

Prepared For:



Arizona Department of Transportation
Valley Project Management
205 S. 17th Avenue
Phoenix, Arizona 85007

INTERSTATE 10 (PAPAGO) MEDIAN WIDENING

INITIAL DESIGN CONCEPT REPORT

SR 85 to SR 303L

TRACS No. 010 MA 113 H6877 01L

SR 303L to SR 101L

TRACS No. 010 MA 125 H6879 01L

February 2006



Prepared by:



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NFra Inc.

INITIAL DESIGN CONCEPT REPORT
Interstate 10 (Papago) Median Widening
State Route 85 to State Route 303L
TRACS No. 010 MA 113 H6877 01L
State Route 303L to State Route 101L
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Project Nos. Unknown
Maricopa County, Arizona
Phoenix Construction District

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EXECUTIVE SUMMARY

This Initial Design Concept Report (IDCR) describes the development, evaluation and recommendation to add general purpose (GP) and High Occupancy Vehicle (HOV) lanes, generally within the median of Interstate 10 (I-10) from State Route (SR) 85 to SR 101L, excluding a 2 mile segment from 3300' east of Citrus Road to 1700' east of Sarival Avenue where I-10 will be realigned to the north of the existing alignment. The Project is located in the Arizona Department of Transportation's (ADOT's) Phoenix District within Maricopa County in south-central Arizona.

The Project encompasses two different TRACS numbers. SR 85 to SR 303L from milepost (MP) 112.13 to MP 123.22, TRACS Number 010 MA 113 H6877 01L, and SR 303L to SR 101L from MP 123.22 to MP 133.99, TRACS Number 010 MA 125 H6879 01L.

The west valley is developing at a fast rate, and the resulting traffic demand is causing the I-10 west corridor to become increasingly congested, particularly during the morning and evening peak travel periods. Projections indicate that future traffic volumes will further congest the facility. The addition of a general purpose lane in each direction from SR 85 to SR 101L would provide needed relief and remove the existing "bottle-neck" that occurs at Dysart Road. Further, extending the existing HOV lane network by adding an HOV lane in each direction from SR 303L to SR 101L would provide opportunities for motorists to use these designated lanes for multi-occupant vehicles by encouraging carpooling, and providing for future transit uses during peak travel periods. Because the vehicles using the HOV lanes are multi-occupant, the demand on the general purpose lanes should be reduced and the level-of-service improved.

The purpose of the project is to reduce congestion, improve access to employment centers and enhance regional mobility of goods and services by increasing the capacity of I-10. A Categorical Exclusion (CE) document and related technical reports are being prepared in concert with this Report.

The Arizona Transportation Board has approved funding in ADOT's Five-Year Transportation Facilities Construction Program (2006-2010) to begin design of a portion of this Project. A list of projects for the I-10 corridor within or adjacent to the Study Area is shown in Table ES.1.

The Maricopa Association of Governments (MAG), Regional Public Transportation Authority (RPTA) and ADOT have worked together for many years to develop a comprehensive plan for the Regional Freeway System.

Table ES.1 – Five-Year Transportation Facilities Construction Program (2006-2010)

BMP	Location	Type of Work	Funding Source	Funding Amount (Thousands)	Fiscal Year
133.6	99 th Ave-83 rd Ave.	Construct FMS	CM	\$160	2006
127.7	Bullard Ave. TI	Const TI	STATE	\$10,000	2006
127.7	Bullard Ave. TI	R/W Acquisition	STATE	\$1,000	2006
133.0	SR 101L, Agua Fria - I17	Design	STATE	\$3,740	2008
	SR 303L to Dysart	Design	STATE	\$4,620	2009
133.0	SR 101L, Agua Fria - I17	Construction	MAG/STP	\$68,000	2009

The recommended improvements are consistent with the following regional freeway, HOV and transit system studies:

- *MAG Regional Transportation Plan*, (MAG 2003)
- *MAG Freeway and Expressway Plan Update: Priority Treatment for High Occupancy Vehicles*, (MAG 1990);
- *High Occupancy Vehicle Facilities Policy Guidelines and Plan for the MAG Freeway System*, (MAG 1994)(adopted by MAG Regional Council and State Transportation Board);
- *Park and Ride Lot Location Study*, (MAG 2001)
- *High Occupancy Lanes and Value Lanes Study*, (MAG 2002)
- *High Occupancy Transit Plan*, (MAG 2003)
- *Regional Transit System Study*, (Valley Metro 2003)

The previous system studies provided the foundation for the development of the multi-modal *Regional Transportation Plan (RTP)* that was adopted by the MAG Regional Council in November 2003. Maricopa County voters approved funding for the RTP with the passage of Proposition 400 in November 2004. Design and construction of the improvements to I-10 identified in this report are included in all phases of the RTP; however, Southwest Valley leaders and ADOT are currently exploring ways to advance construction of these improvements. A list of future projects identified in the RTP within the study area is shown in Table ES.2.

The recommended alternative was developed to conform to adopted regional transportation plans, achieve geometric design requirements, improve traffic operations, minimize environmental impacts, minimize right-of-way acquisition and utility impacts and minimize construction costs. Public agencies that have been involved in the alternative development and evaluation process include ADOT, MAG, RPTA, Valley Metro, City of Tolleson, City of Avondale, City of Goodyear, Town of Buckeye, Maricopa County Department of Transportation, Maricopa County Flood Control District, and the Federal Highway Administration.

Table ES.2 – RTP Freeway Program Projects by Phase

Route	Segment	Type of Work	Funding Amount (Thousands)	RTP Phase	RTP Phase Years
I-10	Bullard Ave.	New TI	\$9,200	I	2006-2010
SR 303L	US 60 to I-10	New Freeway	\$545,000	I & II	2006-2015
I-10	SR 303L to Dysart Rd.	Add two GP lanes & one HOV Lane	\$94,000	II	2011-2015
I-10	Dysart Rd. to SR 101L	Add one GP lane & one HOV Lane	\$57,000	II	2011-2015
I-10	Perryville Rd.	New TI	\$9,200	II	2011-2015
SR 303L	I-10 - I-10R/MC85	New Freeway	\$230,000	II & III	2011-2020
SR 101L (Agua Fria)	I-10 – Grand Ave.	Add one HOV Lane	\$53,000	III	2016-2020
SR 101L (Agua Fria)	I-10 – Grand Ave.	Add one GP Lane	\$85,000	IV	2021-2026
I-10	SR 85 to SR 303L	Add one GP lane	\$106,000	IV	2021-2026
I-10	EI Mirage	New TI	\$17,300	IV	2021-2026
I-10/SR 101L	System TI	Add HOV Ramps	\$60,000	IV	2021-2026

Mitigation measures required for the Project are identified in the following chapter. The final CE will include all final mitigation and coordination requirements.

Additional reports prepared as part of this study include the Final AASHTO Controlling Design Criteria Report, Draft Hazardous Materials Report, Draft Air Analysis Technical Report, Draft Noise Analysis Technical Report, Draft Biology Review, and a Draft Environmental Clearance Memorandum.

The report contains the following four appendices: Appendix A – Final AASHTO Controlling Design Criteria Report, Appendix B – Final Roadway Design Criteria Memorandum, Appendix C – Estimated Costs for Interim Widening from SR 303L (Cotton Lane) to 1700’ east of Sarival Avenue, and Appendix D – Project Plans for the recommended alternative.

The recommended alternative is the “Median Widening Alternative.” Typical sections and plan sheets are provided in Appendix D. Table ES.3 summarizes the four proposed construction segments.

The I-10 Realignment segment is being studied in a separate DCR for the I-10/SR 303L system interchange. The recommended alternative includes realigning I-10 to the north of the existing alignment through the interchange area to avoid constructing “throw-away” pavement within the median of the realigned area. The study is being performed by Maricopa County Department of Transportation (McDOT) and is expected to be complete later in 2006. Improvements necessary to provide lane continuity have been taken directly from information in that DCR except for modifications discussed in Chapter 4.

There are three build alternatives currently being considered in the western section of the South Mountain (SR 202L) Freeway study area: W55 (55th Avenue connection), W71 (71st Avenue connection), and W101 (Loop 101 connection). Each of these build alternatives would connect into I-10 (Papago) and require improvements to I-10 in addition to those described in the Regional Transportation Plan (RTP). For the W55 and W71 Alternatives, the widening would occur between SR 101L and I-17, while for the W101 Alternative, the widening would occur between Dysart Road and 59th Avenue. The portion of widening from Dysart Road to SR 101L would occur to the outside of existing I-10. The W101 Alternative would require one additional lane from Dysart Road to El Mirage Road, two additional lanes from El Mirage Road to Avondale Boulevard, three additional lanes from Avondale Boulevard to 107th Avenue, and two additional lanes between 107th Avenue and 99th Avenue. The existing I-10/SR 101L system interchange will either be partially reconstructed or fully reconstructed with the W101 Alternative. Both options include two-lane ramps to and from SR 202L and may include HOV direct connection ramps in one or more of the quadrants of the system interchange. Possible impacts to the improvements in this study will be evaluated further when the preferred western alignment is selected.

New right-of-way (ROW) will be required in the realigned section of I-10 from station (STA) 6547+57 (MP 123.22) to STA 6648+05 (MP 126.02). Preliminary ROW requirements for this area are identified in the *Initial SR 303L DCR*. Temporary construction easements may be required for construction of potential noise barriers at locations to be determined during the initial design phase. R/W requirements for the ultimate I-10 section will be addressed as part of a future I-10 outside widening study by ADOT.

The total estimate of probable project costs is \$287,267,000. Detailed estimates of probable project costs are provided in Chapter 5.

Table ES.3 – Median Widening Alternative Proposed Construction Segments

Segment	Begin MP	End MP	Length (miles)	Description of Work
SR 85 to 3300’ East of Citrus Road	112.13	124.12	11.99	Widen one lane in each direction in median (PCCP Pavement with AC Shoulders) Median cable barrier Four structure widenings Potential Noise Barriers
I-10 Realignment (3300’ East of Citrus Road to 1700’ East of Sarival Avenue)	124.12	126.02	1.90	Three new general purpose lanes plus one HOV lane (PCCP) in each direction shifted north of existing alignment One structure widening, one structure replacement, six new structures, and four partial directional ramps Two box culverts (structures) Concrete median barrier Median Lighting Freeway Management System (FMS) Conduit Potential Noise Barriers Asphaltic Rubber Friction Course
1700’ East of Sarival Avenue to Dysart Road	126.02	129.70	3.68	One new general purpose plus one HOV lane (PCCP) in each direction in median Replace AC Mainline with PCCP (2 travel lanes only) Six structure widenings Concrete median barrier Median Lighting Freeway Management System (FMS) Conduit Potential Noise Barriers Asphaltic Rubber Friction Course
Dysart Road to SR 101L	129.70	133.99	4.29	One new general purpose plus one HOV lane (PCCP) in each direction in median Four structure widenings Concrete median barrier Median Lighting FMS Conduit Potential Noise Barriers Asphaltic Rubber Friction Course

MITIGATION MEASURES

Design Responsibilities:

- The need for temporary construction easements will be determined by the completion of Stage III (60 percent) design.
- To avoid or minimize impacts, the Arizona Department of Transportation project manager will contact the Environmental and Enhancement Group environmental planner during Stage II (30 percent) design to develop appropriate swallow nesting exclusion measures. Implementation of swallow nesting exclusion measures must occur prior to the commencement of construction activities, as well as throughout the nesting season (February 1-September 30).
- Protected native plants within the project limits will be impacted by this project; therefore, the Arizona Department of Transportation Roadside Development Section will notify the Arizona Department of Agriculture at least 60 days prior to the start of construction so that the Arizona Department of Agriculture can determine the disposition of these plants.
- All disturbed soils that will not be landscaped or otherwise permanently stabilized by construction will be seeded using species native to the project vicinity.
- The Town of Buckeye Engineer and floodplain managers for the Cities of Avondale, Goodyear, and Tolleson will be provided an opportunity to review and comment on the design plans.
- The Arizona Department of Transportation Environmental and Enhancement Group environmental planner will be contacted (602.712.6819) during Stage II (30 percent) design to confirm the presence of wetlands and determine the need for a jurisdictional delineation.
- The Arizona Department of Transportation project manager will coordinate with the Environmental and Enhancement Group environmental planner during Stage III (60 percent) design to prepare and submit the appropriate US Army Corps of Engineers Section 404 permit and Arizona Department of Environmental Quality Section 401 Water Quality Certification.
- The terms and conditions of the Section 404 permit and Section 401 Water Quality Certification will be included in the project specifications.
- The Arizona Department of Transportation project manager will contact the Environmental and Enhancement Group environmental planner (602.712.6819) during Stage III (60 percent) design to review and verify noise analysis results and noise abatement considerations.
- The Arizona Department of Transportation project manager will coordinate with the Environmental and Enhancement Group environmental planner during Stage III (60 percent) design to ensure noise barriers are constructed at the earliest practicable date with the most relevant construction project to reduce noise impacts to adjacent residents and traffic delays to motorists.

- To ensure air quality conformity, the Arizona Department of Transportation project manager must coordinate with the Transportation Planning Division to facilitate inclusion of median widening projects in the next Maricopa Association of Governments' transportation improvement program.
- During Stage IV (95 percent) design, the Arizona Department of Transportation project manager will contact the Environmental and Enhancement Group hazardous materials coordinator (602.712.7768) to determine the need for additional site assessment and lead or asbestos testing.
- The Arizona Department of Transportation Roadside Development Section will determine who will prepare the Storm Water Pollution Prevention Plan.
- Avoidance of the historic Litchfield Railroad Spur must be demonstrated through the design process.

District Responsibilities:

- The Arizona Department of Transportation District Construction Office will submit the Arizona Pollutant Discharge Elimination System Notice of Intent and the Notice of Termination to the Arizona Department of Environmental Quality, Town of Buckeye, and the cities of Avondale, Goodyear, and Tolleson.
- The Arizona Department of Transportation Phoenix Construction District will coordinate with the Environmental and Enhancement Group environmental planner during Stage III (60 percent) design to prepare and submit the appropriate US Army Corps of Engineers Section 404 permit and Arizona Department of Environmental Quality Section 401 Water Quality Certification.

Contractor Responsibilities:

- Should the contractor encounter any tortoises during construction of this project, the contractor shall adhere to the attached Arizona Game and Fish Department's *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects*.
- All earthmoving and hauling equipment shall be washed at the contractor's storage facility prior to entering the construction site to prevent the introduction of invasive species seeds.
- All disturbed soils that will not be landscaped or otherwise permanently stabilized by construction shall be seeded using species native to the project vicinity.
- The contractor shall submit the Arizona Pollutant Discharge Elimination System Notice of Intent and the Notice of Termination to the Arizona Department of Environmental Quality, Town of Buckeye, and the cities of Avondale, Goodyear, and Tolleson.
- The contractor shall contact the Arizona Department of Transportation Environmental and Enhancement Group, Historic Preservation Team, at 602.712.7767, at least ten days prior to the preconstruction meeting to arrange for a qualified archaeologist to attend the meeting and make arrangements for flagging avoidance areas at the historic Litchfield Railroad Spur.

