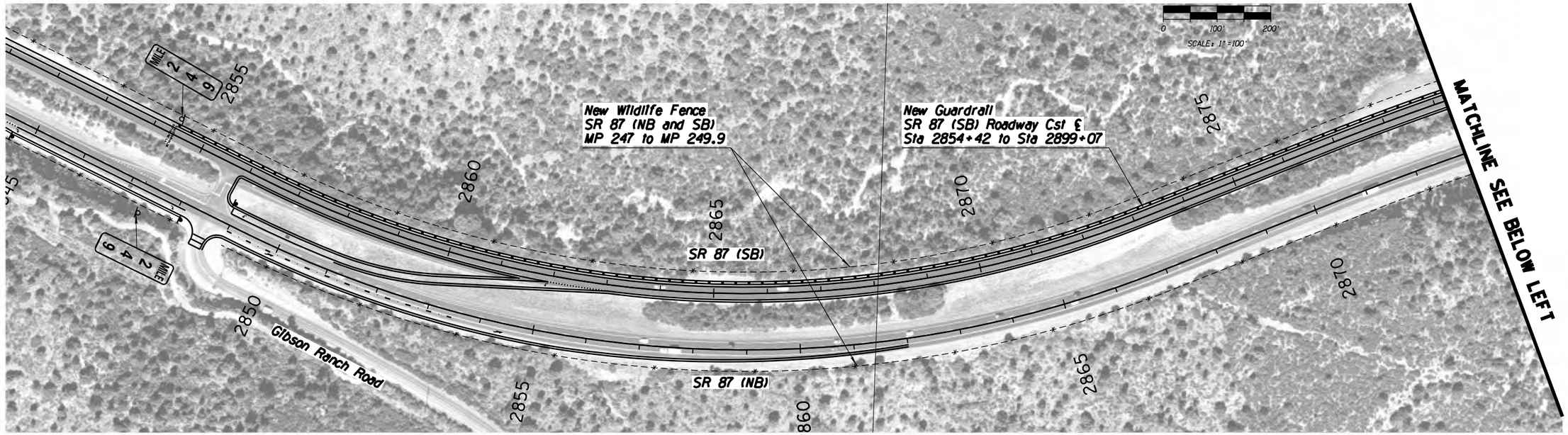
DWG NO. 5.5-01

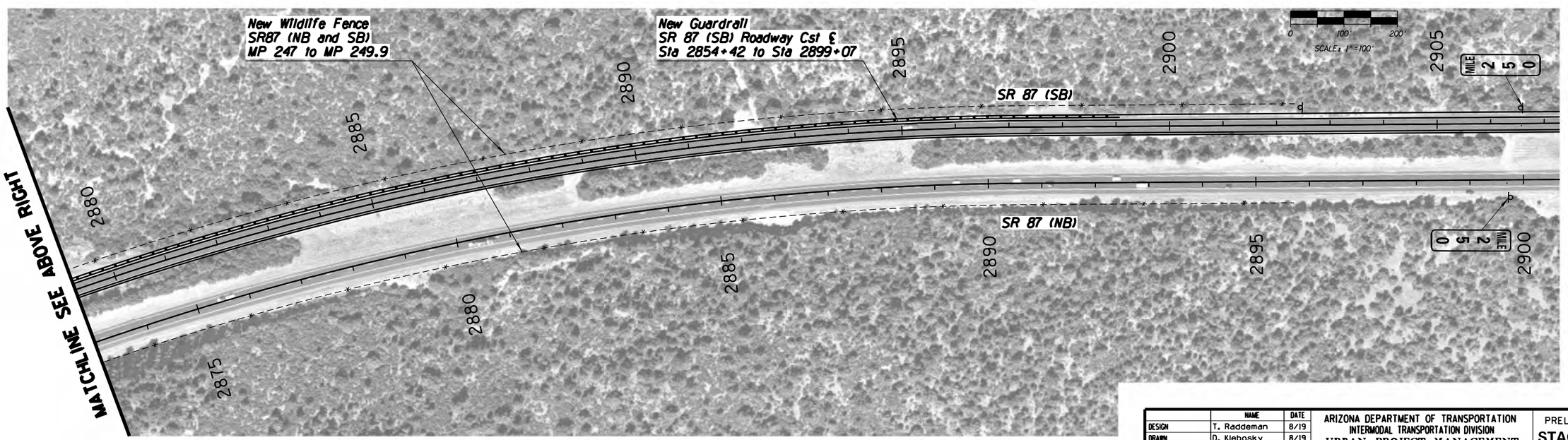
TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

MAINLINE SIGN LOCATIONS STA 2408+00 TO STA 2460+00

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

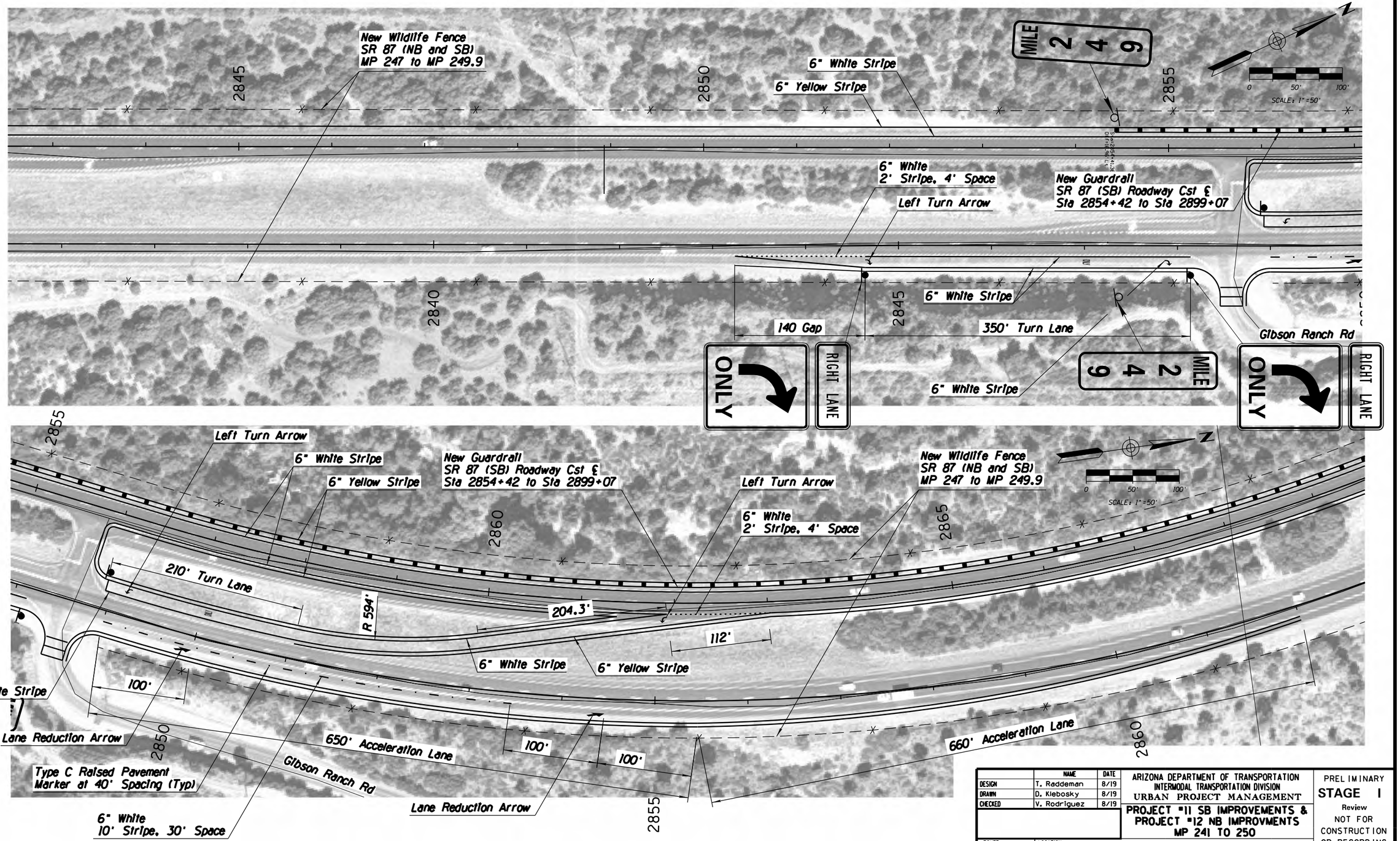
ROUTE	LOCATION	DWG NO. 5.6-01
SR 87	MP 190 TO MP 250	
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

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



	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS &
PROJECT "12 NB IMPROVMENTS
MP 241 TO 250