1.0 INTRODUCTION

1.1 Foreword

This Initial Design Concept Report (IDCR) describes the development, evaluation and recommendation to add general purpose (GP) and High Occupancy Vehicle (HOV) lanes within the median on Interstate 10 (I-10) from State Route (SR) 85 (MP 112.13) to SR 101L (MP 133.9). The Project is located in the Arizona Department of Transportation's (ADOT's) Phoenix District within Maricopa County in south-central Arizona. Project Location and Project Vicinity maps are displayed in Figures 1.1 and 1.2, respectively.

The purpose of the project is to reduce congestion, improve access to employment centers and enhance regional mobility of goods and services by increasing the capacity of I-10. A Categorical Exclusion (CE) document and related technical reports are being prepared in concert with this Report.

1.2 Need for the Project

The current Regional Transportation Plan (RTP), approved by the Maricopa Association of Governments (MAG) in November 2003, has tracked rapid and sustained growth within Maricopa County over the past four decades, and projects continued growth over the next two decades. Residential and commercial growth on the fringes of the urbanized area, as well as infill development, is contributing to increased urban density of the entire region.

Considering the RTP findings, ADOT prepared an *I-10 West Corridor Profile Study* in May 2005 and further evaluated the transportation needs, characteristics, and patterns for I-10, including the SR 85 to SR 101L project area. Without improvements, the projected traffic volumes for 2030 revealed that I-10, between Miller Road and SR 101L, would function at a level of service (LOS) E between two to four hours per day and a LOS F between two to seven hours per day.

This project is needed because the population growth, economic development, and employment patterns have resulted in increased traffic congestion on the regional freeway system (RFS) and arterial streets. Additionally, 2030 peak hour traffic demands are projected to exceed the existing capacity of I-10 resulting in the need for additional lanes.

MAG, Regional Public Transportation Authority (RPTA) and ADOT have worked together for many years to develop a comprehensive plan for the RFS. The recommended improvements are consistent with the following regional freeway, HOV and transit system studies:

- *MAG Regional Transportation Plan*, (MAG 2003)
- *MAG Freeway and Expressway Plan Update: Priority Treatment for High Occupancy Vehicles*, (MAG 1990);
- *High Occupancy Vehicle Facilities Policy Guidelines and Plan for the MAG Freeway System*, (MAG 1994)(adopted by MAG Regional Council and State Transportation Board);
- *Park and Ride Lot Location Study*, (MAG 2001)
- *High Occupancy Lanes and Value Lanes Study*, (MAG 2002)
- *High Occupancy Transit Plan*, (MAG 2003)
- *Regional Transit System Study*, (Valley Metro 2003)

The previous system studies provided the foundation for the development of the multi-modal RTP that Maricopa County voters approved for funding with the passage of Proposition 400 in November 2004. Design and construction of the improvements to I-10 identified in this report are included in all phases of the RTP; however, Southwest Valley leaders and ADOT are currently exploring ways to advance construction of these improvements.

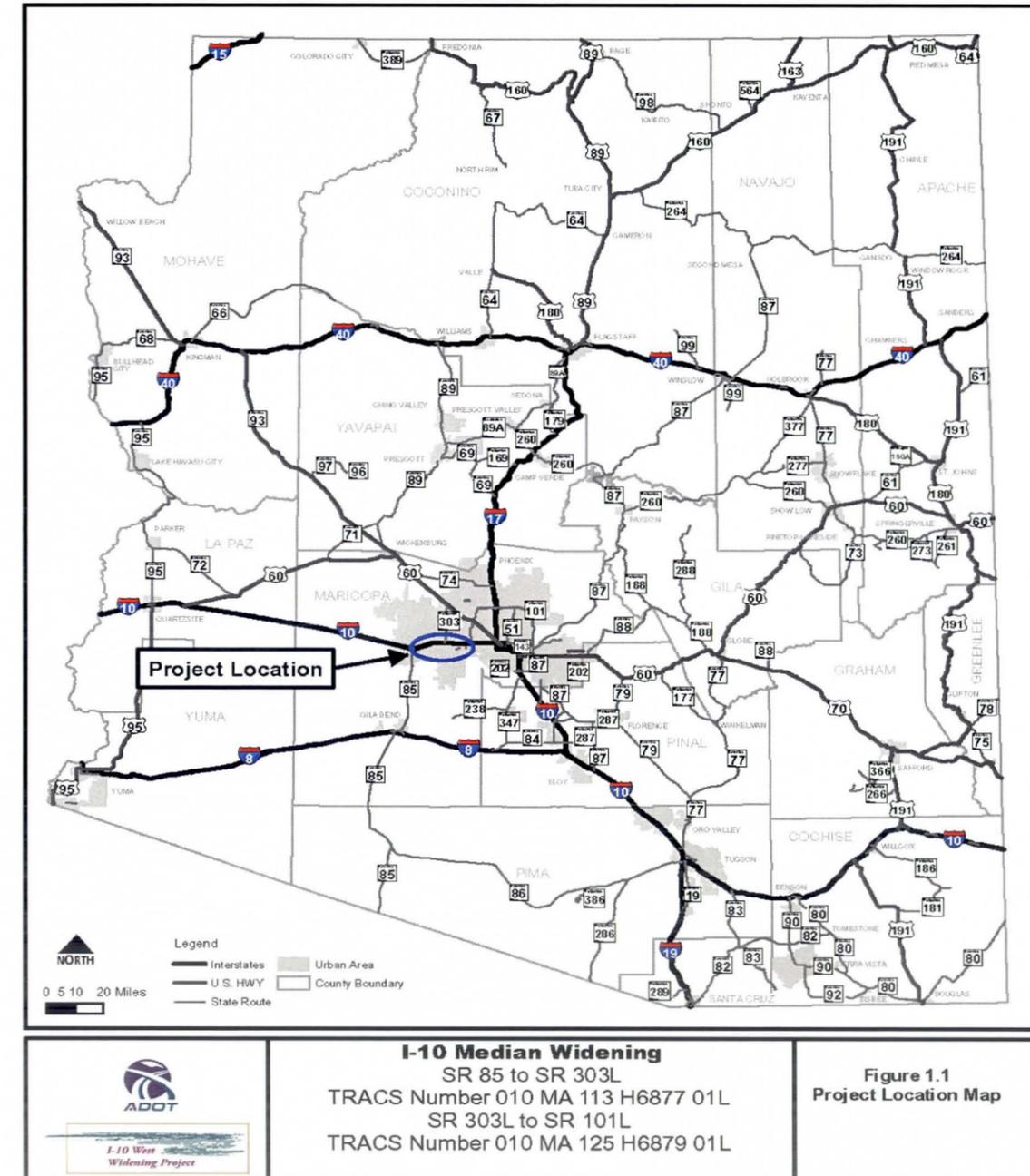
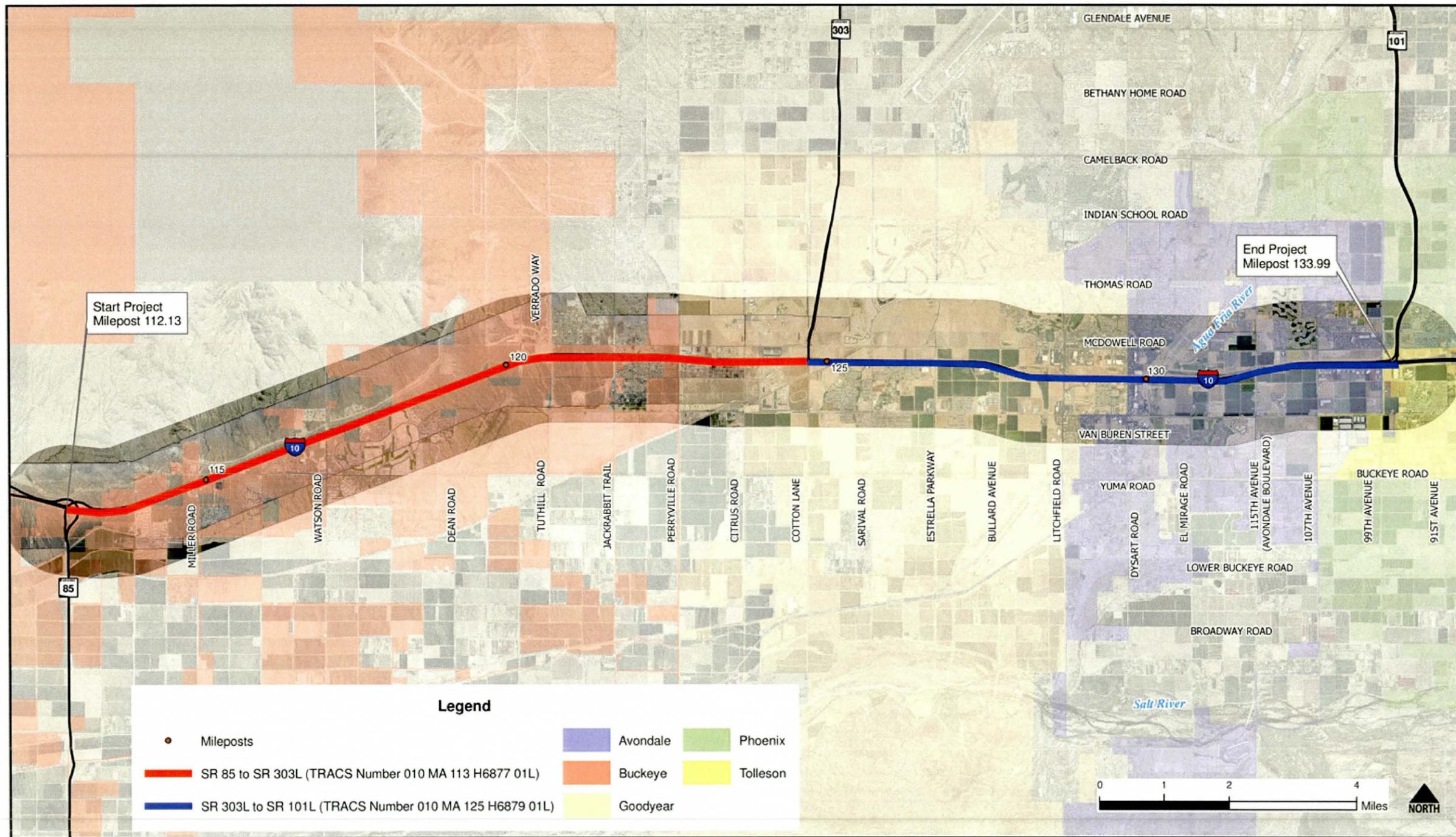


Figure 1.1 – Project Location Map



 <p><i>I-10 West Widening Project</i></p>	<p>I-10 Median Widening</p> <p>SR 85 to SR 303L TRACS Number 010 MA 113 H6877 01L SR 303L to SR 101L TRACS Number 010 MA 125 H6879 01L</p>	<p>Figure 1.2 Vicinity Map</p>
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Figure 1.2 – Vicinity Map

1.3 Description of Project

The proposed project on Interstate 10 is from SR 85 (MP 112.13) to SR 101L (MP 133.99) for a total distance of 21.86 miles. The project consists of the four general construction segments shown below.

- SR 85 to 3300' east of Citrus Road (11.99 miles) – widen one general purpose (GP) lane in median (both directions)
- I-10 Realignment (3300' east of Citrus Road to 1700' east of Sarival Avenue) (1.90 miles) – construct three new general purpose and one new HOV lane (both directions)
- 1700' east of Sarival Avenue to Dysart Road (3.68 miles) – widen one GP and one HOV lane in median (both directions)
- Dysart Road to SR 101L (4.29 miles) – widen one GP and one HOV lane in median (both directions)

The resulting median will be open with cable barrier from SR 85 to 3300' east of Citrus Road and closed with concrete median barrier from 3300' east of Citrus Road to SR 101L, except to allow for HOV ramp connection within the I-10/SR 303L system interchange.

A complete description of the items of work for this project is included in Chapter 3 of the report.

The I-10 Realignment segment is being studied in a separate DCR for the I-10/SR 303L system interchange. The recommended alternative includes realigning I-10 to the north of the existing alignment through the interchange area to avoid constructing "throw-away" pavement within the median of the realigned area. The study is being performed by Maricopa County Department of Transportation (McDOT) and is expected to be complete later in 2006. Improvements necessary to provide lane continuity have been taken directly from information in that DCR except for modifications discussed in Chapter 4.

1.4 Project Objectives

The addition of general purpose lanes from SR 85 to SR 101L would provide needed relief and remove the existing "bottle-neck" that occurs at Dysart Road. Further, extending the existing HOV-lane network by adding HOV lanes from SR 303L to SR 101L would provide opportunities for motorists to use these designated lanes for multi-occupant vehicles by encouraging carpooling, and providing for future transit uses during peak travel periods. Because the vehicles using the HOV lanes are multi-occupant, the demand on the general purpose lanes should be reduced and the level-of-service improved.

1.5 Characteristics of the Corridor

This segment of I-10 (Papago Freeway) provides a vital transportation corridor for west valley commuters as well as for interstate trucking. It is a heavily traveled route that provides connectivity to I-8 via SR 85 as well as connections to SR 303L and SR 101L. Table 1.1 presents a list of previous projects constructed within the study area.

1.5.1 Roadway

Within the study area, I-10 is classified as an Urban Principle Interstate. The posted speed limit varies, with a posted speed limit of 75 mph from SR 85 to east of the Agua Fria River, 65 mph from that point east to 99th Avenue, and 55 mph from 99th Avenue to SR 101L.