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

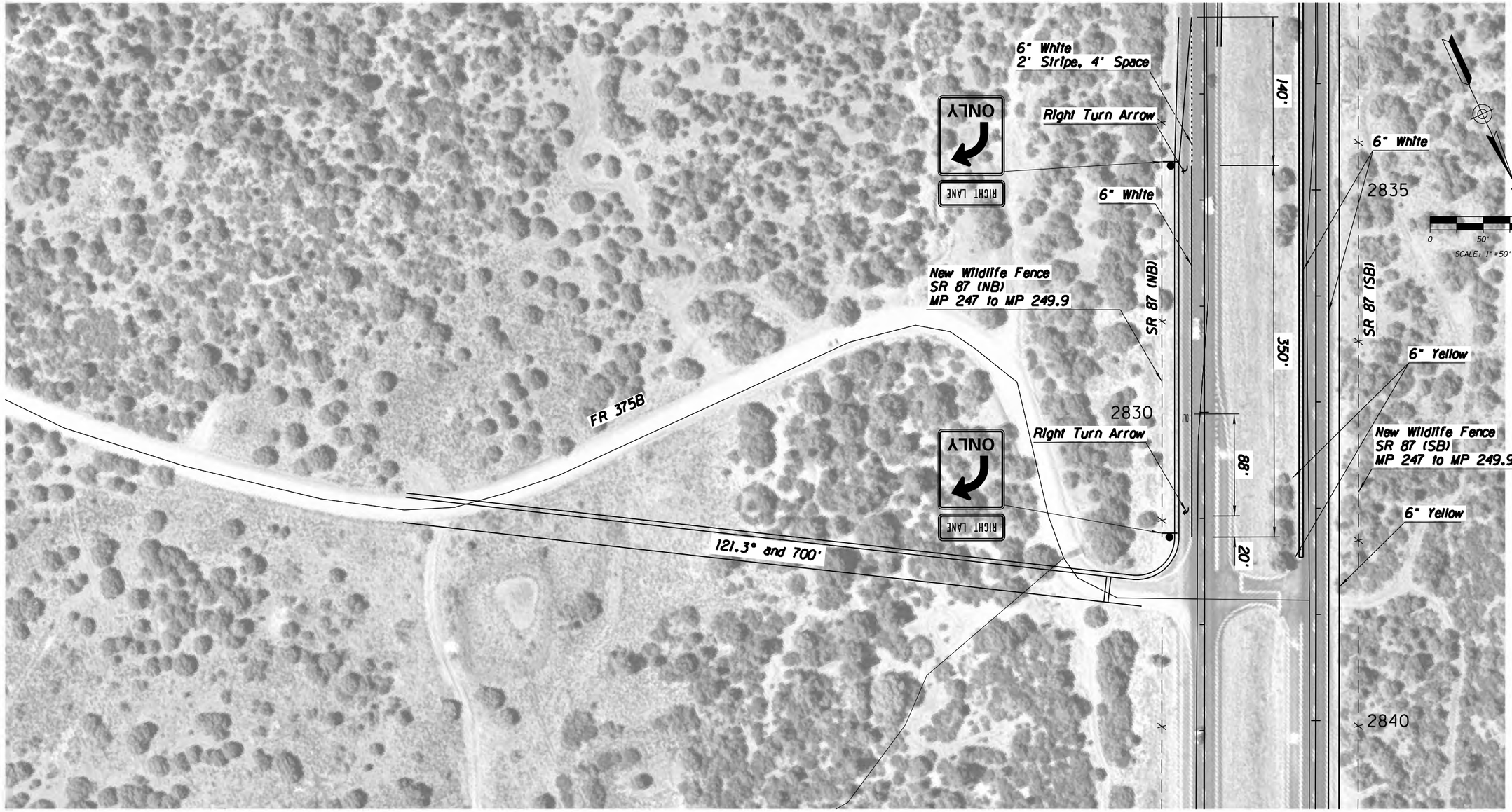
DWG NO. 5.7-01

TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

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



	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS & PROJECT "12 NB IMPROVEMENTS MP 247 TO 249

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	7.3-01
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

$TIME$ $DATE$ $USERNAME$ $FILE$

PACKAGE PROJECT 12 –
NORTHBOUND IMPROVEMENTS
(MP 247-250)

ADOT SR 87 Corridor Development Study

PRELIMINARY SCOPING REPORT

GENERAL PROJECT INFORMATION	
Date: 8/20/2019	**ADOT Project Manager:**
Project Name: Northbound Improvements (MP 247-250)	
City/Town: N/A	**County:** Gila
COG/MPO: CAG	**ADOT District:** Northcentral
Primary Route/Street: SR 87	
Beginning Limit: 247	
End Limit: 250	
Project Length: 3 Miles	
Right of Way Ownership(s) (where proposed project would occur): *(check all that apply)* ☐City/Town ☐County ☒ADOT ☐Private ☐Federal ☐Tribal ☐Other	
Adjacent Land Ownership(s): *(Check all that apply)* ☐City/Town ☒County ☐ADOT ☒Private ☒Federal ☐Tribal ☐Other	

PROJECT NEED
This location has experienced a high number of accidents involving wildlife, there are also sight distance and grade issues at several intersections.

PROJECT PURPOSE			
What is the Primary Purpose of the Project?	☐Preservation	☒Modernization	☐Expansion
Prevent wildlife-involved crashes by adding wildlife fencing, signage, and an overpass, address sight distance issues at intersections through side street realignments and turn lane improvements.			

PROJECT RISKS	
Check any risks identified that may impact the project's scope, schedule, or budget:	
☐Access/Traffic Control/Detour Issues	☐Right-of-Way
☐Constructability/Construction Window Issues	☐Environmental
☐Stakeholder Issues	☐Utilities
☐Structures & Geotech	☐Other:
Risk Description: *(if a box is checked above, briefly explain the risk)*	

Click or tap here to enter text.

POTENTIAL FUNDING SOURCE(S)				
Anticipated Project Design/Construction Funding Type: *(Check all that applied)*	☐STBG	☐TAP	☒HSIP	☒State
	☐Local	☐Private	☐Tribal	☐Other

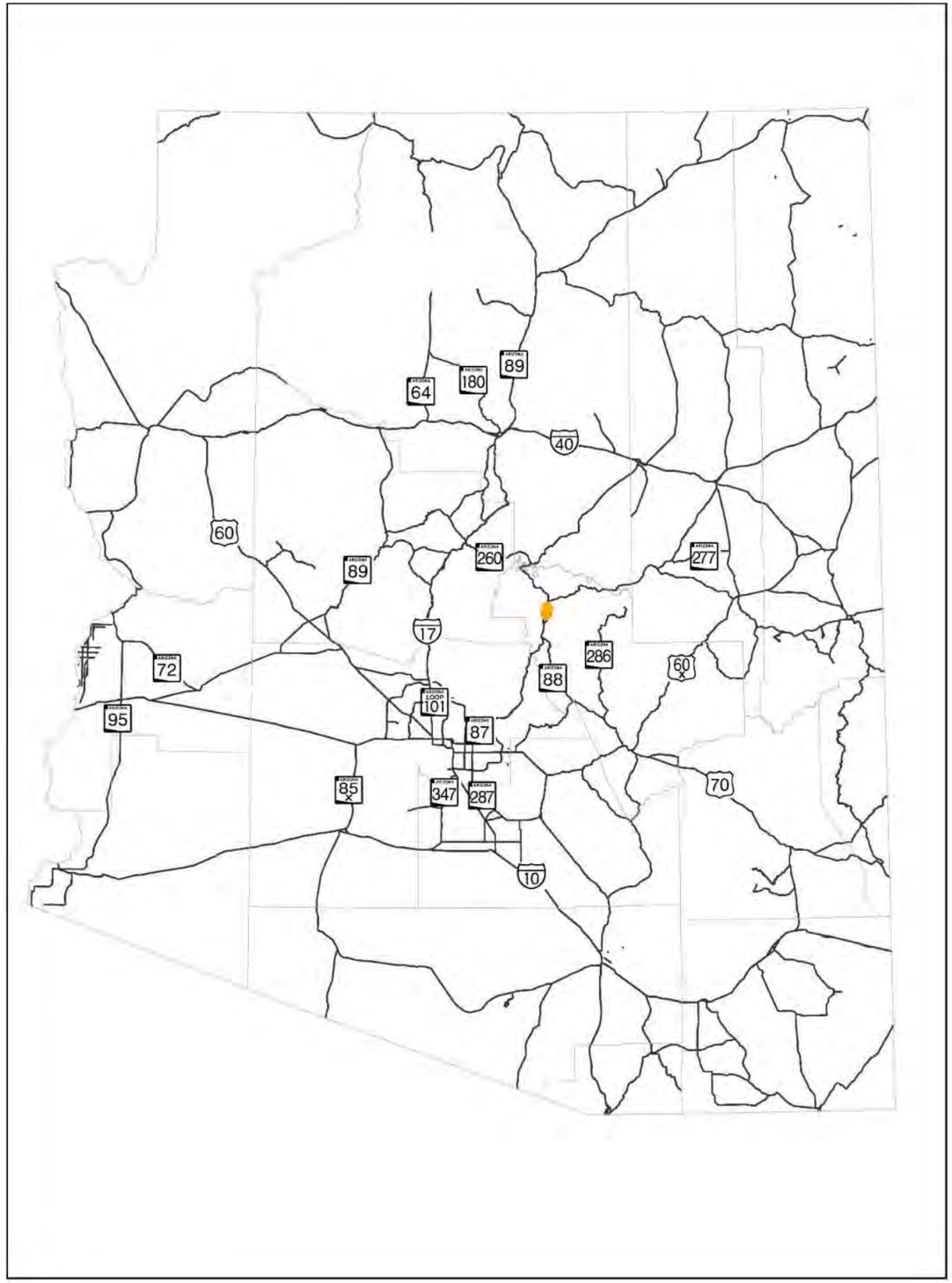
COST ESTIMATE			
Design $578,840.00	Right-of-Way $0.00	Construction $5,209,560.00	Total $5,788,400.00

RECOMMENDED PROJECT DELIVERY
Delivery: ☐Design-Bid-Build ☐Design-Build ☒Other:
Design Program Year: Click or tap here to enter text.
Construction Program Year: Click or tap here to enter text.

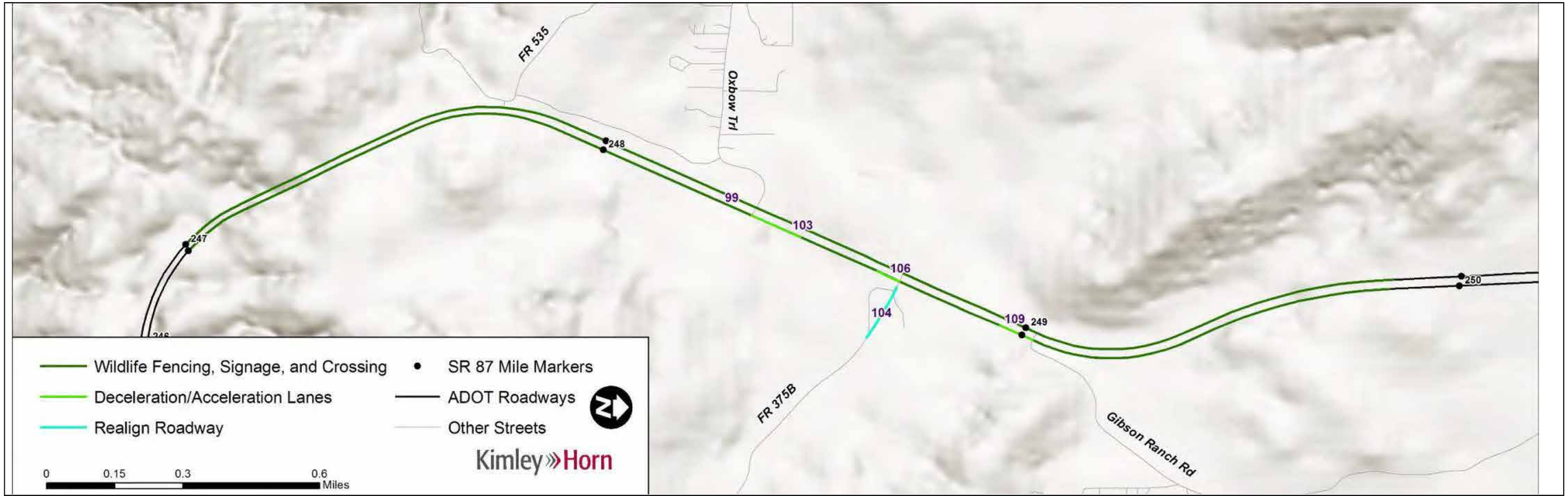
ATTACHMENTS
1. **Project Scope of Work**
2. **State Location Map**
3. **Project Vicinity Map**
4. **Itemized Cost Estimates**
5. **Conceptual Design Plans**

ATTACHMENT 1: SCOPE OF WORK
(Provide a detailed breakdown of the project's scope of work using bullet form)
• Install wildlife Fencing and wildlife warning signage, and add a wildlife crossing overpass (MP 247-249.9)
• Construct northbound inside acceleration lane at Oxbow Trail (MP 248.4)
• Realign FR 375B east of SR 87 (MP 248.6)
• Construct northbound right-turn lane at FR 375B (MP 248.6)
• Construct northbound right-turn lane and outside acceleration lane at Gibson Ranch Road (MP 249)

ATTACHMENT 2: STATE LOCATION MAP



ATTACHMENT 4: PROJECT VICINITY MAP



Project Element	Map No.	Begin MP	End MP	Cost	Element Justification
1. Install wildlife fencing and wildlife warning signage, and add a wildlife crossing overpass	99	247	249.9	$4,166,000	34 crashes in this segment involved wildlife in the crash analysis.
2. NB inside acceleration lane at Oxbow Trail	103	248.4	248.4	$581,800	Provide an acceleration lane to allow vehicles to accelerate and merge into traffic to avoid the sight distance and grade issues in the SR 87 median.
3. Realign FR 375B	104	248.6	248.6	$247,900	Remove sight distance and grade issues at the intersection of SR 87 and FR 375B.
4. NB right-turn lane at FR 375B	106	248.6	248.6	$110,800	Provide turn/deceleration lane where it does not currently exist.
5. NB right-turn lane and outside acceleration lane at Gibson Ranch Road	109	249	249	$681,941	Provide turn/deceleration lane where it does not currently exist.
			Total:	**$5,788,400**	

ATTACHMENT 4: ITEMIZED COST ESTIMATES

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

103. Northbound inside accel lane at Oxbow Trl (MP 248.4)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	320	$20.00	$6,400
2020201	SAW CUTTING	L.FT.	1,440	$2.50	$3,600
2030301	ROADWAY EXCAVATION	CU.YD.	1,280	$10.00	$12,800
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	1,014	$60.00	$60,840
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	768	$160.00	$122,880
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	62	$120.00	$7,440
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$1,440.00	$1,440
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	1,440	$1.50	$2,160
				Roadway Construction Subtotal	**$231,060**
	Unidentified Item Allowance (15%)				$ 34,659
				Subtotal	**$265,719**
	Water Supply/Dust Palliative (3%)				$ 7,972
	Maintenance And Protection Of Traffic (15%)				$ 39,858
	Erosion Control (1%)				$ 2,658
	Contractor Quality Control (2%)				$ 5,315
	Construction Surveying And Layout (2%)				$ 5,315
				Other Item Subtotal	**$326,837**
	Mobilization (12%)				$ 39,221
				Construction Subtotal	**$ 366,058**
	Engineering Design (10%)				$ 36,606
	Construction Engineering and Contingencies (20%)				$ 73,212
	Indirect Cost Allocation (10.02%)				$ 36,680
				Construction Total	**$ 512,556**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

104. Realign FR 375B to take out sharp curvature (MP 248.6)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	23	$35.00	$805
2020201	SAW CUTTING	L.FT.	100	$2.50	$250
2030301	ROADWAY EXCAVATION	CU.YD.	90	$10.00	$900
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	645	$120.00	$77,400
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	109	$160.00	$17,440
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	10	$120.00	$1,200
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$100.00	$100
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	100	$1.50	$150
				Roadway Construction Subtotal	**$111,745**
	Unidentified Item Allowance (15%)				$ 16,762
				Subtotal	**$128,507**
	Water Supply/Dust Palliative (3%)				$ 3,856
	Maintenance And Protection Of Traffic (15%)				$ 19,277
	Erosion Control (1%)				$ 1,286
	Contractor Quality Control (2%)				$ 2,571
	Construction Surveying And Layout (2%)				$ 2,571
				Other Item Subtotal	**$158,068**
	Mobilization (12%)				$ 18,969
				Construction Subtotal	**$ 177,037**
	Engineering Design (10%)				$ 17,704
	Construction Engineering and Contingencies (20%)				$ 35,408
	Indirect Cost Allocation (10.02%)				$ 17,740
				Construction Total	**$ 247,889**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

106. Northbound right-turn lane at FR 375B (MP 248.6)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	23	$35.00	$805
2020201	SAW CUTTING	L.FT.	200	$2.50	$500
2030301	ROADWAY EXCAVATION	CU.YD.	300	$10.00	$3,000
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	97	$120.00	$11,640
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	63	$160.00	$10,080
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	5	$120.00	$600
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$200.00	$200
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	200	$30.00	$6,000
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	1	$2,500.00	$2,500
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	1	$800.00	$800
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	200	$1.50	$300
				Roadway Construction Subtotal	**$49,925**
	Unidentified Item Allowance (15%)				$ 7,489
				Subtotal	**$57,414**
	Water Supply/Dust Palliative (3%)				$ 1,723
	Maintenance And Protection Of Traffic (15%)				$ 8,613
	Erosion Control (1%)				$ 575
	Contractor Quality Control (2%)				$ 1,149
	Construction Surveying And Layout (2%)				$ 1,149
				Other Item Subtotal	**$70,623**
	Mobilization (12%)				$ 8,475
				Construction Subtotal	**$ 79,098**
	Engineering Design (10%)				$ 7,910
	Construction Engineering and Contingencies (20%)				$ 15,820
	Indirect Cost Allocation (10.02%)				$ 7,926
				Construction Total	**$ 110,754**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

109. Northbound right-turn lane at Gibson Ranch Rd (MP 249)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	23	$35.00	$805
2020201	SAW CUTTING	L.FT.	200	$2.50	$500
2030301	ROADWAY EXCAVATION	CU.YD.	300	$10.00	$3,000
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	97	$120.00	$11,640
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	63	$160.00	$10,080
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	5	$120.00	$600
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$200.00	$200
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	200	$1.50	$300
				Roadway Construction Subtotal	**$40,625**
	Unidentified Item Allowance (15%)				$ 6,094
				Subtotal	**$46,719**
	Water Supply/Dust Palliative (3%)				$ 1,402
	Maintenance And Protection Of Traffic (15%)				$ 7,008
	Erosion Control (1%)				$ 468
	Contractor Quality Control (2%)				$ 935
	Construction Surveying And Layout (2%)				$ 935
				Other Item Subtotal	**$57,467**
	Mobilization (12%)				$ 6,897
				Construction Subtotal	**$ 64,364**
	Engineering Design (10%)				$ 6,437
	Construction Engineering and Contingencies (20%)				$ 12,873
	Indirect Cost Allocation (10.02%)				$ 6,450
				Construction Total	**$ 90,124**

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SR87 Corridor Development Study
ITEMIZED COST ESTIMATE