Table 1.1 – Previous Projects

Project Number	Begin	End	Type	Year
I-10-2(28)	SR 85	West of Watson Rd.	Grade & Drain	1977
I-10-2(64)	Miller Road		SR 85, Miller Rd TI Structures	1977
I-10-2(31)	West of Watson Rd.	Perryville Road	Grade, Drain & Structures	1977
I-10-2(57)			Well	1980
I-10-2(43)	SR 85	Perryville Road	Paving	1979
	Watson Road		Add TI at Watson Road	
	Verrado Way		Add TI at Verrado Way (Airport Rd alignment)	2002
I-IG-10-2(37)	West of Bullard	West end Agua Fria Bridge	Grade, Drain, Pave; Structures	1980
I-10-2(44)			Agua Fria River Bridges	1980
I-10-2(34)	Perryville Road	East of Reems Road	Grade, Drain & Structures	1985
I-10-2(104)	Reems Road TI Addition		Add TI at Reems Road (Now named Estrella Pkwy)	1987
I-10-2(75)	East end Agua Fria Bridge	West Side 115th Avenue Bridge	Grade & Drain & Channel	1984
I-10-2(70)	East Side 115 th Avenue Bridge	East of 99th Avenue TI Ramps	Grade & Drain & Channel	1986
I-10-2(78)			115 th , 107 th , 99 th Avenue Bridges	1982
I-10-2(84)	East side Dysart TI Bridge	West Side 99th Avenue	Portland Cement Concrete Pavement (PCCP)	1990
I-10-2(40)	95 th Avenue	79 th Avenue	Grade, Drain, Pave; Structures	1986
AC-FIR-10-2(142)	107 th Avenue	99 th Avenue	Add TI at 107th Avenue Frontage roads	1994
RAM-600-0-523	I-10/SR 101L Interchange		Grade, Drain, Pave; Structures, Channel	2001
I-10-2(81)	East Side 99 th Avenue Bridge	West of 67th Avenue Bridge	Grade, Drain, Pave; Structures, Channel	1989
ACI-10-2(117)	27 th Avenue	25 th Avenue	Roadway, 27th Avenue OP; RCBC	1987
AC-IM-STP-010-B(003)B	91 st Avenue	59 th Avenue	Auxiliary Lanes; Restriping	2003
I-10-B(508)	Dysart Road TI		TI Improvements	2005
Rehab and Other Projects				
I-10-2-505	East side Agua Fria River	West side 99th Avenue	Grind EB PCCP	1992
IR-10-2(69)	West side Litchfield TI	West side Dysart Bridge	Landscaping	1986
I-10-2(65)	West of SR 85	Dysart Road	Signing	1979
IM-10-2(148)	West of Perryville Rd.	Dysart Road	Mill and Replace, 3.5"	1993
IR-IM-10-2(150)	SR 85	Perryville Road	R&R, Gore Lighting, Guardrail	1997
I-IR-10-2(119)	99 th Avenue	83 rd Avenue	Landscape	1992

From SR 85 to Dysart Road, the facility is paved with asphalt and consists of two 12-foot general-purpose lanes, a 4' inside shoulder and a 10' outside shoulder in each direction with an 84-foot open median.

From the east side of the Dysart Road Overpass to SR 101L, the roadways are paved with PCCP. With the exception of the I-10/SR 101L system interchange approaches, the section from Dysart to SR 101L consists of three 12-foot general purpose lanes, an 8' inside shoulder and a 10' outside shoulder in each

direction. The median is 84-feet wide from Dysart to west of Avondale Boulevard, where a curve is used to transition the median down to 74 feet. The median is maintained at 74 feet past the 99th Avenue Overpass then becomes variable through the I-10/SR 101L system interchange.

Median cable barrier has been installed from Dysart Road to SR 101L.

This section of I-10 has fully directional system interchanges at SR 85 and the Agua Fria Freeway (SR 101L). As noted above, additional lanes have been added to provide capacity and lane balance approaching and departing the I-10/SR 101L system interchange.

Full diamond service interchanges are provided at Miller Road (OP), Watson Road (OP), Verrado Way (UP), Jackrabbit Trail (OP), Cotton Lane (OP) (which connects to SR 303L north of I-10), Estrella/Pebble Creek Parkways (OP), Litchfield Road (OP), Dysart Road (OP), and Avondale Boulevard (OP). Half diamond interchanges are provided at 107th Avenue (OP) (to the west) and 91st Avenue (UP) (to the east). These half diamonds are connected via collector-distributor (CD) roads through the SR 101L system interchange area. Slip ramps from I-10 to these CD roadways are included to provide full access to 99th Avenue (OP).

In addition to the structures listed above, additional grade separation overpasses are provided at Perryville Road, Citrus Road, RID canal, Sarival Avenue, Bullard Wash, Bullard Avenue and a crossing of the Agua Fria River. Additionally, there is an overpass over the Union Pacific Railroad just west of Litchfield Road. The addition of service interchanges are planned for Perryville Road, Bullard Avenue and El Mirage Road in the future.

I-10 is at-grade to slightly elevated between overpasses and is completely elevated at and approaching the overpasses. There are currently no ADOT noise barriers within this section of I-10.

HOV lanes have been implemented on I-10 through the Phoenix metropolitan area and currently begin at the I-10/SR 101L system interchange.

1.5.2 Transit Facilities and Routes

There are no existing Park-and-Ride (P&R) lots currently in operation within the study area; however, there is one planned to be opened by 2006. It is to be located where a detention basin currently exists at the NW corner of Litchfield Road and I-10. There are also two P&R facilities proposed for the Buckeye area, one west of the Project area near 339th Avenue (West Buckeye P&R, 2024) and one within the Project area to be located in the vicinity of Miller Road (East Buckeye P&R, 2023).

There are currently no express bus routes to downtown Phoenix utilizing this section of I-10. Valley Metro does plan on adding the following routes in conjunction with the RTP Transit Program:

- Avondale Express: This route would serve the planned Litchfield Road P&R.
- SR 303L Express: This route would provide service to and from a proposed SR 303L/Northern P&R to the planned Litchfield Road P&R.
- Papago Freeway Connector: This route would provide service from the proposed West Buckeye P&R to the 79th Avenue P&R, servicing the East Buckeye P&R and the Litchfield Road P&R also.
- Buckeye Express: This route would provide direct service to and from the proposed East Buckeye P&R.

1.5.3 Land Use

The existing I-10 right-of-way is owned by ADOT and reserved for transportation use. Adjacent land is privately or municipally owned. Adjacent land uses for the SR 85 to Citrus Road segment are mostly agricultural but also include residential (single and multi-family), commercial, recreational and industrial. Adjacent land uses for the Citrus Road to SR 101L segments are a mixture of residential (single and multi-family), commercial, recreational, agricultural and industrial.

1.5.4 Utilities

There are 29 different utility owners with facilities crossing or adjacent to I-10 within the study area including: ADOT, Arizona Public Service (APS), Arizona Water Company, AT&T, City of Avondale, AZVT LLC, Broadwing Communications, Town of Buckeye, Bureau of Reclamation, Cox Communications, Cricket Communications, El Paso Natural Gas, City of Goodyear, Green Street Properties, Insight Cable, MCI Telecommunications, City of Phoenix, Qwest, Roadway Electric, Inc., Roosevelt Irrigation District, Salt River Project (SRP) (Electric), SRP (Irrigation), Southwest Gas, Sprint PCS, T-Mobile, City of Tolleson, US Telecom, Velocita Communications, Western Area Power Administration (WAPA).

A utility inventory was developed using information collected from field observations, Blue Stake ticket requests, ADOT permits, as-built plans, and quarter-section maps. This information is summarized in Table 1.2 below.

Table 1.2 – Existing Utilities

Location	Existing Utility Type
Oglesby Road to Miller Road	F.O., Elec., Culverts, Storm Drain, Prop., Coaxial Cable, Water, Sewer, CATV, Traffic Signals, Street Lighting, String Conductor for 2nd Circuit of Buckeye-L, Overhead conduit
Miller Road to Watson Road	F.O., Elec., Culverts, Storm Drain, Prop., CATV, Traffic Signals, Street Lighting, Telephone, Overhead Power (12kv), 24" Pipe (x3), Underground Conduit, Underground 4" Conduit (x2), Underground 1.5" Conduit (x6), Underground Line, Bore Conduit at Miller Rd., Overhead Power (69kv), Remove Old Install New O.H. Conduit, Natural Gas, 8" Sewer line, 6" & 8" Gas Line, 16" Waterline
Watson Road to Verrado Way	F.O., Elec, Culverts, Storm Drain, Prop., Coaxial Cable, Water, Sewer, CATV, Telephone, Overhead Power (69kv), Street Lights
Verrado Way to 195 th Avenue	20" Steel Casing, F.O., Elec., Culverts, Storm Drain, Prop., Waterline, CATV, Telephone, Natural Gas
195 th Avenue to Perryville Road	F.O., Elec., Culverts, Storm Drain, Prop., CATV, Telephone, 20" Steel Casing around 12" Waterline, 12" Steel Casing around 6" Waterline, Natural Gas, (69kv & 12kv) Overhead Power, Power Source for ADOT, Placement of Hybrid Quad, Gas Main, 36" Pipes (x4)
Perryville Road to Citrus Road	F.O., Elec., Culverts, Storm Drain, Prop., CATV, Water, Sewer, Telephone, High Pressure Gas, Overhead Power (69kv), 20" Steel Casing, 6" Waterline, Weight Motion Sensor
Citrus Road to Cotton Lane	F.O., Elec., Culverts, Storm Drain, Prop., CATV, F.O., 6" Waterline, Sewer, Telephone, Natural, High Pressure Gas, Overhead Power (69kv), Power to ADOT Lighting
Cotton Lane to Sarival Avenue	F.O., Relocate Existing F.O., Elec., Culverts, Storm Drain, Prop., Coaxial Cable, CATV, Waterline, Telephone, Overhead Power (69kv), Underground Conduit,

Location	Existing Utility Type
	Abandoned Underground Service, Underground Line, Main Canal Crossing, Natural Gas, 24" Sewer Line
Sarival Avenue to Estrella Parkway	F.O., Elec., Culverts, Storm Drain, Prop., CATV, Traffic Signals, Waterline, Telephone, Natural Gas, Overhead Power (12kv), 24" Sewer Line, Underground Pipe
Estrella Parkway to Bullard Avenue	F.O., Elec., Culverts, Storm Drain, Prop., Unknown Conduit, CATV, Traffic Signals, Water, Sewer, Telephone, Natural Gas, Underground Pipe
Bullard Avenue to Litchfield Road	F.O., Elec., Culverts, Storm Drain, Prop., CATV, Traffic Signals, Irrigation Pipe, Overhead Power (12kv), 16" Irrigation Pipe, 20" Return Line, 8" Water Line, Natural Gas, High Pressure Gas, Cellular Site, Underground Conduit
Litchfield Road to Dysart Road	F.O., Elec., Culverts, Storm Drain, Prop., CATV, Traffic Signals, Telephone, Natural Gas, High Pressure Gas, Street Lights, Underground Conduit, 16" Waterline, Sewer Line, Water, Water Main Through ADOT Property
Dysart Road to Avondale Boulevard	Pull TI Lines Through Existing Conduit, F.O., Telephone, Natural Gas, 6", 8", 12" & 48" Water Line, 6", 8", 24" and 42" Sewer Line, 42", 48" and unknown size Storm Drain, Elec., Culverts, Prop., CATV, 8" & 24" Pipe, Overhead Power (69kv), Underground Conduit, 18" Irrigation Pipe, 8" Sewer Line, Gas Main, Wireless Facility, Boring To Install Fiber Optics, Cellular Site, Utility Agreement-Relocate
Avondale Boulevard to 107 th Avenue	F.O., Elec., Culverts, Storm Drain, Prop., CATV, Natural Gas, Telephone, Electric conduit, Irrigation Pipe, 27" & size unknown Sewer Line, 12", 16", 48" and unknown size Waterline, (12kv) & (69kv) Overhead Power, 48" & 78" Pipe, Waterline, Underground Power (12kv)
107 th Avenue to 99 th Avenue	Overhead Power (12kv) & (69kv), Underground Power (12kv), F.O., Elec., Culverts, Storm Drain, Prop., Coaxial Cable, Traffic Signals, 12" and size unknown Waterline, Sewer, CATV, Telephone, Irrigation Pipe, 66" Pipe, Traffic Signal, Traffic Lighting, 6" Gas Main
99 th Avenue to 91 st Avenue.	Size unknown & 12" Waterline, Sewer, F.O., Elec., Culverts, Storm Drain, Prop., Coaxial Cable, CATV, Telephone, Irrigation Pipe, Natural Gas, 3-barrel box culvert, 2" & 4" Underground Line, Overhead Power (12kv) and (Unknown voltage), 60" Pipe

1.5.5 Drainage

On-Site

The on-site freeway drainage either sheet flows off the edge of the pavement or is collected in median catch basins that either discharge directly into the freeway off-site cross-culverts or is conveyed through lateral pipes that discharge in the freeway offsite drainage systems. The median also conveys the pavement runoff through superelevated curves.

As-built drawings of this section of I-10 were used to determine the existing on-site and off-site drainage system configurations.

No curb and gutter exists on the I-10 mainline from SR 85 to SR 101L except in areas near the bridges where curb and gutter has been placed on the outside shoulder to convey water off of the bridges and into concrete spillways or catch basins with downdrains.

There were limited drainage reports for the original freeway projects available for review. Therefore, it is unknown at this time if the on-site drainage systems were originally designed to accommodate future pavement widening in the median. This will need to be evaluated during the Initial design phase. The drainage reports that were reviewed are listed below.

- *Final Drainage Report for Interstate 10/Watson Road Traffic Interchange* (April 2002)
- *I-10/Verrado Way Traffic Interchange, Final Drainage Report* (March 2002)
- *Outer Loop/I-10 Interchange at 99th Avenue Drainage Reports* (June 1991, April 2002 & June 2005)
- *Initial DCR, SR 303L, I-10 to US 60 Drainage Reports* (May 2004)
- *I-10/Bullard Avenue Drainage Report* (February 1989)
- *Agua Fria River to 115th Avenue Drainage Report* (January 1977)
- *I-10, I-17 to Agua Fria River* (October 1976)
- *I-10 Cemetery Road to Perryville Road* (Unknown)
- *I-10 Reliever Corridor Location Analysis* (August 2005)
- *Durango Area Drainage Master Plan* (September 2005)
- *Loop 303 Corridor/White Tanks Area Drainage Master Plan Update* (February 2005)
- *Hydrology Re-Evaluation for Papago Freeway West, I-17 to Agua Fria River* (January 1978)
- *Outer Loop/I-10 Interchange at 99th Avenue Drainage Reports* (June 1991 & April 2002)

The drainage reports for the SR 85, Miller Road and Jackrabbit Trail traffic interchanges were not available.

The existing on-site drainage systems are shown on the project plans provided in Appendix D.

Off-Site

The general topography north of I-10 from SR 85 to the Agua Fria River slopes towards the southeast, with an exception at the Bullard Wash crossing. South of I-10, the topography has a gradual southern slope towards the Gila River. East of the Agua Fria River to the I-10 SR 101L system interchange, the area slopes southwest towards the Agua Fria River, both north and south of the interstate. The interstate forms a barrier prohibiting flow across the interstate except at overpasses. Existing cross culverts periodically collect the off- and on-site drainage from the north and convey it to the south into existing farm fields, basins, ditches or regional facilities.

The Agua Fria River crosses I-10 between El Mirage Road and Dysart Road. Stormwater flows between Litchfield Road and the river are conveyed to the river by a regional storm drain system. Flows west of the I-10/SR 101L system interchange are conveyed to the river by an existing regional channel, north of I-10.

Bullard Wash crosses I-10 between Bullard Avenue and Estrella Parkway and accepts flows from Bullard Avenue to Estrella Parkway.

1.5.6 Right-of-Way

The existing right-of-way width varies along the corridor through the study area. The total width ranges from 300' to 350' from SR 85 to Dysart Road and from 500' to 600' from Dysart Road to SR 101L.

1.5.7 Structures

There are twenty existing major bridge structures within the study limits. In addition there are minor drainage structures that are discussed in the drainage section of this report. Table 1.3 includes the existing major bridge structures in the study area along with a brief description.