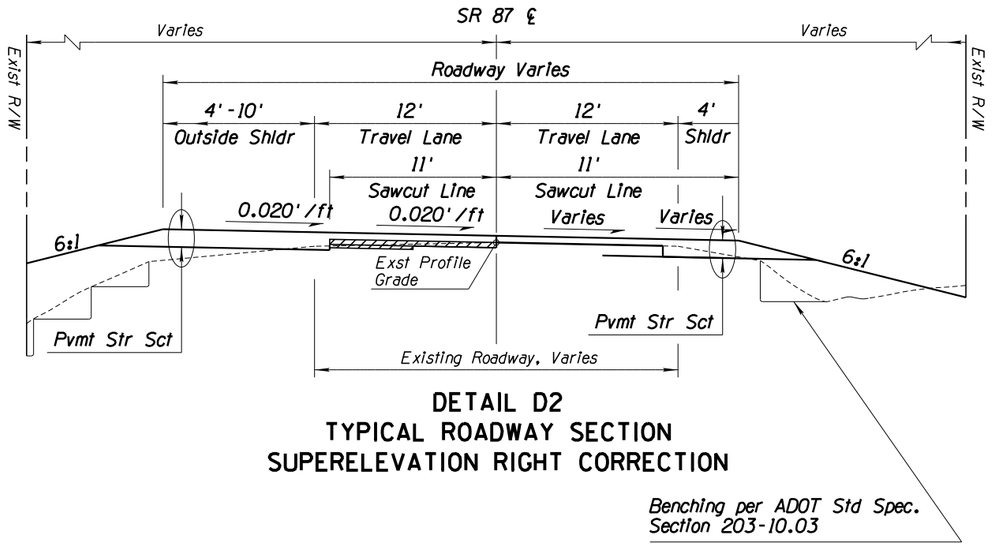
109. NB outside acceleration lane - Gibson Ranch Road (MP 249)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
2010011	CLEARING AND GRUBBING	ACRE	1	$5,000.00	$5,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	292	$20.00	$5,840
2020201	SAW CUTTING	L.FT.	1,310	$2.50	$3,275
2030301	ROADWAY EXCAVATION	CU.YD.	1,170	$10.00	$11,700
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	922	$120.00	$110,640
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	699	$160.00	$111,840
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	56	$120.00	$6,720
6080101	MISCELLANEOUS WORK (SIGNS)	L.SUM	1	$2,000.00	$2,000
7041501	PAVEMENT MARKINGS	L.SUM	1	$1,310.00	$1,310
8050003	SEEDING (CLASS II)	ACRE	1	$3,500.00	$3,500
9240050	MISCELLANEOUS WORK (PUBLIC RELATIONS)	L.SUM	1	$3,000.00	$3,000
9280037	GROUND-IN RUMBLE STRIP (12 INCH)	L.FT.	1,310	$1.50	$1,965
				Roadway Construction Subtotal	**$266,790**
	Unidentified Item Allowance (15%)				$ 40,019
				Subtotal	**$306,809**
	Water Supply/Dust Palliative (3%)				$ 9,205
	Maintenance And Protection Of Traffic (15%)				$ 46,022
	Erosion Control (1%)				$ 3,069
	Contractor Quality Control (2%)				$ 6,137
	Construction Surveying And Layout (2%)				$ 6,137
				Other Item Subtotal	**$377,379**
	Mobilization (12%)				$ 45,286
				Construction Subtotal	**$ 422,665**
	Engineering Design (10%)				$ 42,267
	Construction Engineering and Contingencies (20%)				$ 84,533
	Indirect Cost Allocation (10.02%)				$ 42,352
				Construction Total	**$ 591,817**

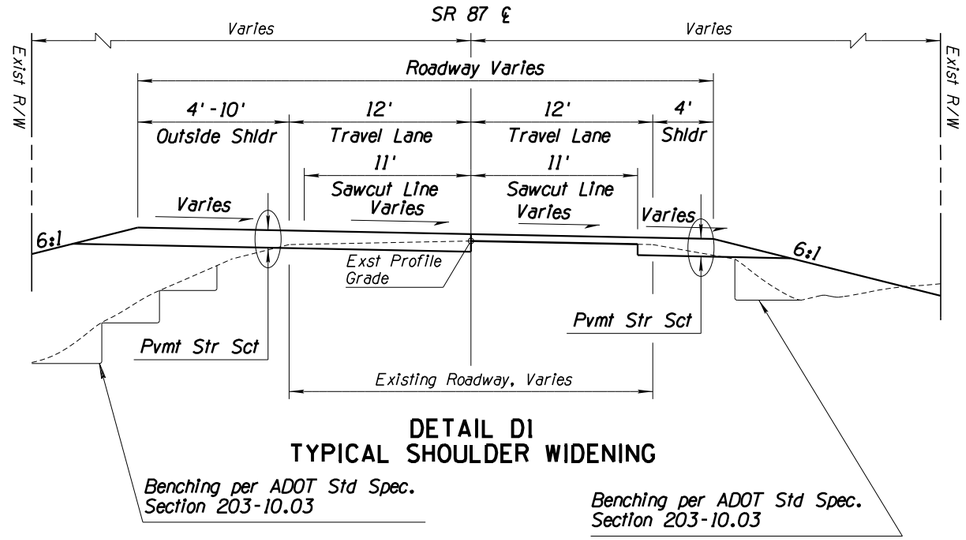
ATTACHMENT 5: PRELIMINARY PLANS

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

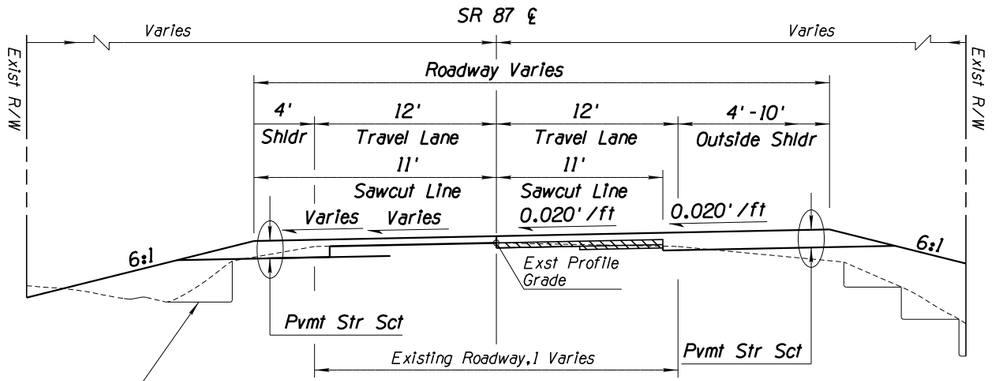
SR 87 MILE POST STATION			
MP NB	STATION	MP SB	STATION
196	101+73	196	101+18
197	155+53	197	154+02
198	207+69	198	207+94
199	261+02	199	259+13
200	314+21	200	311+72
201	367+73	201	364+06
202	419+18	202	417+81
203	471+36	203	470+65
204	526+28	204	523+10
205	577+70	205	575+84
206	630+73	206	628+30
207	682+81	207	680+28
208	736+47	208	734+12
209	788+55	209	786+62
210	842+08	210	839+50
211	894+91	211	890+40
212	942+20	212	939+42
213	998+65	213	995+55
214	1051+86	214	1050+06
215	1105+38	215	1095+77
216	1158+68	216	1147+95
217	1213+92	217	1199+48
218	1268+31	218	1250+20
219	1318+19	219	1304+12
220	1374+67	220	1359+76
221	1427+95	221	1412+99
222	1480+60	222	1465+84
223	1533+97	223	1518+89
224	1584+61	224	1570+72
225	1639+50	225	1625+29
226	1689+86	226	1676+32
227	1740+23	227	1726+14
228	1792+50	228	1778+04
229	1845+24	229	1831+98
230	1898+50	230	1884+70
231	1949+61	231	1933+71
232	1999+33	232	1985+29
233	2047+74	233	2033+06
234	2101+13	234	2085+05
235	2154+59	235	2137+29
236	2207+09	236	2189+44
237	2259+88	237	2240+86
238	2311+66	238	2293+85
239	2364+28	239	2344+91
240	2416+01	240	2397+41
241	2467+79	241	2448+96
242	2518+51	242	2496+68
243	2571+26	243	2549+70
244	2620+38	244	2601+82
245	2677+47	245	2655+01
246	2729+53	246	2703+04
247	2741+30	247	2747+68
248	2794+18	248	2801+15
249	2847+25	249	2854+41
250	2899+69	250	2906+58



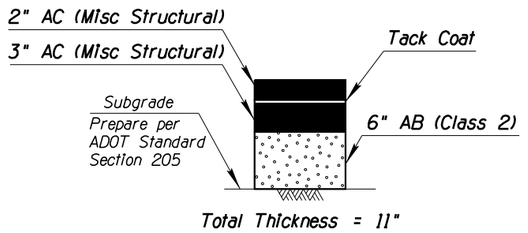
DETAIL D2
TYPICAL ROADWAY SECTION SUPERELEVATION RIGHT CORRECTION



DETAIL D1
TYPICAL SHOULDER WIDENING



DETAIL D3
TYPICAL ROADWAY SECTION SUPERELEVATION LEFT CORRECTION



Total Thickness = 11"

PAVEMENT STRUCTURAL SECTION

	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

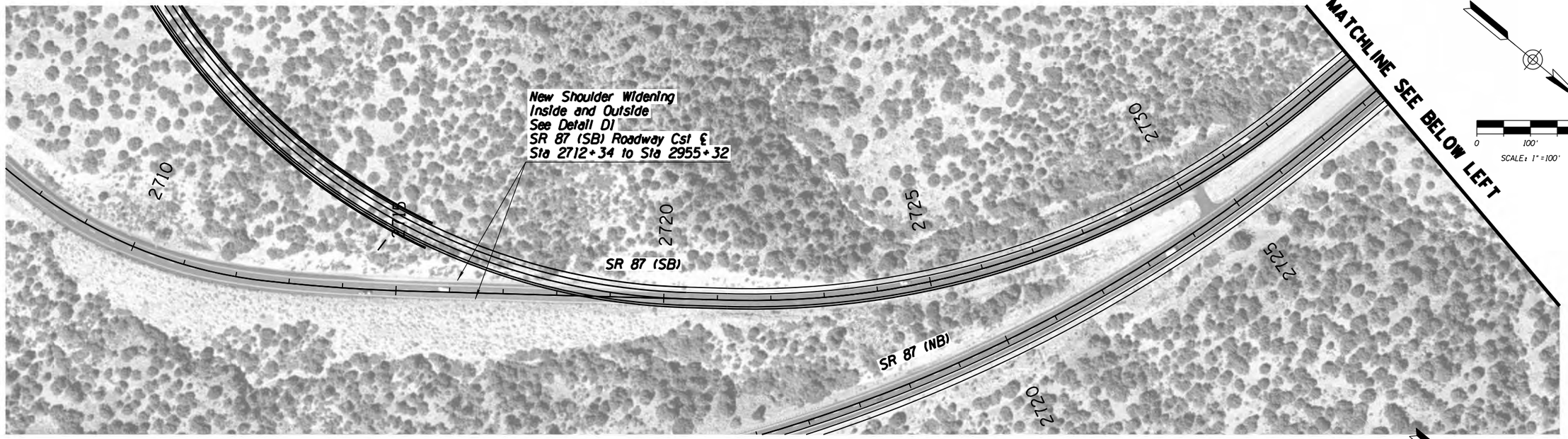
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	___ OF ___