Table 1.3 – Existing Major Bridge Structures

Structure Number	Structure Name	Milepost	Exist. Min. Vertical Clearance	Bridge Type
1725	Oglesby Road Ramp B UP	112.75	17.29'	PT Box
1726	Oglesby Road Ramp C UP	112.92	17.56'	PT Box
1728 EB 1729 WB	Miller Road TI OP	114.84	17.82'	RC CIP Box
1681 EB 1682 WB	Watson Road TI OP	116.97	16.70'	RC CIP Box
2668	Verrado Way TIUP	120.26	17.28'	AASHTO Type VI
1683 EB 1684 WB	Jackrabbit Trail TI OP	121.67	16.72'	RC CIP T-Girder
1705 EB 1706 WB	Perryville Road	122.69	17.21'	PT Box
1707 EB 1708 WB	Citrus Road OP	123.69	16.61'	PT Box
1709 EB 1710 WB	Cotton Lane TI OP	124.69	16.75'	PT Box
1711 EB 1712 WB	RID Canal Bridge	125.19	15'-7"	AASHTO Type III
1713 EB 1714 WB	Sarival Ave TI OP	125.69	14.62'	PT Box
1715 EB 1716 WB	Estrella Parkway	126.67	15.72' EB	PT Box
1849 EB 1850 WB	Airport Wash	127.15	N/A	CIP Slab
1717 EB 1718 WB	Bullard Avenue	127.67	16.17' EB	PT Box
1719 EB 1720 WB	SPRR OP	128.45	22.93' EB	AASHTO Type II
1721 EB 1722 WB	Litchfield Road TI OP	128.68	15.94' EB	PT Box
1723 EB 1724 WB	Dysart Road TI OP	129.67	16.24'	PT Box
1852 EB 1853 WB	Agua Fria River Bridge	130.00	N/A	AASHTO Type IV
1856 EB 1857 WB	115 th Ave. TI OP	131.68	16.55'	PT Box
1858 EB 1859 WB	107 th Ave. OP	132.66	16.81'	PT Box
1860 EB 1861 WB	99 th Ave. TI OP	133.66	16.62'	PT Box

1.5.8 Signing and Lighting

Most of the existing overhead freeway guide signs are supported with cantilever sign supports mounted on the outside of the roadways and are therefore not affected by median widening. Table 1.4 summarizes existing sign bridges that have foundations in the median and will likely need to be modified to accommodate the widening.

Table 1.4 – Existing Sign Bridges

Milepost	Location	Type	Modification
114.06	WB between Miller Road and SR 85	Monotube FMS sign bridge	Clear zone protection
131.61	EB east of the Avondale Blvd. exit	Sign truss bridge	Replace with tubular
132.35	EB at 107 th Ave. exit	Sign truss bridge	Replace with tubular
132.80	EB at 99 th Ave. exit	Monotube sign bridge	Retrofit median side
133.30	EB at SR 101L North exit	Monotube sign bridge	Retrofit median side

The majority of roadway lighting is installed on the outside of the roadway at the ramp gores. However, there are eleven median-mounted high-mast light poles located between SR 101L and 107th Avenue that were installed as part of the I-10/SR 101L system interchange project. The pole foundations were originally designed and constructed to accommodate future median barrier and should not require modification as part of this project.

1.5.9 Geotechnical Conditions

The generalized descriptions of the surface and subsurface geotechnical conditions for I-10 from SR 85 to SR 101L presented herein are based on review of published geologic literature, available geotechnical investigation reports for projects within the corridor, and available as-built plans.

Geologic Setting

The project corridor is situated primarily within the West Salt River Valley (WSRV) sub-basin, which encompasses the western portion of the greater Phoenix metropolitan area, and includes Phoenix, Glendale, Peoria, Avondale, Goodyear, Litchfield Park and Tolleson. The WSRV sub-basin is bounded to the north by the Hedgepeth Hills and the Hieroglyphic Mountains, to the east by the Phoenix Mountains, Papago Buttes and Union Hills, to the south by the South Mountains and the Sierra Estrellas, and to the west by the White Tank Mountains. The sub-basin boundary extends to downstream of the confluence of the Salt and Gila Rivers in the vicinity of Buckeye, north-northwest of the northern end of the Sierra Estrellas and south-southeast of the southern end of the White Tanks. The WSRV sub-basin is characterized by a broad and gently-sloping alluvial plain underlain by up to several thousand feet of alluvium, and bisected by several streams, including the Salt and Gila Rivers, Agua Fria River, New River and Skunk Creek.

The WSRV is underlain by a sequence of basin-fill material deposits, generally divided into three primary units, as follows:

- Lower Alluvial Unit: This unit overlies and is in contact with the bedrock of the valley floor, and consists of well-consolidated sediments. This unit is described by Brown and Pool (1989) as the lower conglomerate unit.

- Middle Alluvial Unit: This unit overlies the Lower Conglomerate Unit, and consists primarily of weakly consolidated sand and gravel at the basin margins, to mudstones and evaporates near the basin center. This unit is described by Brown and Pool (1989) as the middle silt and clay unit.
- Upper Alluvial Unit: This unit consists primarily of sand and gravel, interbedded with lesser amounts of clay and silt, and is generally unconsolidated. This unit is locally coarser-grained along drainages, in particular the major drainages of the Salt and Gila Rivers. This unit forms the primary foundation soils for the project corridor. The upper alluvial unit is estimated to range in thickness from less than 100 feet at the margins of the basin, to more than 500 feet in the vicinity of Luke Air Force Base (ADWR, 1991).

Bedrock of the southern end of the White Tank Mountains is exposed immediately north of the I-10 corridor near the SR 85 TI, and generally consists of Precambrian-age igneous and metamorphic rocks (granite and gneiss).

Groundwater Conditions

Depth to groundwater within the WSRV varies from a few feet within and adjacent to major drainages during flow events, to several hundred feet below the ground surface within the deeper zones of basin-fill alluvium. Depth to groundwater data along the I-10 corridor for 1997-1998 and 2002-2003 (Rascona, 2003) ranges from about 60 feet near the Agua Fria River to about 230 feet near the White Tank Mountains.

Ground Subsidence and Earth Fissures

The WSRV is an area of known groundwater decline and associated ground subsidence and earth fissuring. Gelt (1992) indicates that ground subsidence due to groundwater withdrawal has occurred in the western part of the Salt River Valley and near Luke Air Force Base (AFB), and further that the subsidence encompasses an overall area of 140 square miles. According to Gelt (1992), where the ground subsidence occurs, earth fissures are a possible occurrence, and earth fissures have been identified in the Salt River Valley. The AZGS Earth Fissure Map (AZGS, 2006) indicates areas of identified ground subsidence north of the I-10 corridor in west Phoenix, approximately between SR 303L and SR 101L and centered on Luke AFB, and both north and south of I-10 west of SR 85. Areas of known and documented ground subsidence and earth fissuring exist at Luke AFB and from Northern Avenue/Cotton Lane to Peoria Avenue/Sarival Avenue, and intersect the SR 303L alignment (URS, 2004). However, specific, published information regarding documented earth fissures which may intersect the I-10 alignment between SR 85 and SR 101L was not identified in the course of preparation of this IDCR. It is recommended that the initial design phase for the project include an evaluation of the project alignment for potential fissure zones and features, and associated impacts of earth fissuring.

Soil Shrink/Swell Potential

Published mapping for the greater Phoenix area (NRCS, 2002) of areas of potential shrinking or swelling soils indicates three distinct, relatively narrow zones of soils of high shrink/swell potential which intersect I-10 in the west Valley. These zones are located at about one mile east and west of the Agua Fria River (just west of Avondale Boulevard, and between Dysart and Litchfield Roads), and roughly midway between Bullard Avenue and Estrella Parkway. A more broad, approximately two-mile wide zone of moderate soil shrink/swell potential is identified approximately between Dysart Road and Bullard Avenue. It is recommended that the initial design phase for the project include sufficient geotechnical investigation to permit characterization of the extent and potential impacts on design of these zones of soils.

Subsurface Geotechnical Profile

The native subsurface soils within the project limits are comprised of interbedded, granular to fine-grained, alluvial soils. Within depths of about 50 feet from existing site grades, these soils consist of mixtures of sand, silt and clay with varying amounts of gravel. These soils are typically low to medium in plasticity, slightly moist to moist, and loose to medium dense or soft to moderately firm within the upper 5 to 15 feet (measured from existing grades), to dense to very dense or very firm to hard at depth. Cementation of these soils (with calcium carbonate) tends to increase with increasing depth below grade, and is more prevalent within the predominantly fine-grained (silty and clayey) soils. Native soils at the west end of the project alignment are in general coarser-grained (contain more sand and gravel) than soils at the east end.

Agua Fria River channel soils consist of stratified deposits of poorly graded clean sands and silty to clayey sands, with varying amounts of gravel within the upper 50 to 60 feet from the ground surface. The soils are loose to medium dense near-surface, to dense to very dense at depth. The upper 10 to 15 feet of the river channel soils are clean and uncemented; below a depth of 15 feet, these soils contain varying amounts of clay and are weakly to moderately cemented, to locally strongly cemented. At depths below about 50 feet are clayey sands and sandy clays, which are nonplastic to medium in plasticity, and very firm to hard.

Based on very limited data, existing I-10 fill embankment soils appear to consist primarily of clayey to silty sands and sandy to clayey silts, with varying amounts of gravel.

Existing Roadway Subgrade

Information regarding the existing roadway subgrade characteristics was provided by the ADOT Materials Group, Pavement Management Section. Based on this information, subgrade soils for the I-10 mainline consist primarily of clayey to silty sands, sandy clays and clayey silts. Correlated R-values for these soils vary over a broad range, from 10 to 70. Laboratory tested R-values were within a similar range, of about 10 to 80. Based on these data and discussions with ADOT Pavement Management Section, a preliminary, estimated design R-value for the project pavements is 30.

1.5.10 Existing Pavement Sections

Information regarding the existing pavement structural sections was obtained from as-built plans, and was provided by the ADOT Materials Group, Pavement Management Section. Based on this information, the existing pavement structural sections are summarized in Table 1.5.

Table 1.5 – Existing Pavement Structural Sections

Location/Segment	Direction	Begin MP	End MP	Select Material (Inches)	Lean Concrete Base (Inches)	AC (Base Mix) (Inches)	AB (Class 2) (Inches)	AC (Inches)	ACFC (Inches)	PCCP (INCHES)	Total Thickness (Inches)	Project Number	Year
Original Construction													
I-10/SR 85 TI - West of Rooks Road	EB & WB	112.0	112.5 EB 112.1 WB	9	---	---	---	8.5	0.5	---	18	I-10-2(61) I-10-2(43) (ACFC overlay)	1976 1978
West of Rooks Road - West of Perryville Road	EB & WB	112.5 EB 112.3 WB	122.3	12	---	---	---	6	0.5	---	18.5	I-10-2(43)	1978
West of Perryville Road - West of Bullard Avenue ¹	EB & WB	122.3	127.4	---	---	---	---	10.5	0.5	---	11	I-10-2(34)	1978
West of Bullard Avenue - Litchfield Road	EB & WB	127.4	128.8	---	---	---	---	9.5	0.5	---	10	IG-10-2(37)	1978
Litchfield Road - Dysart Road	EB & WB	128.8	129.7	---	---	---	---	10	0.5	---	10.5	IG-10-2(37)	1978
Dysart Road – West of 99th Avenue	EB & WB	129.7	133.5	---	5	---	---	---	---	10	15	I-10-2(84)	1984
I-10/SR 101L (Agua Fria Freeway) TI	EB & WB	---	---	---	---	4 ²	4	---	---	12	16	RAM-600-0-523	1991
99th Avenue - 67th Avenue	EB & WB	133.7	137.6	---	5	---	---	---	---	10	15	I-10-2(81)	1985
¹ Pavement from west of Perryville Road to Dysart Road was rehabilitated with 3" mill and overlay including 0.5 inch ACFC in 1993. ² AC (Base Mix) utilized for depressed portion of I-10; AB (Class 2) utilized for remaining (at-grade and elevated) portions. General Notes: MP – milepost AC – asphalt concrete AB – aggregate base ACFC – asphaltic concrete friction course PCCP – Portland cement concrete pavement EB – eastbound WB – westbound													

REFERENCES

Arizona Department of Water Resources (ADWR), 1991, Groundwater Site Inventory, Phoenix, Arizona.

Arizona Geologic Survey (AZGS), 2006, Earth Fissure Map, accessed at <<http://www.azgs.state.az.us>>, accessed on 01/11/2006.

Brown, J.G. and Pool, D.R., 1989, Hydrogeology of the Western Part of the Salt River Valley Area, Maricopa County, Arizona, U.S. Geological Survey Water Resources Investigations Report 88-4202, five sheets.

Gelt, J., 1992, Land Subsidence, Earth Fissures Change Arizona's Landscape, in Arroyo, Summer 1992, Vol. 6, No. 2.

Natural Resources Conservation Service (NRCS), 2002, Soil Shrink/Swell Potential, Greater Phoenix Area, downloaded from <<http://www.az.usda.gov>>, map dated 01/11/2002.

Rascona, S.J., 2003, Maps Showing Groundwater Conditions in the Phoenix Active Management Area, Maricopa, Pinal and Yavapai Counties, Hydrologic Map Series Report No. 35, Arizona Department of Water Resources, Phoenix, Arizona.

URS Corporation, 2004, SR 303L, I-10 to US 60, Initial Design Concept Report, WO #69016, prepared for Maricopa County Department of Transportation, May 26.

2.0 TRAFFIC AND CRASH DATA

2.1 Traffic Analysis

2.1.1 Existing Traffic Volumes

The majority of the existing I-10 roadway between SR 85 and SR 101L is two lanes in each direction, with only the section from Dysart Road to SR 101L being three lanes in each direction. There are nine full access and one half access service interchanges between the system interchanges for SR 101L and SR 85. The traffic volumes found in the "2003 Average Weekday Traffic Volume Map" published by Maricopa Association of Governments (MAG) are shown for I-10 in Figure 2.1. Traffic volumes range from 46,000 vehicles per day (vpd) between SR 85 and Miller Road to 115,000 vpd between Avondale Boulevard and 107th Avenue.

2.1.2 Forecast Traffic Volumes

The forecast traffic volumes are based on the 2030 travel demand model developed by MAG to evaluate the metropolitan transportation system. The 2030 model includes all of the improvements from the Regional Transportation Plan (RTP) including the widening of I-10 from SR 85 to SR 101L. Improvements to the existing conditions between SR 85 and SR 101L include:

- Widening of I-10 to three lanes in each direction from SR 85 to SR 303L (Cotton Lane), to four lanes plus a high-occupancy vehicle lane (HOV) in each direction from SR 303L (Cotton Lane) to 107th Avenue, and to five lanes plus an HOV lane in each direction from 107th Avenue to SR 101L
- Constructing new full access service interchanges at Perryville Road, Bullard Avenue and El Mirage Road
- Constructing a new system interchange for SR 303L near Cotton Lane including half access service interchanges at Citrus Road and Sarival Avenue

The 2030 forecast traffic volumes are shown in Figure 2.1. The 2030 traffic volumes range from 135,000 vpd between SR 85 and Miller Road to 266,000 vpd between Avondale Boulevard and 107th Avenue. Within the planning horizon, the traffic along I-10 from SR 85 to SR 101L is forecasted to increase between 230% and 330%.