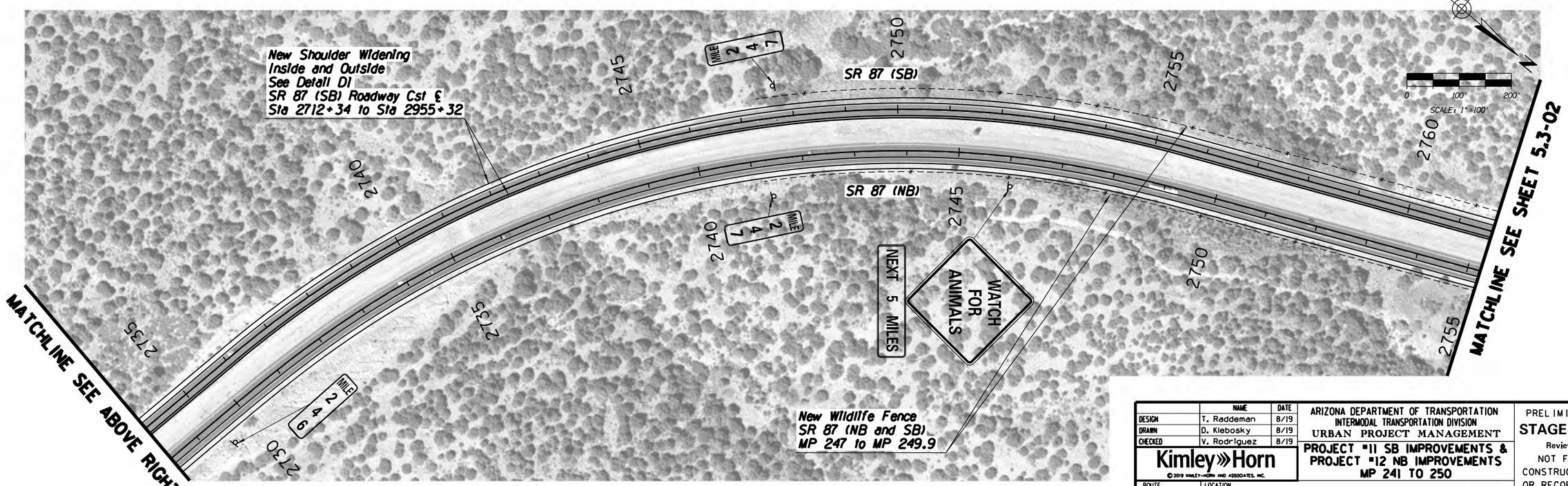
TRACS NO. XXXXX XXX | XXX-X(XXX)X

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

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

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





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

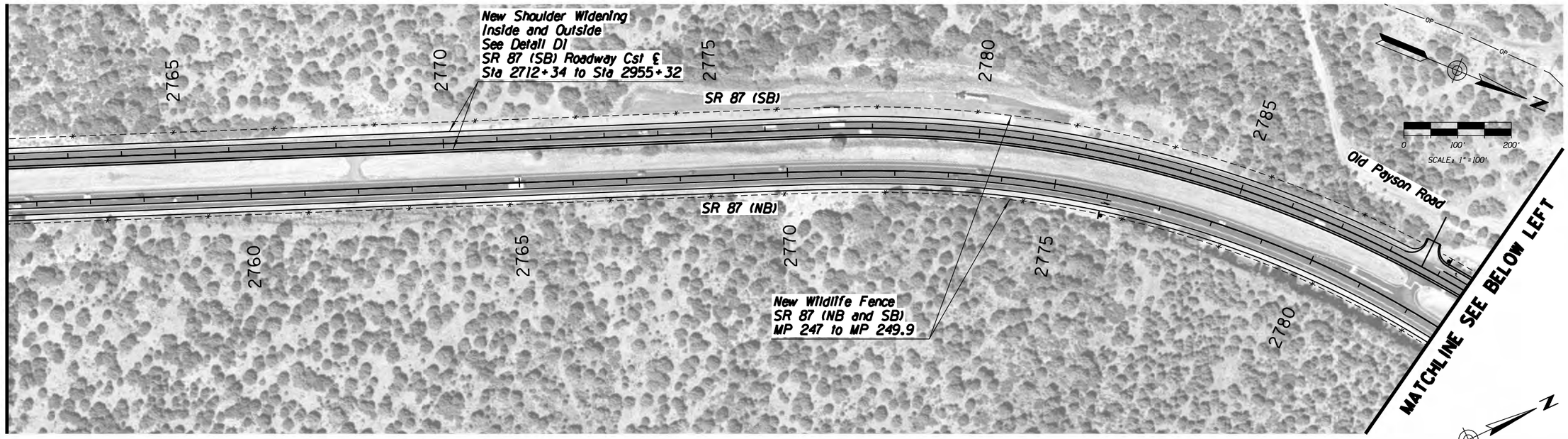
PROJECT "11 SB IMPROVEMENTS &
PROJECT "12 NB IMPROVEMENTS
MP 241 TO 250

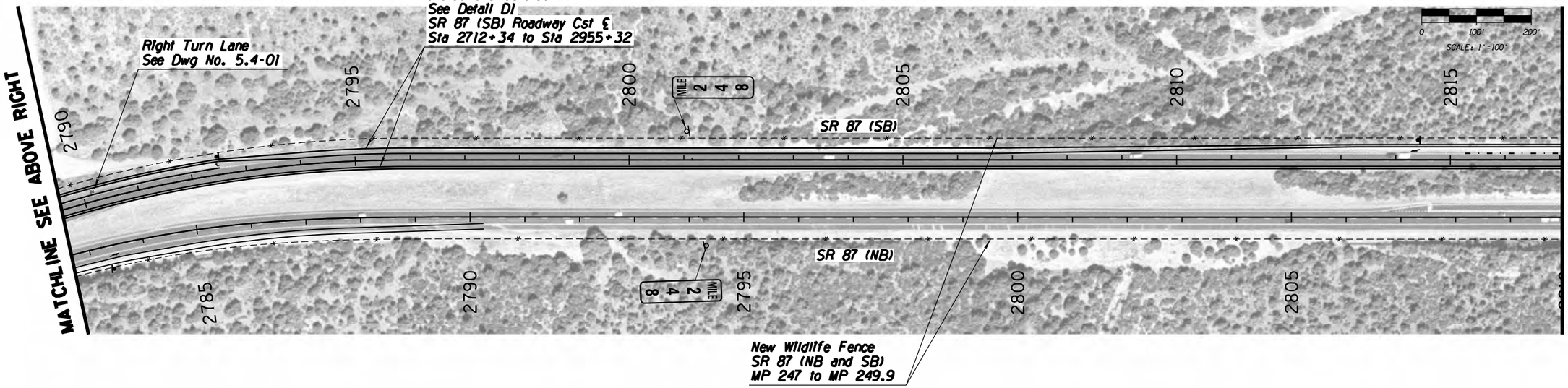
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO. 5.3-01
SR 87	MP 190 TO MP 250	
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS &
PROJECT "12 NB IMPROVEMENTS
MP 241 TO 250

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

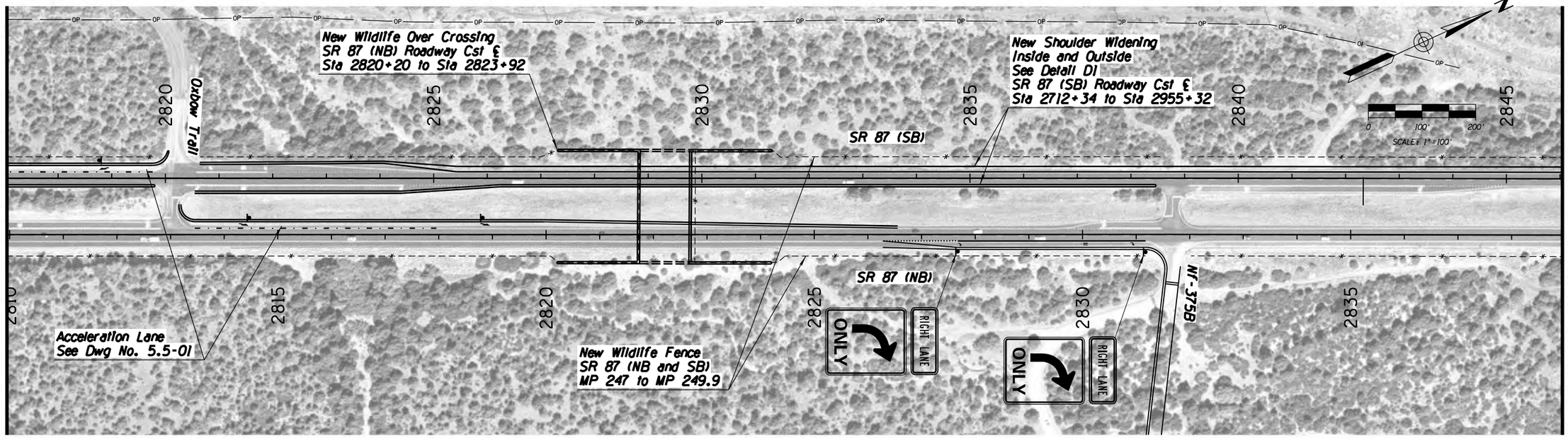
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	5.3-02

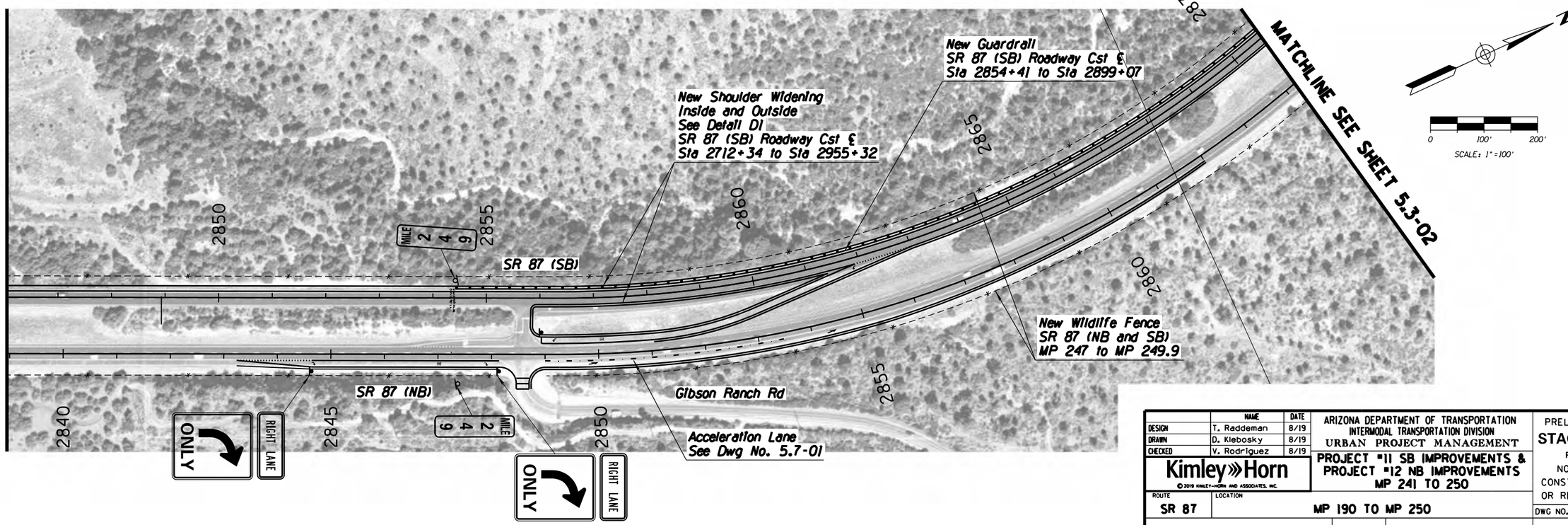
TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS &
PROJECT "12 NB IMPROVEMENTS
MP 241 TO 250

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

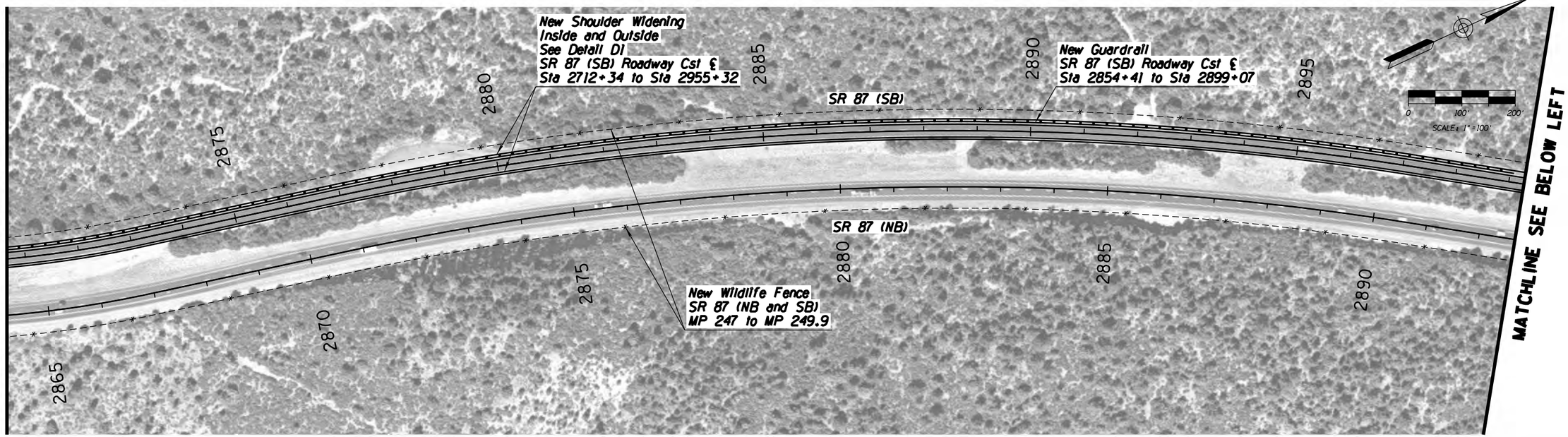
DWG NO. 5.3-03

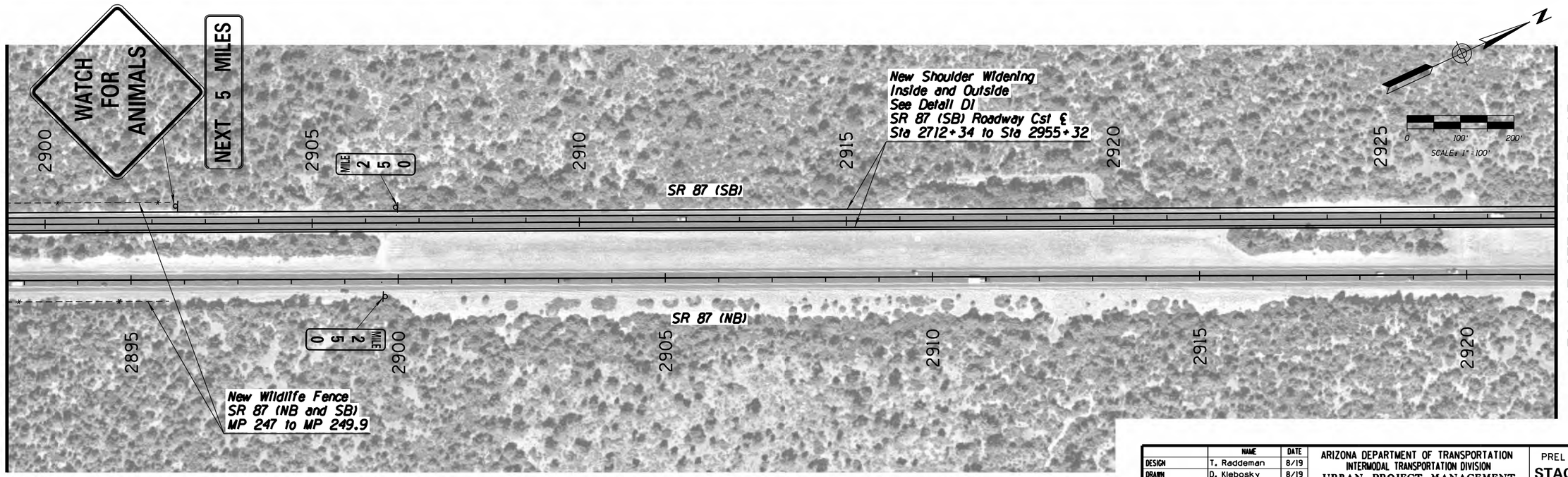
TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS &
PROJECT "12 NB IMPROVEMENTS
MP 241 TO 250

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	5.3-04

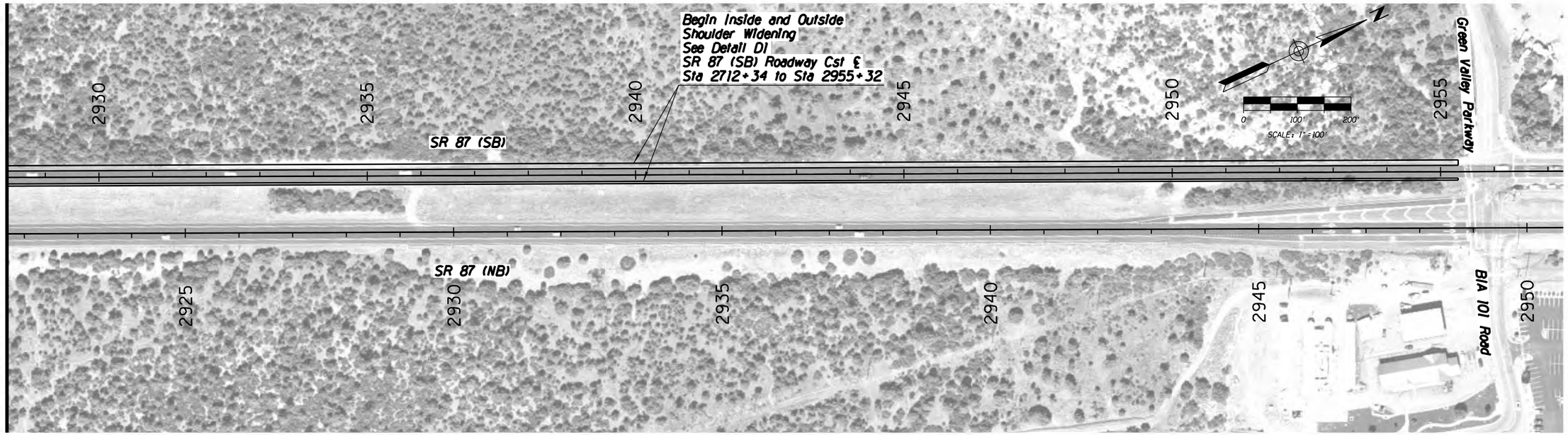
TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