To analyze the operational performance of the interstate, the level of service (LOS) was calculated (within the MAG model) for each segment illustrated in Figure 2.1. The results of the analysis for morning and afternoon peak hour are shown in Table 2.1. In cases where the interstate experiences LOS E and F, the duration in hours is also presented. The table assumes the peak direction in the morning is eastbound from SR 85 to SR 101L and in the afternoon westbound from SR 101L to SR 85. The majority of the interstate functions at LOS E and F during the AM and PM peak periods. The *Interstate 10 West Corridor Profile Study* (2005) conducted by ADOT recommended an additional general purpose lane (above the RTP provisions) in each direction between SR 85 and SR 101L in order to improve the LOS to D. The additional lanes recommended by the study will be included in a future outside widening study to be conducted by ADOT.

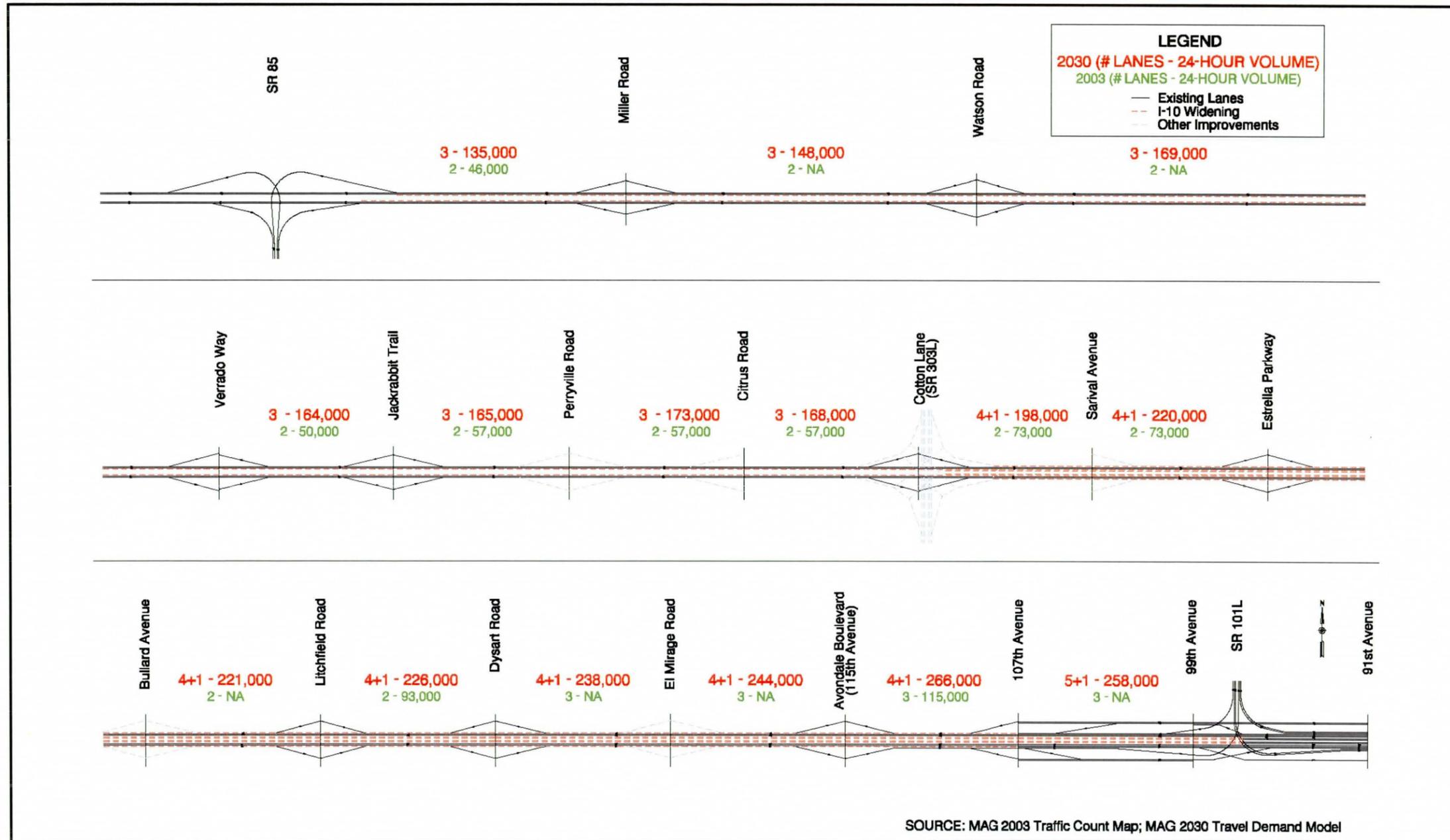
Table 2.1 – 2030 Peak Hour Level of Service (LOS)

	AM Peak Hour LOS (Eastbound)	Duration LOS E/F (hours)	PM Peak Hour LOS (Westbound)	Duration LOS E/F (hours)
SR 85 to Miller Road	B	0	C	0
Miller Road to Watson Road	C	0	D	0
Watson Road to Verrado Way	D	0	E/F	< 1
Verrado Way to Jackrabbit Trail	D	0	E/F	< 1
Jackrabbit Trail to Perryville Road	D	0	E/F	< 1
Perryville Road to Citrus Road	E/F	< 1	E/F	1 to 2
Citrus Road to Cotton Lane	E/F	< 1	E/F	1 to 2
Cotton Lane to Sarival Avenue	E/F	< 1	E/F	< 1
Sarival Avenue to Estrella Parkway	E/F	< 1	E/F	< 1
Estrella Parkway to Bullard Avenue	E/F	< 1	E/F	< 1
Bullard Avenue to Litchfield Road	E/F	< 1	E/F	< 1
Litchfield Road to Dysart Road	E/F	< 1	E/F	< 1
Dysart Road to El Mirage Road	E/F	< 1	E/F	< 1
El Mirage Road to Avondale Avenue	E/F	< 1	E/F	< 1
Avondale Avenue to 107th Avenue	D	0	E/F	< 1
107th Avenue to 99th Avenue	D	0	E/F	< 1
99th Avenue to 91st Avenue	D	0	E/F	< 1

2.2 Crash Analysis

A crash analysis was conducted along I-10 between SR 85 (MP 112) and 91st Avenue (MP 134) to identify crash patterns and trends. Crash data was obtained from ADOT for the dates between September 1, 2002 and August 31, 2005, the three most current years available.

A total of 2,661 crashes were documented. Of those, 1,500 (56 percent) occurred in the eastbound direction and 1,161 (44 percent) occurred in the westbound direction. The 909 (34 percent) injury crashes resulted in 1,640 injuries and the 49 (2 percent) fatal crashes resulted in 64 fatalities. On average, 68 crashes per mile occurred in the eastbound direction and 53 crashes per mile occurred in the westbound direction for a total 121 crashes per mile in both directions. The crash rate for the 22-mile section of I-10, based on the 2003 traffic volumes, was 1.6 crashes per million vehicle miles traveled. A summary of the total crashes can be found in Table 2.2.



 	<p>I-10 Median Widening SR 85 to SR 303L TRACS Number 010 MA 113 H6877 01L SR 303L to SR 101L TRACS Number 010 MA 125 H6879 01L</p>	<p>Figure 2.1 Existing and Forecast Traffic Volumes</p>
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Figure 2.1 – Existing and Forecast Traffic Volumes

Table 2.2 – Crash Number and Severity Summary

Location	Crashes	Length (Miles) Crashes per Mile	Crashes per Million Vehicle Miles Traveled
Eastbound I-10 Mainline	1500 ¹	22	1.8
	[565, 28] ²	68	
Westbound I-10 Mainline	1,161	22	1.4
	[344, 21]	53	
Total Both Directions	2,661	22	1.6
	[909, 49]	121	

Notes:
¹ number of crashes
² [number of injury crashes, number of fatal crashes]

As part of this crash analysis, the data was broken down by location, collision manner, first harmful contact, and environment conditions to see if any trends exist between SR 85 and 91st Avenue. The following paragraphs discuss each type of analysis.

A more detailed breakdown of crash number and severity by location can be found in Table 2.3. In both the eastbound and westbound directions, there are segments of I-10 that represent a large portion of the total crashes. These segments are highlighted in the table. The five-mile stretch from Cotton Lane to Dysart Road in the eastbound direction includes 57 percent of the total crashes and 61 and 46 percent of the injury and fatal crashes, respectively. The five-mile stretch from Dysart Road to 91st Avenue in the westbound direction includes 59 percent of the total crashes and 60 and 43 percent of the injury and fatal crashes, respectively.

The crash data was also analyzed based on the manner of collision. The most common types of collisions were rear-end (55 percent), sideswipe (18 percent), and single vehicle (18%). The results for all recorded collision manners by direction and total can be found in Table 2.4.

Table 2.3 – Crash Number and Severity by Location

Type ¹	Eastbound Crashes				Westbound Crashes				Total Crashes			
	F	I	D	T	F	I	D	T	F	I	D	T
SR 85 to Miller Road	2	1	14	17	0	11	16	27	2	12	30	44
Miller Road to Watson Road	0	10	32	42	2	7	20	29	2	17	52	71
Watson Road to Verrado Way	2	41	47	90	5	25	66	96	7	66	113	186
Verrado Way to Jackrabbit Trail	1	3	13	17	0	9	16	25	1	12	29	42
Jackrabbit Trail to Perryville Road	2	19	17	38	0	4	11	15	2	23	28	53
Perryville Road to Citrus Rd.	1	4	17	22	0	2	23	25	1	6	40	47
Citrus Road to Cotton Lane	0	16	24	40	0	5	11	16	0	21	35	56
Cotton Lane to Sarival Avenue	3	38	64	105	0	8	25	33	3	46	89	138
Sarival Avenue to Estrella Parkway	3	46	64	113	2	21	22	45	5	67	86	158
Estrella Parkway to Bullard Avenue	5	94	93	192	2	17	31	50	7	111	124	242
Bullard Avenue to Litchfield Road	1	73	118	192	2	9	39	50	3	82	157	242
Litchfield Road to Dysart Rd.	1	95	151	247	3	19	40	62	4	114	191	309
Dysart Road to El Mirage Rd.	2	26	52	80	1	38	87	126	3	64	139	206
El Mirage Road to Avondale Blvd.	2	19	40	61	0	42	100	142	2	61	140	203
Avondale Blvd. to 107 th Avenue	1	13	49	63	2	42	116	160	3	55	165	223
107 th Avenue to 99 th Avenue	1	35	57	93	2	53	98	153	3	88	155	246
99 th Avenue to 91 st Avenue	1	32	55	88	0	32	75	107	1	64	130	195
Total (22 miles)	28	565	907	1500	21	344	796	1161	49	909	1703	2661

Notes:
¹ F - Fatality; I - Injury; D - Property Damage Only; T - Total

Table 2.4 – Crashes by Manner of Collision

Collision Manner ¹	Eastbound		Westbound		Total	
	Number of Crashes	Percent of Total	Number of Crashes	Percent of Total	Number of Crashes	Percent of Total
Rear-End	898	60	557	48	1,455	55
Sideswipe	254	17	218	19	472	18
Single Vehicle	234	16	241	21	475	18
Angle, Backing, Head-On and Non-Contact	22	1	27	2	49	2
Other	92	6	118	10	210	8
Total	1,500	100	1,161	100	2,661	100

Note:
¹ Collision manners that did not occur during the analysis period have been omitted.

The first thing encountered by the initiating vehicle in the crash is defined as the first harmful contact. The most common first harmful contact is another vehicle (76 percent). The remaining 24 percent first harmful contacts were split between objects from vehicles, vehicle problems, overturning, median barrier, guard rail, non-collision, and other objects. The full results can be found in Table 2.5.

Another factor in crashes is the surrounding environment, which could include the daylight, weather and road conditions. Each one of these items is analyzed separately and the results can be found in Table 2.6. In general, the majority of crashes occurred in daylight (74 percent), during clear weather (92 percent), and on dry road surface conditions (96 percent)

Table 2.5 – Crashes by First Harmful Contact

First Harmful Contact	Eastbound		Westbound		Total	
	Number of Crashes	Percent of Total	Number of Crashes	Percent of Total	Number of Crashes	Percent of Total
Another Vehicle	1,198	80	821	71	2,019	76
Objects from Vehicles	53	4	97	8	150	6
Vehicle Problems	53	4	46	4	99	4
Overturning	43	3	42	4	85	3
Median Barrier	42	3	38	3	80	3
Guard Rail	42	3	37	3	79	3
Non-Collision	20	1	28	2	48	2
Other Objects	17	1	20	2	37	1
Other	32	2	32	3	64	2
Total	1,500	100	1,161	100	2,661	100

Table 2.6 – Crashes by Daylight, Weather and Road Surface Conditions

	Eastbound		Westbound		Total	
	Number of Crashes	Percent of Total	Number of Crashes	Percent of Total	Number of Crashes	Percent of Total
Environmental Condition						
Daylight	1,188	79	783	67	1,971	74
Darkness	248	17	285	25	533	20
Dusk/Dawn	62	4	90	8	152	6
Other	2	0	3	0	5	0
Total	1,500	100	1,161	100	2,661	100
Weather						
Clear	1,394	93	1,061	92	2,455	92
Cloudy	71	5	57	5	128	5
Rainy	32	2	38	3	70	3
Other	3	0	5	0	8	0
Total	1,500	100	1,161	100	2,661	100
Road Surface Condition						
Dry	1,450	97	1,113	96	2,563	96
Wet	40	2	44	4	84	3
Not Reported	10	1	4	0	14	1
Total	1,500	100	1,161	100	2,661	100

3.0 DESIGN CONCEPT ALTERNATIVES

3.1 Introduction

The recommended alternative was developed to conform to adopted regional transportation plans, achieve geometric design requirements, improve traffic operations, and to minimize environmental impacts, right-of-way acquisition, utility impacts, and throw-away construction.

Public agencies that have been involved in the alternative development and evaluation process include ADOT, MAG, RPTA, Valley Metro, City of Tolleson, City of Avondale, City of Goodyear, Town of Buckeye, Maricopa County Flood Control District (FCDMC), McDOT and the Federal Highway Administration (FHWA).

3.2 Evaluation Criteria

Six screening criteria were developed to evaluate the "Median Widening" and "No-Build" alternatives. Each evaluation criterion is described below:

- **Conformance with Adopted Regional Transportation Plans:** This criterion evaluates the ability of the alternative to achieve the goals and objectives of the Regional Transportation Plan.
- **Geometric Design:** This criterion evaluates the use of applicable geometric design criteria.
- **Traffic Operations:** This criterion evaluates the alternatives for potential benefits to the operational performance and level-of-service of the freeway system within the study area.
- **Environmental Considerations:** This criterion evaluates the alternatives for its social and economic considerations, amount of disturbance to developed areas and vegetation, potential noise and air quality impacts, potential changes in visual character and quality, potential impacts to cultural and biological resources and hazardous materials issues.
- **Right-of-Way Requirements and Utility Impacts:** This criterion evaluates the impact of the alternatives on right-of-way acquisition and existing utilities.
- **Construction Cost:** This criterion evaluates the estimated construction cost of the alternatives.

3.3 Design Concept Alternatives Considered

The "No-build" and "Median Widening" alternatives were evaluated for their merits based on the above criterion.

3.3.1 No-Build Alternative

The "No-Build" alternative would not implement the improvements identified in the Regional Transportation Plan to reduce traffic congestion, encourage carpooling and support planned Bus Rapid Transit (BRT) and other express bus systems.

This would result in no benefits to the travelers on I-10 within the study area and was, therefore, eliminated.

3.3.2 Median Widening Alternative

A design concept was developed to pave additional lanes in the median. Table 3.1 below describes the Median Widening Alternative and its construction segments.

The I-10 Realignment segment is being studied in a separate DCR for the I-10/SR 303L system interchange. The recommended alternative includes realigning I-10 to the north of the existing alignment through the interchange area. The study is being performed by McDOT and is expected to be complete later in 2006. Improvements necessary to provide continuous median widening have been taken directly from information in that DCR except for the modifications discussed in Chapter 4.

Table 3.1 – Median Widening Alternative Construction Segments

Segment	Begin MP	End MP	Length (miles)	Description of Work
SR 85 to 3300' East of Citrus Road	112.13	124.12	11.99	Widen one lane in each direction in median (PCCP Pavement with AC Shoulders) Median cable barrier Four structure widenings Potential Noise Barriers
I-10 Realignment (3300' East of Citrus Road to 1700' East of Sarival Avenue)	124.12	126.02	1.90	Three new general purpose lanes plus one HOV lane (PCCP) in each direction shifted north of existing alignment One structure widening, one structure replacement, six new structures, and four partial directional ramps Two box culverts (structures) Concrete median barrier Median Lighting FMS Conduit Potential Noise Barriers Asphaltic Rubber Friction Course
1700' East of Sarival Avenue to Dysart Road	126.02	129.70	3.68	One new general purpose plus one HOV lane (PCCP) in each direction in median Replace AC Mainline with PCCP (2 travel lanes only) Six structure widenings Concrete median barrier Median Lighting FMS Conduit Potential Noise Barriers Asphaltic Rubber Friction Course
Dysart Road to SR 101L	129.70	133.99	4.29	One new general purpose plus one HOV lane (PCCP) in each direction in median Four structure widenings Concrete median barrier Median Lighting FMS Conduit Potential Noise Barriers Asphaltic Rubber Friction Course

The intent of the recommended alternative is to provide relief to the congestion along I-10 while limiting the amount of "throw-away" construction. No work on the ramps or ramp gores will occur as part of this project except on the I-10 Realignment segment.

This alternative is consistent with the improvements identified in the Regional Transportation Plan, and achieves the necessary geometric design requirements for freeway lanes. The existing median cable barrier installed from Dysart Road to SR 101L would be removed, and new concrete median barrier installed from SR 303L to SR 101L.

By providing an additional general purpose lane in each direction, traffic congestion and delays would be reduced, thereby reducing travel times. Constructing HOV lanes from SR 303L to SR 101L for motorists to use for carpooling and transit would further help alleviate traffic congestion within the corridor during peak periods. Since these lanes would all be constructed within the open freeway median, the proposed improvements would not require the acquisition of additional right-of-way (beyond that identified in the *Initial SR 303L DCR*).

There are three build alternatives currently being considered in the western section of the South Mountain (SR 202L) Freeway study area: W55 (55th Avenue connection), W71 (71st Avenue connection), and W101 (Loop 101 connection). Each of these build alternatives would connect into I-10 (Papago) and require

improvements to I-10 in addition to those described in the Regional Transportation Plan (RTP). For the W55 and W71 Alternatives, the widening would occur between SR 101L and I-17, while for the W101 Alternative, the widening would occur between Dysart Road and 59th Avenue. The portion of widening from Dysart Road to SR 101L would occur to the outside of existing I-10. The W101 Alternative would require one additional lane from Dysart Road to El Mirage Road, two additional lanes from El Mirage Road to Avondale Boulevard, three additional lanes from Avondale Boulevard to 107th Avenue, and two additional lanes between 107th Avenue and 99th Avenue. The existing I-10/SR 101L system interchange will either be partially reconstructed or fully reconstructed with the W101 Alternative. Both options include two-lane ramps to and from SR 202L and may include HOV direct connection ramps in one or more of the quadrants of the system interchange. Possible impacts to the improvements in this study will be evaluated further when the preferred western alignment is selected.

The estimated construction cost for this alternative is provided in Chapter 5 of this report.

3.4 Recommended Alternative

The "Median Widening" alternative is recommended for implementation. The design concept associated with this alternative is provided on the project plans in Appendix D.

4.0 MAJOR DESIGN FEATURES OF THE RECOMMENDED ALTERNATIVE

4.1 Design Controls

Interstate 10 is classified as an Urban Principal Interstate. A summary of the design controls for the recommended alternative is provided in Table 4.1. The same design controls will apply to the realignment of I-10 in the vicinity of the future I-10/SR 303L system interchange.

A separate Roadway Design Criteria memorandum was developed during the study process and is included in Appendix B of this report.

4.2 Horizontal and Vertical Alignments

Plan sheets are provided in Appendix D for the recommended alternative. The plans include the horizontal geometry for the existing I-10 roadway. The horizontal and vertical geometry is also provided for the realigned segment of I-10 in the vicinity of the future I-10/SR 303L System Interchange. I-10 will be realigned both horizontally and vertically (slightly elevated) in this area so that it will be compatible with the design of the future system interchange.

With the exception of the realigned segment of I-10, the new general purpose and HOV lanes will be developed by widening the existing roadway toward the median. Therefore, the existing roadway profiles will be maintained and the new general purpose and HOV lanes will be extended at the existing cross-slope. This will, in effect, close the median from SR 303L to SR 101L. Upon completion, this will result in a planar roadway surface that will drain toward the outside shoulder of the roadway for the median widening and realigned section.

Table 4.1 – Design Controls for Recommended Alternative

Description of Criteria	Values for Design
Design Year	2030
Design Speed	Match Existing (65 mph) Realigned I-10 (65 mph)
Superelevation	Match Existing (0.06 '/ft maximum)
Cross-Slope	0.02 '/ft
Lane Width	12 ft.
Shoulder Width (Left)	Variable (8' to 13')
Maximum Horizontal Curve	3° 30'
Maximum Gradient	3%
Taper Rate	Design Speed:1
Slope Standards	C-02.10
Minimum Vertical Clearance:	
Interstate	16' – 6"
Crossroad	14' – 6"

The realigned segment of I-10 will be based on the horizontal and vertical alignments presented in the *Initial Design Concept Report for SR 303L; I-10 to US 60* prepared for the Maricopa County Department of Transportation by URS. As stated previously, there is a fully directional system interchange proposed for the I-10/SR 303L freeways. In order to be in conformance with the planned ultimate construction of the system interchange, this project will construct I-10 in its realigned position, as well as all the proposed I-10 bridges over the future SB Frontage Road, the future SR 303L, the future NB Frontage Road and Sarival Avenue. The alignments contained within the *Initial SR 303L DCR* will be used for this project through the realignment area, with the following modifications:

- SR 303L alignments, both horizontal and vertical, will be recreated in State Plane Coordinates to match the mapping and survey being done for all projects within the Phoenix Metro Area.
- Within the area that the offsets from median centerline are held constant, the EB and WB centerlines/PGL offsets will be moved from the 38 feet shown in the *Initial SR 303L DCR* to the 54 feet that exists in the field. This will allow the realignment to match existing roadways and lanes at each end as well as better balance the lanes around the PGL/Axis of Rotation. This adjustment also results in a 13-foot median shoulder instead of the 11-foot shoulder shown in the *Initial SR 303L DCR*, as well as the ability to continue the four-foot HOV buffer instead of the two-foot buffer shown in the DCR.
- The *Initial SR 303L DCR* indicates a reach of reconstruction on existing tangent alignment for a distance of approximately 4800' west of the beginning of the realignment and for 700' east of the end of the realignment. HDR has concluded that these reaches of reconstruction are not necessary. This means that replacement of the Citrus Road Overpass, as shown in the *Initial SR 303L DCR*, is not necessary, and is now shown as being widened for this project. It will be widened on the outside in the future to accommodate the System TI lanes when constructed.
- The *Initial SR 303L DCR* showed proposed bridges over the RID Canal within the realignment area. HDR has met with RID and confirmed that crossing I-10 with a RCBC is preferable for conveying RID flows across the corridor, so no bridges are being shown for the RID canal and maintenance road. Also, we have determined that offsite drainage flows are conveyed under the current I-10 RID bridges, so an additional RCBC is proposed adjacent to the RID RCBC to convey those flows across the corridor.
- The system interchange shown in the *Initial SR 303L DCR* displaces the Cotton Lane arterial and its traffic interchange and proposes half TI's at Citrus Road to the west, Sarival Avenue to the east, McDowell Rd on the north and Van Buren Street on the south. These half TI's would be connected via one-way frontage roads in all four directions. If this project is constructed prior to the I-10/SR 303L system interchange project, continuity of Cotton Lane's connection to I-10 will be disrupted and will need to be addressed during the Initial design phase.

The horizontal and vertical alignment information for the I-10 recommended alternative is presented in Table 4.2.

Table 4.2 – Horizontal and Vertical Alignment Data for I-10

I-10 Eastbound Roadway Vertical Alignment					
VPI Station	VPI Elevation	Approach Grade	Departure Grade	Curve Length	Curve Type
5944+00.00	1035.00	-2.6000	0.6250	1000	Sag
5960+00.00	1046.00	0.6250	-0.5333	1000	Crest
5973+00.00	1039.07	-0.5333	0.7266	1200	Sag
6008+00.00	1064.50	0.7266	0.1781	800	Crest
6034+00.00	1069.19	0.1781	1.1900	1000	Sag
6058+00.00	1097.75	1.1900	-0.6269	1500	Crest
6071+00.00	1089.60	-0.6269	0.5123	1000	Sag
6095+00.00	1102.89	0.5123	-0.0959	800	Crest
6124+00.00	1099.11	-0.0959	0.7061	1000	Sag
6157+00.00	1122.41	0.7061	1.2947	1000	Sag
6174+00.00	1142.42	1.2947	0.1422	1000	Crest
6210+00.00	1149.54	0.1422	-0.1952	1000	Crest
6264+00.00	1139.00	-0.1952	-0.9412	1000	Crest
6298+00.00	1102.00	-0.9412	-0.4130	1000	Sag
6321+00.00	1097.50	-0.4130	-0.0172	1000	Sag
6350+00.00	1097.00	-0.0172	0.0462	0	Grade Break
6371+86.10	1098.00	0.0462	-0.5285	1000	Crest
6405+00.00	1080.49	-0.5285	1.1007	1000	Sag
6420+00.00	1097.00	1.1007	-1.5405	1700	Crest
6442+00.00	1063.11	-1.5405	-0.4195	1000	Sag
6458+50.00	1056.19	-0.4195	1.1361	1000	Sag
6474+00.00	1072.15	1.1361	-2.0929	2100	Crest
6489+49.83	1041.36	-2.0929	-0.3125	1000	Sag
6511+00.00	1034.64	-0.3125	1.1307	1000	Sag
6640+00.00	1014.77	-1.0030	-0.1679	1000	Sag
6668+00.00	1010.07	-0.1679	1.4312	1000	Sag
6685+00.00	1034.40	1.4312	-2.0396	2400	Crest
6709+00.00	985.45	-2.0396	1.6049	2400	Sag
6735+50.00	1027.98	1.6049	-1.8999	2250	Crest
6753+00.00	995.08	-1.8999	0.8892	1000	Sag
6783+00.00	1021.92	0.8892	-1.9850	1000	Crest
6799+00.00	990.16	-1.9850	0.1258	800	Sag
6828+50.00	993.87	.1258	1.8100	800	Sag
6841+50.00	1017.40	1.8100	-1.7408	1200	Crest
6853+50.00	996.51	-1.7408	-0.2124	750	Sag
6885+00.00	989.82	-0.2124	0.2012	1000	Sag
6909+51.45	994.75	0.2012	0.1949	0	Grade Break
6926+75.05	998.22	0.1949	0.2012	0	Grade Break
6933+00.00	999.50	0.2012	1.8143	1000	Sag
6947+00.00	1024.90	1.8143	-1.5833	1400	Crest
6959+00.00	1005.90	-1.5833	0.2504	1000	Sag
6970+00.00	1008.65	0.2504	0.1217	0	Grade Break
6982+00.00	1010.11	0.1217	1.8000	1000	Sag
6999+00.00	1040.50	1.8000	-1.5000	1400	Crest
7014+00.00	1018.00	-1.5000	0.2600	1000	Sag
7039+00.00	1024.50	0.2600	1.7308	1000	Sag
7052+00.00	1047.00	1.7308	-1.9308	1400	Crest
7065+00.00	1021.85	-1.9308	0.2000	1000	Sag

I-10 Eastbound Roadway Horizontal Alignment (Bold Items are Proposed Curves in Realignment Area)					
Location	As-Built PI Station	Dc	Length	Delta	Super
SR85	5978+62.77	0°29'52"	7267.74	36°10'06"	0.024
Verrado Way	6350+89.14	0°30'09"	4202.33	21°06'40"	0.024
W. of Perryville	6462+35.28	0°45'19"	1323.91	10°00'00"	0.036
E. of Perryville	6481+73.56	0°59'26"	1026.45	10°10'07"	0.039
W. of SR303L	6556+02.51	0°14'58"	1717.43	4°17'00"	NC
W. of SR303L	6574+00.56	0°15'00"	1878.41	4°41'46"	NC
E. of SR303L	6620+58.42	0°15'00"	1827.38	4°34'06"	NC
E. of SR303L	6638+87.96	0°14'58"	1831.69	4°34'06"	NC
W. side Bullard	6725+15.73	1°00'34"	1929.59	19°28'46"	0.039
W. side Litchfield	6759+93.16	0°59'26"	1963.67	19°27'12"	0.039
W. side Avondale Blvd	6917+88.10	0°45'00"	1666.67	12°30'00"	0.029
W. side 107th	6979+66.61	0°45'22"	1454.96	11°00'00"	0.029
E. side 99th	7057+25.27	0°14'58"	962.56	2°24'00"	NC