MATCHLINE SEE SHEET 5.3-04



	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS &
PROJECT "12 NB IMPROVEMENTS
MP 241 TO 250

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

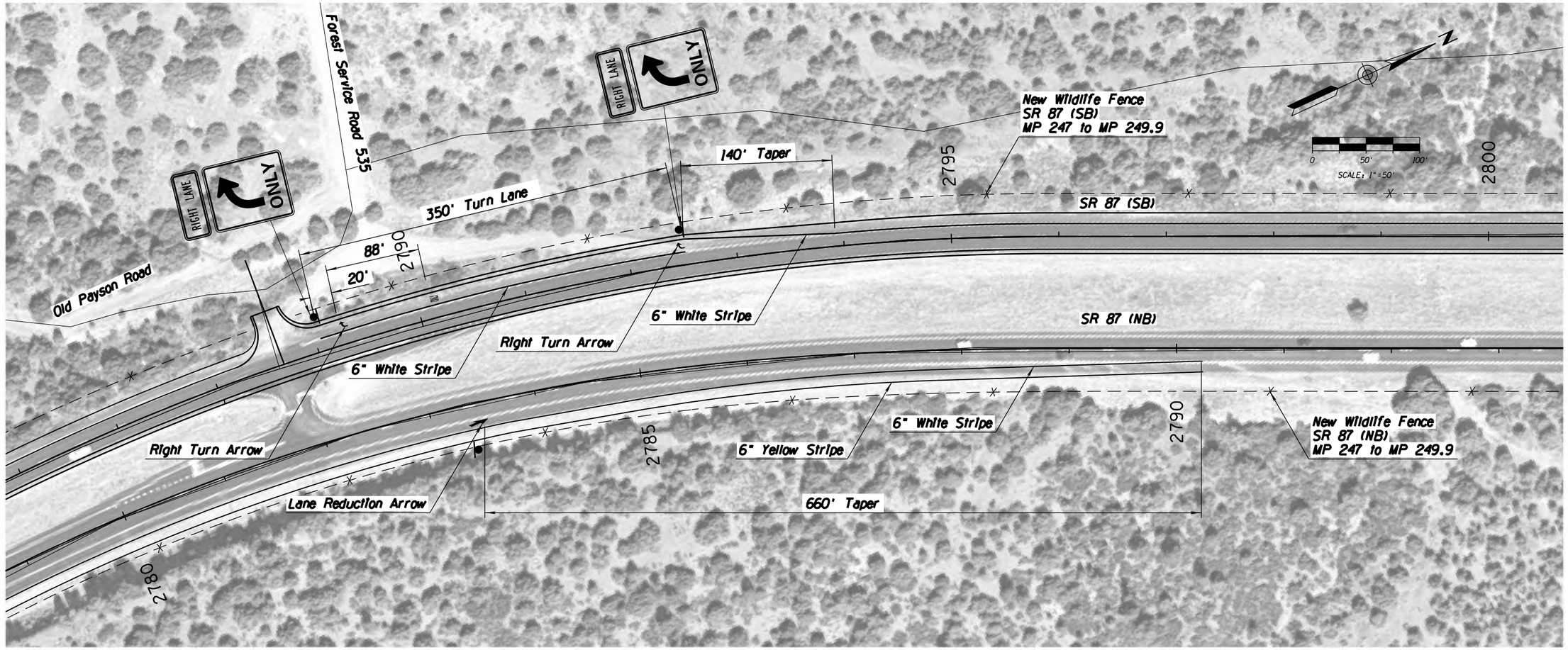
ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	5.3-05

TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT #11 SB IMPROVEMENTS &
PROJECT #12 NB IMPROVEMENTS
MP 241 TO 250

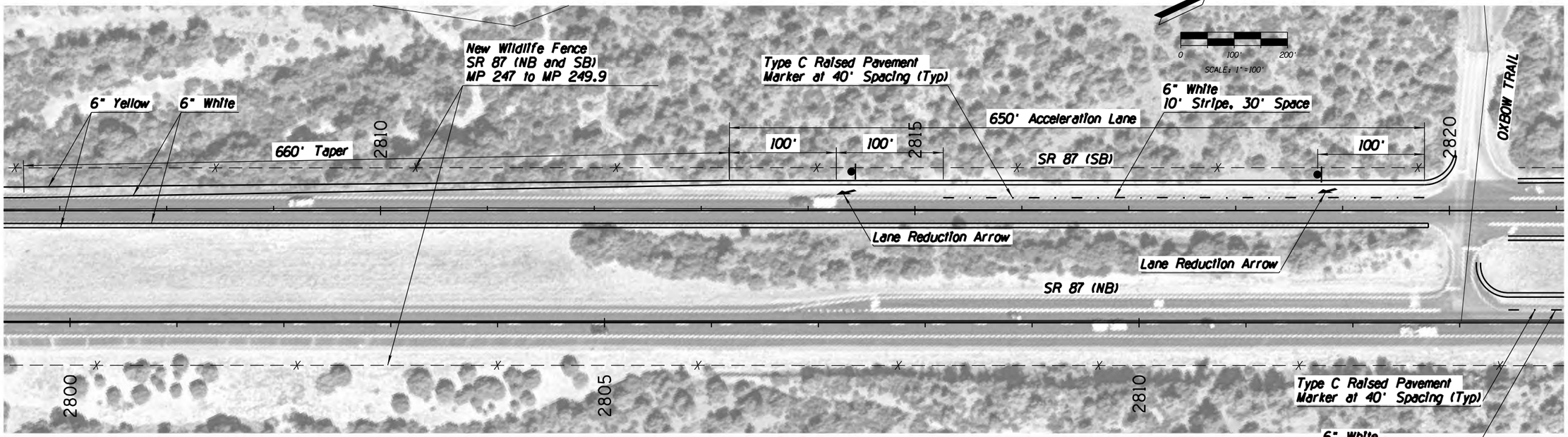
PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	5.4-01
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS &
PROJECT "12 NB IMPROVEMENTS
MP 241 TO 250

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

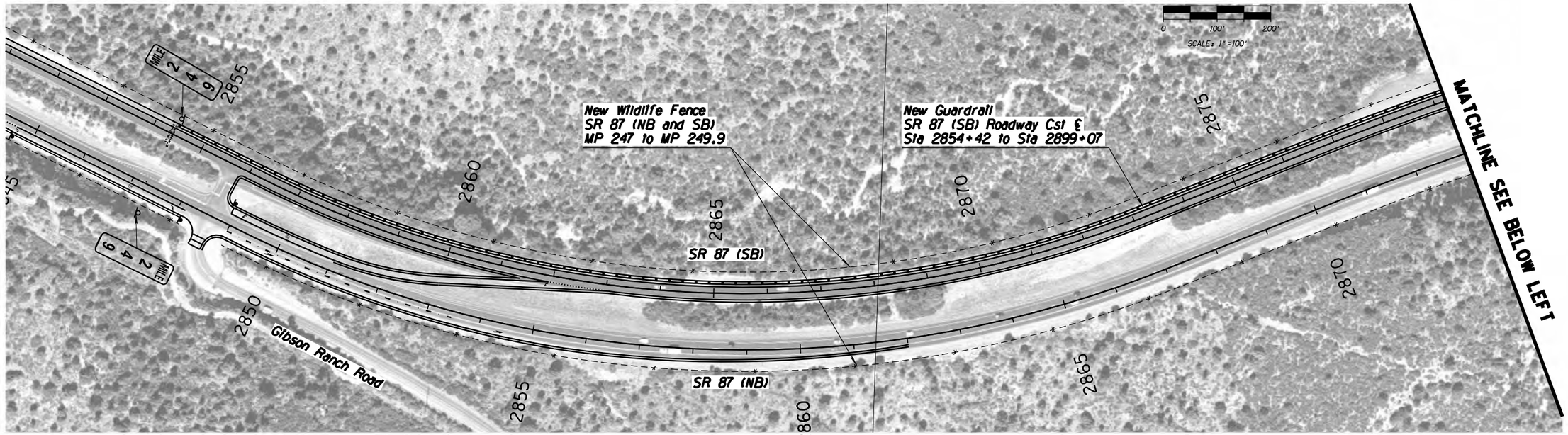
DWG NO. 5.5-01

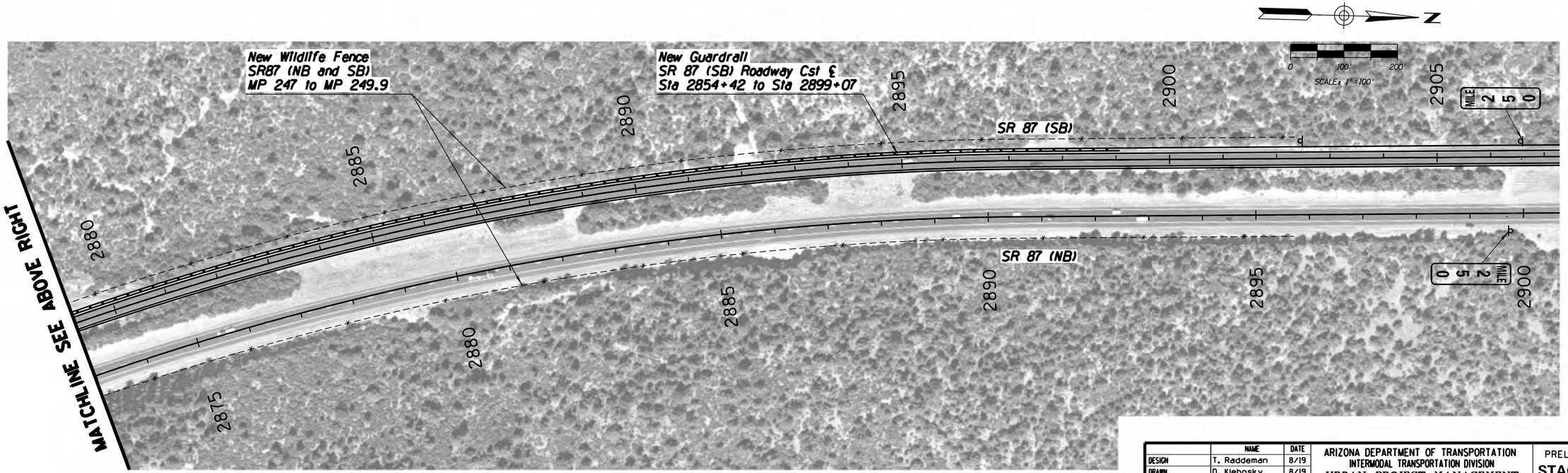
TRACS NO. XXXXX XXX | XXX-X(XXX)X | ___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			