I-10 Westbound Roadway Vertical Alignment					
VPI Station	VPI Elevation	Approach Grade	Departure Grade	Curve Length	Curve Type
5944+00.00	1036.00	-2.6061	0.7924	1000	Sag
5958+50.00	1046.49	0.7924	-0.5291	1000	Crest
5973+00.00	1038.82	-0.5291	0.7623	1000	Sag
6008+00.00	1065.00	0.7623	0.2015	800	Crest
6034+00.00	1070.67	0.2015	1.1667	1000	Sag
6058+50.00	1099.25	1.1667	-0.6920	1400	Crest
6071+00.00	1090.60	-0.6920	0.5123	1000	Sag
6095+00.00	1102.89	0.5123	-0.0966	800	Crest
6124+00.00	1100.09	-0.0966	0.6933	1000	Sag
6155+45.00	1121.93	0.6933	1.4000	1000	Sag
6173+00.00	1146.43	1.4000	0.1651	1000	Crest
6204+50.00	1151.63	0.1651	-0.1955	1000	Crest
6264+00.00	1140.00	-0.1955	-0.9485	1000	Crest
6298+00.00	1102.25	-0.9485	-0.4257	1000	Sag
6321+00.00	1097.96	-0.4257	0.0400	1000	Sag
6371+86.10	1100.00	0.0400	-0.5556	1000	Crest
6405+00.00	1081.59	-0.5556	1.1340	1000	Sag
6420+00.00	1098.60	1.1340	-1.6990	1700	Crest
6440+00.00	1064.62	-1.6990	-0.4374	1000	Sag
6459+00.00	1056.31	-0.4374	1.2593	1000	Sag
6474+00.00	1071.68	1.2593	-2.1787	2000	Crest
6489+00.15	1042.52	-2.1787	-0.3582	1000	Sag
6511+00.00	1034.64	-0.3582	1.1973	1000	Sag
6640+00.00	1015.27	-0.9630	-0.1857	1000	Sag
6668+00.00	1010.07	-0.1857	1.4547	1000	Sag
6685+00.00	1034.80	1.4547	-2.0696	2400	Crest
6709+00.00	985.13	-2.0696	1.5823	2400	Sag
6735+50.00	1027.06	1.5823	-1.7988	2100	Crest
6753+00.00	995.25	-1.7988	0.9089	1000	Sag
6783+00.00	1022.35	0.9089	-2.0131	1000	Crest
6799+00.00	990.14	-2.0131	0.1342	800	Sag
6828+50.00	994.10	0.1342	1.8154	800	Sag
6841+50.00	1017.70	1.8154	-1.7458	1200	Crest

I-10 Westbound Roadway Vertical Alignment					
VPI Station	VPI Elevation	Approach Grade	Departure Grade	Curve Length	Curve Type
6853+50.00	996.75	-1.7458	-0.2121	800	Sag
6887+00.00	989.64	-0.2121	0.2149	1000	Sag
6909+85.82	994.55	0.2149	0.2316	0	Grade Break
6926+52.49	998.41	0.2316	0.2149	0	Grade Break
6933+00.00	999.50	0.2149	1.8143	1000	Sag
6947+00.00	1024.90	1.8143	-1.5833	1400	Crest
6959+00.00	1005.90	-1.5833	0.2504	1000	Sag
6970+00.00	1008.65	0.2504	0.3314	0	Grade Break
6984+00.00	1013.29	0.3314	1.8000	1000	Sag
6999+00.00	1040.50	1.8000	-1.5000	1400	Crest
7014+00.00	1018.00	-1.5000	0.2600	1000	Sag
7039+00.00	1024.50	0.2600	1.7308	1000	Sag
7052+00.00	1047.00	1.7308	-1.9300	1400	Crest
7065+00.00	1021.96	-1.9300	0.2000	1000	Sag

I-10 Westbound Roadway Horizontal Alignment (Bold Items are Proposed Curves in Realignment Area)					
Location	As-Built PI Station	Dc	Length	Delta	Super
SR85	5978+27.52	0°30'09"	7199.59	36°10'06"	0.024
Verrado Way	6351+09.27	0°29'52"	4242.12	21°06'40"	0.024
W. of Perryville	6462+44.73	0°44'41"	1342.76	10°00'00"	0.036
E. of Perryville	6481+63.95	1°00'34"	1007.28	10°10'07"	0.039
W. of SR303L	6557+83.12	0°15'02"	2078.01	5°12'26"	NC
W. of SR303L	6579+46.28	0°15'00"	2247.94	5°37'11"	NC
E. of SR303L	6615+08.02	0°15'00"	2205.35	5°30'48"	NC
E. of SR303L	6637+10.77	0°15'02"	2200.16	5°30'48"	NC
W. side Bullard	6725+34.27	0°59'26"	1966.30	19°28'46"	0.039
W. side Litchfield	6759+74.64	1°00'34"	1927.00	19°27'12"	0.039
W. side Avondale Blvd	6918+22.47	0°45'00"	1666.67	12°30'00"	0.029
W. side 107th	6979+78.36	0°44'39"	1478.38	11°00'00"	0.029
E. side 99th	7057+22.71	0°15'02"	957.44	2°24'00"	NC

VPI elevations should be adjusted during Final design to account for the difference in vertical datums between the as-built plans and design aerial mapping.

4.3 Access Control

Since the majority of the widening work on this project will occur in the median, access control will remain as it currently exists through most of the corridor. The realigned segment of I-10 in the vicinity of the future I-10/SR 303L system interchange will incorporate access control standards that are in accordance with ADOT and FHWA Access Control Policy requirements.

4.4 Right-of-Way

New right-of-way (ROW) will be required in the realigned section of I-10 from station (STA) 6547+57 (MP 123.22) to STA 6648+05 (MP 126.02). Preliminary ROW requirements for this area are identified in the *Initial SR 303L DCR*. Temporary construction easements may be required for construction of potential noise barriers at locations to be determined during the initial design phase. R/W requirements for the ultimate I-10 section will be addressed as part of a future I-10 outside widening study by ADOT.

4.5 Drainage

4.5.1 Analysis Criteria

The drainage evaluation was based on the requirements of Chapter 600 of ADOT's Roadway Design Guidelines. The minimum catch basin spacing was based on the allowable spread requirements for each roadway classification.

- For non-depressed roadways, the pavement drainage system shall be designed for a 10-year design storm frequency. For depressed roadways, the pavement drainage system shall be designed for a 50-year storm frequency.
- For a 10-year storm frequency, allowable spread on all roadways shall not exceed the width of the roadway gutter, shoulder and/or distress lane plus, on roadways with more than one lane in each direction, the spread may encroach upon one-half of the adjacent lane.
- For the 50-year storm frequency, the allowable spread width should not exceed the width of the roadway gutter, shoulder, parking lane and/or distress lane. On roadways with more than one lane in each direction, the spread may encroach upon the full adjacent lane.
- Allowable ponding depth on highways shall not exceed the height of the curb for a 10-year storm frequency.
- The capacity of detention basins and ditches that are parallel to the roadway and serve to convey roadway drainage shall be designed to meet the requirements of the 10-year storm frequency. Detention basins and ditches that intercept off-site flows shall be designed for a 50-year frequency.

4.5.2 Existing Studies and Models

Several existing studies have been performed in the project area. A list and description (where applicable) of each study is described below.

Loop 303 Corridor/White Tanks Area Drainage Master Plan Update, February 2005 by URS

The ADMP studies the off-site flows for areas north and south of I-10 from the White Tank Mountains east to the Agua Fria River and from US 60 south to the Gila River, with the inclusion of the proposed I-10/SR 303L system interchange. The report discusses both on and off-site drainage for the realigned I-10 mainline through the system interchange. A HEC-1 model was created for the existing conditions, as well as one for the proposed drainage improvements. Conceptual Design Plans were created for proposed regional and roadway basins and channels along SR 303L and I-10.

Hydrology Re-Evaluation for the Papago Freeway West, Ehrenberg – Phoenix Highway, I-17 to Agua Fria River, January 1978 by ADOT

This study includes the offsite drainage for the north from the Agua Fria to the I-17 Interchange. This study includes a drainage report, HEC-1 models and drainage maps. This study, along with the roadway as-builts, was used to help verify the current design flows for the concrete lined channel to the north of I-10. The flow values and typical channel sections will also be used to check the channel capacity for the additional flow that will be added with the median widening.

Initial Design Concept Report for SR 303L, I-10 to US 60, May 2004 by URS

The DCR closely follows the concepts depicted in the ADMP for the Loop 303/White Tanks. An Initial Design Concept Report (IDCR) was prepared by URS for the design of SR 303L between Interstate 10 and US 60. This IDCR includes the realignment of Interstate 10 (I-10) between Citrus Avenue to Sarival Avenue to allow for a proposed interchange with SR 303L. The report proposes an ultimate design for the realignment of I-10, which includes a normal crown typical section, curb and gutter, a complete roadway storm drain system, and a Regional Drainage System that follows the SR 303L alignment. The proposed Regional Drainage System continues to the south along the alignment with an ultimate outfall at the Gila River. This IDCR is used as the basis for HDR's drainage design through the realignment section.

Outer Loop/I-10 Interchange at 99th Avenue Drainage Reports (June 1991, April 2002 & June 2005) by HDR

I-10/Bullard Avenue Drainage Report (February 1989) by HNTB

Agua Fria River to 115th Avenue Drainage Report (January 1977)

I-10, I-17 to Agua Fria River (October 1976)

I-10 Reliever Corridor Location Analysis (August 2005) by URS

Report was prepared for the City of Avondale and did not contain any drainage specific information.

Durango Area Drainage Master Plan (September 2005) by Dibble and Associates

Buckeye Flood Retarding Structure No. 1 Rehabilitation Project

Buckeye FRS No. 1 is the western most dam of a system of three dams that parallels the north side of Interstate 10 for 7.1 miles west to the Hassayampa River. The dam is operated and maintained by the District and is regulated under the jurisdiction of the Arizona Department of Water Resources (ADWR). The Buckeye FRS captures floodwaters from the upstream watershed and routes them westerly to a discharge point on the Hassayampa River just north of I-10.

Sun Valley Area Drainage Master Plan (ADMP)

This ADMP is being developed to ensure responsible floodplain management and to coordinate flood control infrastructure improvements in conjunction with new development projects. The Sun Valley ADMP covers approximately 183 square miles, which includes the Town of Buckeye as well as portions of unincorporated Maricopa County.

Final Drainage Report for Interstate 10/Watson Road Traffic Interchange (April 2002)

I-10/Verrado Way Traffic Interchange, Final Drainage Report (March 2002)

4.5.3 On-Site Drainage System Modifications

The proposed widening discussed in this section includes the addition of pavement in the median on I-10 from the SR 85 System TI through the SR 101L System interchange. The inside widening will include additional pavement in the median from SR 85 to SR 303L, and full enclosure of the median and addition of

concrete barrier rail from SR 303L to SR 101L. The widening will be normal crowned to allow for continued drainage to the outside, except in superelevated sections where catch basins will be placed along the median barrier rail to collect runoff.

Existing On-Site Drainage Features

With the exception of interchanges, the existing I-10 mainline does not have curb and gutter. The existing roadway cross section has normal crown geometry, except in areas of superelevation, allowing runoff to flow to the outside and off the pavement. The median is unpaved with a central median ditch and periodic catch basins to collect runoff and convey the flow to the north or south. The median also conveys the pavement runoff through superelevated curves.

Scattered throughout, but mainly at the interchanges, curb and gutter has been placed on the outside shoulder to convey water off of the bridges and into concrete spillways or catch basins with downdrains. The pavement runoff is then conveyed to either the north or south into one of the following: open farm fields or desert, existing detention basins located at Estrella Parkway, Bullard Wash, existing detention basins at Litchfield Road Interchange, existing detention basins at Dysart Road Interchange, Agua Fria River, or the concrete lined channel to the north from SR 101L to the Agua Fria River

The existing bridge over the Agua Fria River has drainage openings in the bridge deck. These openings are 8 inches in diameter, and are placed every 18 feet on center along the length of the bridge. The existing width of the bridge is 61 feet.

Table 4.3 lists the existing structures and runoff flow patterns for the existing I-10 mainline within the project limits.

Table 4.3 – Existing Structures and Runoff Flow Patterns

Begin Approach	End Approach	Northern Runoff	Southern Runoff	Existing Structures
SR 85	Citrus Road	Directed into cross culverts via drainage dikes and ditches, some upstream regional detention facilities	Flows into open farm fields or desert	No curb & gutter. I-10 median catch basins. Numerous cross culverts convey off-site drainage from north to south.
Citrus Road	East of Cotton Lane	Collected into ditches and conveyed south through culverts under I-10 and into open farm fields or desert	Flows into open farm fields or desert	No curb & gutter. I-10 median catch basins and catch basins between ramps and mainline.
East of Cotton Lane	RID Canal	Collected into ditches and conveyed into the RID Canal.	Collected into ditches and conveyed into the RID Canal.	No curb & gutter. I-10 median catch basins. RID flows north to south and underneath I-10. Off-site runoff flow underneath bridge to the south.

Begin Approach	End Approach	Northern Runoff	Southern Runoff	Existing Structures
RID Canal	East of Sarival Rd.	Runoff is conveyed into open farm fields.	Runoff is conveyed into open farm fields.	No curb & gutter. I-10 median catch basins.
East of Sarival Rd.	East of Estrella Parkway	Runoff is conveyed into open farm fields.	Runoff is conveyed into a development's detention basins.	No curb & gutter, except at Estrella Interchange. Catch basins with downdrains at Interchange. I-10 median catch basins.
East of Estrella Parkway	Bullard Ave.	Runoff is conveyed into Bullard Wash	Runoff is conveyed into Bullard Wash.	No curb & gutter, except at East Approach to Bullard Bridge. East approach has concrete spillways. I-10 median catch basins.
Bullard Ave.	West of Litchfield Interchange	Runoff is conveyed into Maricopa Flood Control District Detention Basins	Runoff is conveyed into open farm fields.	No curb & gutter. I-10 median catch basins.
West of Litchfield Interchange	West Bank of Agua Fria River	Runoff is conveyed into Maricopa Flood Control District Detention Basins	Runoff is conveyed into open farm fields.	No curb & gutter, except at East & West approach to Litchfield Rd. East & West approaches have concrete spillways. I-10 median catch basins. Litchfield & Dysart Road Interchanges have median catch basins between ramps and mainline.
East Bank of Agua Fria River	West of 107th Ave. Interchange	Runoff is conveyed into concrete lined channel.	Runoff is conveyed into open farm fields or ditches that flow to the Agua Fria River.	No curb & gutter, except at East & West approaches to 115th Ave. East & West approaches have catch basins with downdrains. I-10 median catch basins. 115th Ave. Interchange has median catch basins between ramps and mainline.
West of 107th Ave. Interchange	SR 101L Interchange	Runoff is conveyed into concrete lined channel.	Runoff is conveyed into concrete lined channel.	No curb & gutter, except at East & West approaches to 107th Ave. and 99th Ave. East & West approaches have catch basins with downdrains. I-10 median catch basins. 107th Ave. & 99th Ave. Interchanges have median catch basins between ramps and mainline.

Proposed On-Site Drainage Features

The proposed drainage for the project includes median improvements, with little or no improvements to the outside edge of the roadway. However, one portion of this project will construct a new pavement section within a new alignment and occasionally the ultimate pavement width. This is the realigned section of the I-10 mainline contained in the URS IDCR, in the SR 303L interchange area.