	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

MAINLINE SIGN LOCATIONS
STA 2408+00 TO STA 2460+00

ROUTE	LOCATION
SR 87	MP 190 TO MP 250

TRACS NO. XXXXX XXX | XXX-X(XXX)X

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

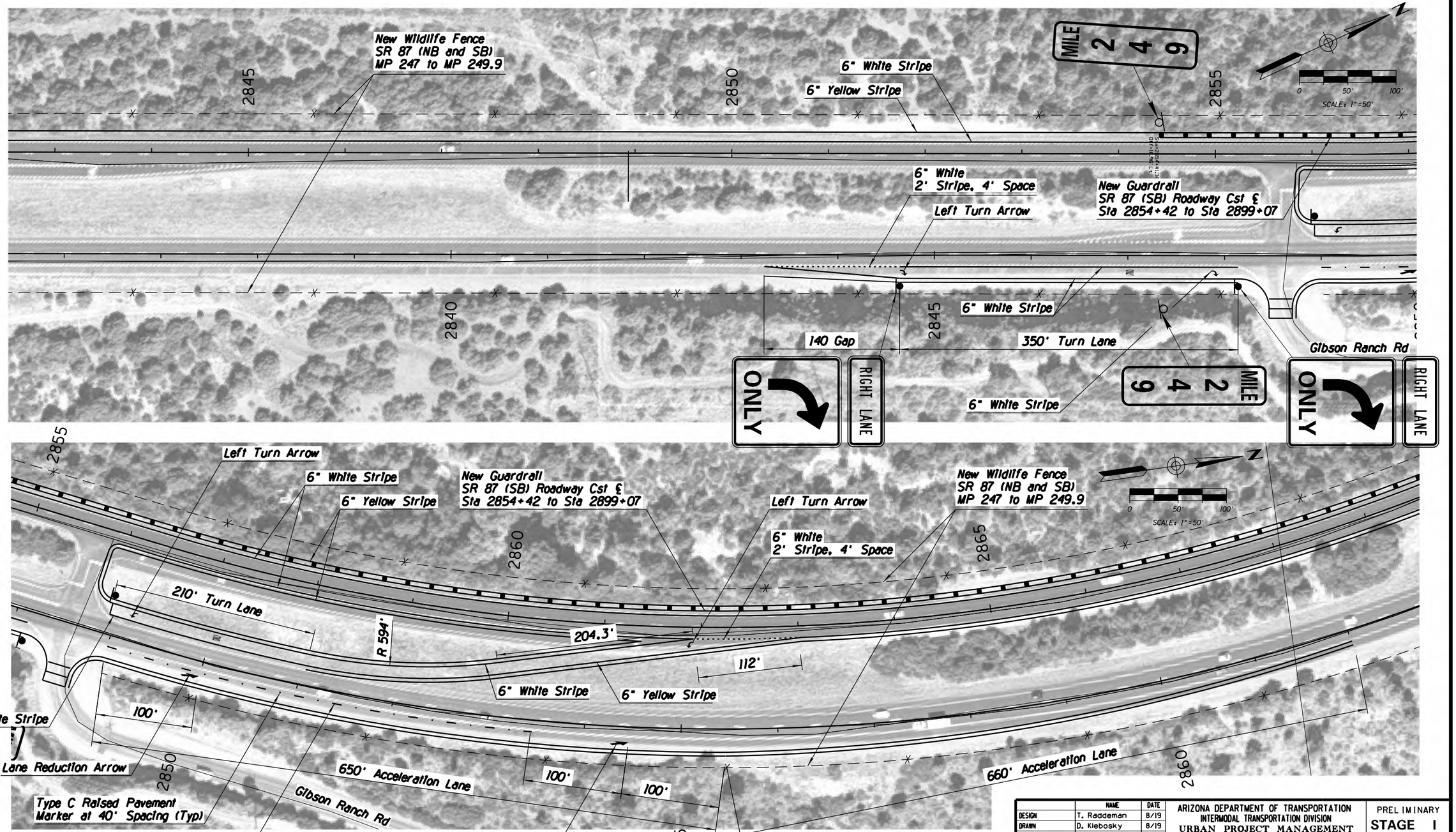
DWG NO. 5.6-01

___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			



	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS &
PROJECT "12 NB IMPROVMENTS
MP 241 TO 250

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

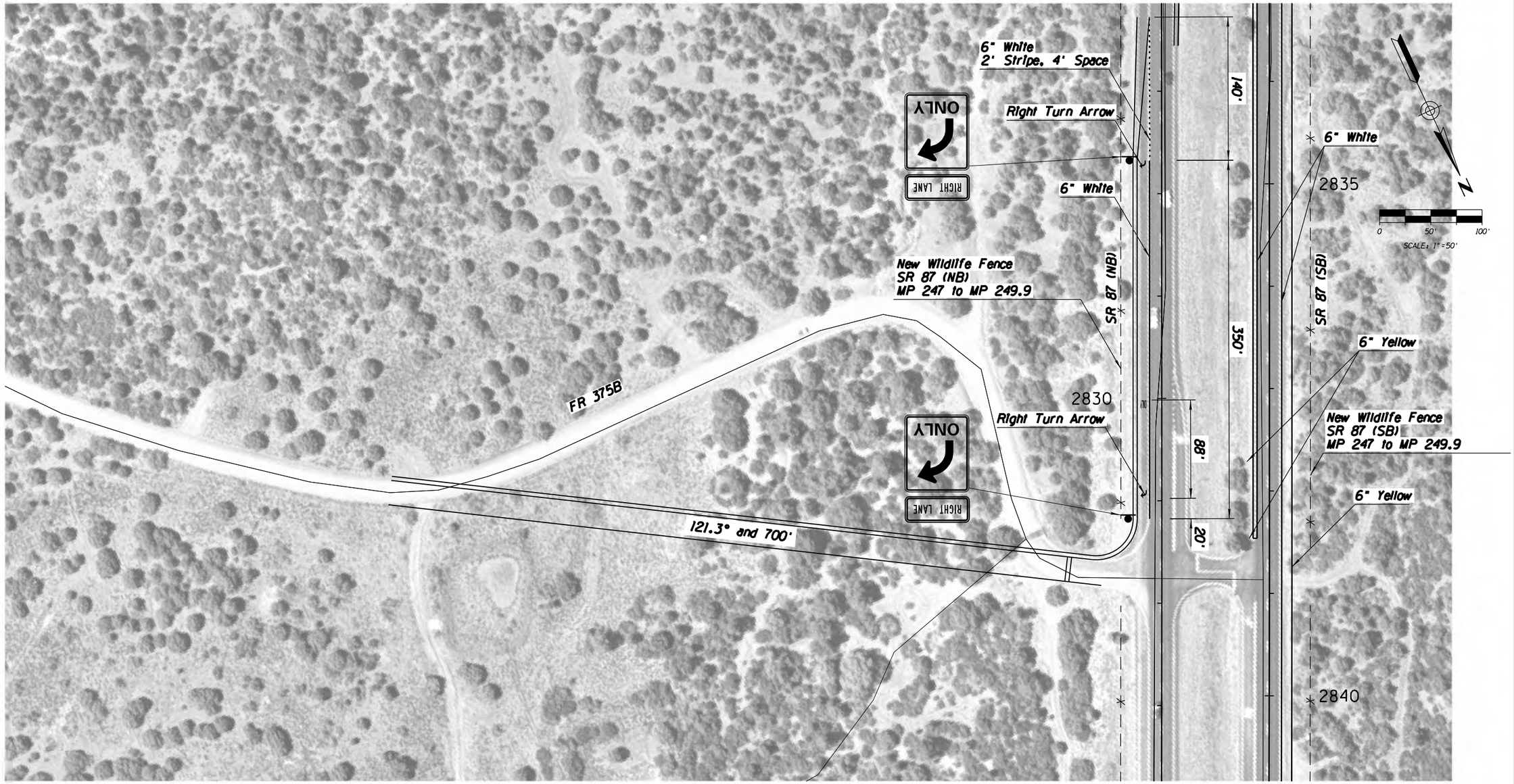
ROUTE	LOCATION	DWG NO. 5.7-01
SR 87	MP 190 TO MP 250	
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

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

$TIME$ $DATE$ $USERNAME$ $FILE$

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
-	ARIZ.	-		59	
		-			

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



	NAME	DATE
DESIGN	T. Raddeman	8/19
DRAWN	D. Klebosky	8/19
CHECKED	V. Rodriguez	8/19

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ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
URBAN PROJECT MANAGEMENT

PROJECT "11 SB IMPROVEMENTS & PROJECT "12 NB IMPROVEMENTS MP 247 TO 249

PRELIMINARY
STAGE I
Review
NOT FOR CONSTRUCTION OR RECORDING

ROUTE	LOCATION	DWG NO.
SR 87	MP 190 TO MP 250	7.3-01
TRACS NO. XXXXX XXX	XXX-X(XXX)X	___ OF ___

$TIME$ $DATE$ $USERNAME$ $FILE$