In the realigned portion at the I-10/SR 303L system interchange, curb and gutter and/or barrier rail will be installed on the outside shoulder of the roadway within the ultimate section. ADOT C-15.91 catch basins will be installed along the curb to collect the pavement runoff as needed, and ADOT C-15.92 catch basins are proposed along the barrier rail. Runoff collected in the catch basins will be conveyed to cut ditches or storm drains, with ultimate disposal into one of the detention basins proposed in the interchange area. A discussion of the detention basins proposed in this project is contained in the Off-Site Drainage Elements section of this report.

Additionally, areas within the realigned section that will not be constructed to ultimate width will have the pipe required for future inlets constructed now with this project. The pipes will be capped until catch basins are placed with the ultimate section as some point in the future. The general drainage scheme for the interchange and placement of the pipes was taken from the IDCR for the interchange by URS.

The widening for the remainder of the I-10 mainline will be accomplished by either partially or fully enclosing the median with new pavement. The outside portions of the pavement section will remain unimproved, and therefore runoff will continue to sheet flow off of the pavement section in areas that currently are without curb and gutter. Barrier rail is proposed between the directions of travel, with ADOT C-15.92 catch basins as necessary in superelevated areas against the barrier rail.

In the partially enclosed median areas, the existing median catch basins will be adjusted to the proposed grades. In the fully enclosed median areas, the existing catch basins in the median ditch and associated piping will either be removed or abandoned in place. The method of abandonment currently calls for inlets to be capped below pavement and the pipes filled with a sand/cement slurry or similar method. However, should ADOT wish to keep these pipes available for potential future widening improvements, consideration for another method of abandonment may be warranted. The age and condition of these existing pipes should be taken into consideration in this decision, as they were placed in the late 1970's and likely exceeding their design life.

New pipe will be installed to convey flow to its discharge point, or a connection between the new catch basins and existing storm drain laterals will be made, where possible. Specific drainage design features, as shown on the plans in the Appendix, are:

- The existing storm drain culverts that exist beneath I-10 will either remain, be extended where needed, or abandoned in place or removed where no longer needed to convey offsite drainage.
- Existing drainage improvements that will not be disturbed by median widening will be left in place.
- The realignment of I-10 through system interchange to the RID Canal will have outside curb and gutter, as well as median concrete barrier. However, the remainder of the I-10 widening project proposes improvements only to the median. In these areas, runoff will sheet flow off of the pavement section into existing collection systems. These systems are discussed in more detail in the Off-Site Drainage Elements section of this report.

- In superelevated pavement sections, runoff will be collected in ADOT Standard C-15.92 catch basins and conveyed into the offsite drainage system.

PROPOSED CONDITIONS – I-10 BRIDGE CROSSING THE AGUA FRIA RIVER

As previously discussed, drainage openings exist on the Agua Fria Bridge structure. These will remain in place. A spread calculation was performed to ensure that the existing openings, 8" in diameter placed every 18 feet on center, will handle the increased pavement width that results from the widening. A clogging factor of 0.5 was used in these calculations. Discussions with ADOT, FCDMC, and ADEQ personnel have indicated that perpetuating this existing condition is acceptable.

Additionally, scour calculations were performed on the existing structures to assess their stability in the Agua Fria River environment (documented in a memo from HDR dated September 12, 2005, *Bridge Scour Evaluation – Interstate 10 over the Agua Fria River*). The existing structures were placed on spread footings set at a depth of 24 feet below the existing river bed elevation. Due to the high risk of failure due to scour of spread footings, these types of bridge supports are no longer placed in the river environment. However, numerous stabilization measures have been employed at this crossing, including channelization of the river between soil cement levees and numerous drop structures both upstream and downstream of the bridges. Due to the stabilization measures and the addition of the New Waddel Dam in the upstream watershed, total scour was calculated at 12.7 feet for the 100-year event and 14.9 feet for the 500-year event in this memo, which indicates that the current footing depth is adequate. However, the placement of a large diameter, loose riprap blanket was recommended to provide additional protection for the western one-half of the structure due to potential flow concentration through the bend in the river at the bridge reach.

4.5.4 Off-Site Drainage Elements

Existing Off-Site Drainage Conditions

The general topography north of I-10 and west of the Agua Fria River slopes towards the southeast, with an exception at the Bullard Wash crossing. South of I-10, the topography has a gradual southern slope towards the Gila River. East of the Agua Fria River the area slopes southwest towards the Agua Fria River, both north and south of the interstate. The interstate forms a barrier prohibiting flow across the freeway alignment. Existing cross culverts periodically collect the off- and on-site drainage from the north and convey it to the south into existing farm fields, basins, ditches or regional facilities. Table 4.4 contains a summary of the major existing off-site flow crossings of the freeway alignment.

Table 4.4 – Existing Off-site Flow Estimates at Major Drainage Cross Conveyances

Location	100-year, 24-hr. Peak Flow across I-10 to South/Structure	Source
I-10/Section Line 5 and 6 crossing (Sta 6367+00)	Unknown/Four 10' x 8' RCBC	ADOT As-Built Plans/Sun Valley ADMP
Jackrabbit Trail TI	Unknown/Five 10' x 4' RCBC	ADOT As-Built Plans/Sun Valley ADMP
I-10/189 th Avenue (Sta 6453+00)	Unknown/Five 10' x 3' RCBC	ADOT As-Built Plans/Sun Valley ADMP
I-10/184 th Avenue (Sta 6486+00)	Unknown/Four 36" CMP	ADOT As-Built Plans/ Sun Valley ADMP
Citrus Road	444 cfs/TI Bridge	Loop 303/White Tanks ADMP Update

Location	100-year, 24-hr. Peak Flow across I-10 to South/Structure	Source
I-10 at Sta 6538+00 (west of Cotton Lane TI)	60 cfs/Four 36" CMP	Loop 303/White Tanks ADMP Update
I-10 at Sta 6562+00 (west of Cotton Lane TI)	34 cfs/Four 36" CMP	Loop 303/White Tanks ADMP Update
Cotton Lane	635 cfs/TI Bridge	Loop 303/White Tanks ADMP Update
RID Canal Crossing	646 cfs/RID Bridge	Loop 303/White Tanks ADMP Update
Sarival Avenue	532 cfs/TI Bridge	Loop 303/White Tanks ADMP Update
I-10 at Sta 6653+00 (east of Sarival Avenue)	64 cfs/Four 36" CMP	Loop 303/White Tanks ADMP Update
Estrella Parkway	14 cfs/TI Bridge	Loop 303/White Tanks ADMP Update
Bullard Wash (Sta 6708+00)	2249 cfs/Wash Bridge	Loop 303/White Tanks ADMP Update
Bullard Wash to Dysart Road	0*/Basins into 48" Storm Drain to the Agua Fria River	Loop 303/White Tanks ADMP Update
Agua Fria River	52,000 cfs/River Bridge	FCDMC Agua Fria River Watercourse Master Plan
Agua Fria River to SR 101L	0**/Concrete Channel	ADOT As-Built Plans and Drainage Report

*Regional Detention Basins
 **Concrete drainage channel to north of freeway, outfall to Agua Fria River

Off-site Flow Source Discussion

The following is a brief explanation of the off-site flow sources referenced above in Table 4.4:

- The *Loop 303 Corridor/White Tanks Area Drainage Master Plan Update* prepared in 2004 for FCDMC by URS updated an existing regional HEC-1 model. The ADMP consists of the area west of the Agua Fria to the White Tanks Mountains. The HEC-1 estimated flows are summarized in Table 4.4.
- The existing design of Interstate 10 from I-17 to the Agua Fria River is documented in the 1978 *ADOT Highways Division Plan and Profile of Proposed State Highway Ehrenberg-Phoenix Maricopa County I-10-2 (75)*. These plans were used to estimate the offsite drainage east of the Agua Fria River to the SR 101L. An existing concrete channel is located north of the interstate. This channel collects the off and on-site drainage and conveys it to the Agua Fria River. According to these plans the channel bottom varies from 24-ft to 60-ft between the SR 101L and the Agua Fria River.
- The current hydraulic model of the Agua Fria River was obtained from the FCDMC. This model was originally prepared and adopted as part of the Agua Fria River Watercourse Master Plan by the FCDMC in 2001.
- The Sun Valley Area Drainage Master Plan (ADMP) is currently being developed by the FCDMC. The ADMP is divided into two areas, area 3 and area 4. Area 3 is upstream and adjacent to this segment of I-10. Area 4 is west of the westerly limits of this project. Area 3 outfalls in the existing Buckeye Flood Retarding Structures (FRS) (discussed below). An estimate of off-site flows that may impact I-10 within the study area is being developed with this study. This plan may also identify improvements to the Jackrabbit Trail channel.
- Buckeye FRS No. 1 is upstream of the highway from approximately SR85 to Verrado Way. Since the FRS's construction, the dam has experienced considerable transverse cracking, which ADWR has

identified as a dam safety deficiency that must be corrected. Alternatives may include a modified dam, floodways, or basins, which will provide a minimum of 100-year flood protection. Based on available information, the current FRS configuration provides flood protection up to the 500-year flood event. The preferred alternative may be to provide flood additional protection up to the probable maximum flood (PMF).

Proposed Off-Site Conditions

The proposed widening will contribute additional flow to the existing off-site infrastructure due to an increased runoff coefficient from paving of the median. Although the design will slightly increase runoff amounts, the existing collection infrastructure on the outside of the roadway section will remain unchanged and historic flows will continue to travel where they do today. Off-site drainage is conveyed under I-10 through existing culverts, into farm fields, desert areas, and existing drainage improvements. The one exception is the off-site drainage patterns within the I-10/SR 303L system interchange, where the construction of a portion of a regional system will include several detention basins sized to detain the 100-year, 24-hour regional runoff event. The configuration of these basins is shown on the plan sheets.

PROPOSED DRAINAGE – SR85 TO CITRUS

No changes are proposed to the off-site drainage system in this segment of the project. The existing off-site system will receive the minor amount additional flow contributed from the widened pavement sections.

PROPOSED DRAINAGE – CITRUS TO WEST OF THE AGUA FRIA RIVER

A regional drainage system is planned to collect runoff from the area west of the SR 303L alignment and is discussed further in the aforementioned FCDMC *Loop 303/White Tanks ADMP Update* reference report. This system will follow the SR 303L alignment, and consists of a series of detention basins, channels, and storm drain that ultimately discharges into the Gila River to the south.

In the realignment section of I-10 at the system interchange, two of the regional detention basins per the *Initial SR 303L DCR* are proposed to be constructed with this project. These basins are located to the northwest of the system interchange. The outfall proposed for these basins is a double box culvert, which will also be built with this project. This box culvert will be connected in the future to the regional channel system. However, a temporary basin is necessary to the south of I-10 until the FCDMC regional channel is constructed. This basin is necessary for functioning of the drainage system in the interim condition until the regional channel system is completed, and may be removed once the FCDMC regional drainage system is built. Since these temporary basins will function as retention basins (i.e. without an outfall), percolation rates of the will be evaluated during initial design to ensure the basins drain within 36 hours.

Maintenance of the two regional detention basins referenced above has been discussed with FCDMC. The northernmost basin is adjacent to the Perryville Prison and officials have indicated that the prison would be willing to accept maintenance of the basin provided certain conditions were met. FCDMC has agreed in principle to maintain the southernmost basin assuming the basin will not be equipped with park-like amenities. Further discussions with the two entities will be pursued and results of those discussions included in the Final DCR.

Other basins are proposed in the *SR 303L IDCR* that are not necessary for the functioning of the mainline system and are not proposed to be built with this project. This includes a basin at the southeast quadrant of

the interchange, and two basins adjacent to Sarival Avenue. These basins are necessary for the functioning of the system once the ramps and frontage roads are built, and therefore should be constructed at that time.

An existing I-10 mainline bridge exists at the RID canal. This bridge includes a 105-foot wide drainage channel. At the time that this bridge was designed in 1975, the 50-year off-site flow amount was listed as 2,380 cfs from a drainage area of 8.54 square miles. Current hydrology models for the area have a 100-year flow of 656 cfs arriving at this location. Due to the reduced flow amount, a double 10' x 6' RCBC will be provided at this location to convey the off-site flow, in lieu of a wide channel and new bridge structure.

PROPOSED DRAINAGE - EAST OF THE AGUA FRIA RIVER

The existing regional channel to the north of I-10 and east of the Agua Fria River will receive the additional flow contributed from the widened pavement sections. At this time, a detailed study of the existing condition hydrology and hydraulics of this channel will not be performed. However, it is anticipated that the minimal amount of additional flow and short time to concentration will not affect the peak flows in the system due to regional flows.

4.6 Earthwork

The earthwork required for the median widening from SR 85 to Citrus Road includes approximately 38,000 cubic yards (cy) of excavation and 205,600 cy of borrow. The earthwork required for the median widening from Sarival Avenue to Dysart Road includes approximately 3,500 cy of excavation and 50,000 cy of borrow. The earthwork required for the median widening from to Dysart Road to SR 101L includes approximately 4,000 cy of excavation and 55,000 cy of borrow. No borrow source has been identified for the segments discussed above.

The I-10 Realignment segment from Citrus Road to Sarival Avenue will require approximately 2,100,000 cubic yards of embankment material. This material will be generated by constructing two of the regional detention basins identified in the *Initial SR 303L; I-10 to US 60 DCR*. The basins that will be constructed as part of this project are discussed in greater detail in section 4.5 of this report.

4.7 Traffic Design

4.7.1 Guide Signing

Most of the guide signs (which display the next two or three interchange exits with mileages) are currently located in the right shoulder areas. When mounted in the median area, they are generally located at the midpoint between interchanges at approximate one mile intervals. They are also mounted back to back to provide guidance for both directions. While the signs themselves may not be relocated at the present time, the foundations for these signs should be constructed in connection with the median barrier. Some relocations may be required to provide continuity or adjustments for destination signing.

SR 85 to SR 303L

Due to the addition of one lane to the inside of I-10 EB and WB, the following crossroad street name guide signs will need to be replaced or modified because of their location in the median: Miller Road, Watson Road, Jackrabbit Trail and Perryville Road.

I-10/SR 303L Interchange (future)

The future locations of tubular sign frame bridges for overhead signing for the eastbound and westbound directions on I-10 for SR 303L interchange signing will be determined. This will allow the early placement of the sign bridge foundations on the median side. Some of these median foundation locations may be used temporarily for cantilever structures for overhead HOV lane signing. Additional information is provided in paragraph 4.7.2 below.

The Cotton Lane interchange will be closed during the construction process to realign I-10 towards the north. The EB traffic normally exiting at the Cotton Lane interchange will be re-routed to exit at Jackrabbit Trail, and then detoured to SR 303L via McDowell Road. The WB traffic normally exiting at the Cotton Lane interchange will be re-routed to exit at Estrella Parkway and then detoured to SR 303L via McDowell Road. Detoured traffic can also access Van Buren Street towards the south from both locations.

With these proposed detours, the existing 4-sign sequence should be relocated along the I-10 mainline to Jackrabbit Trail for the EB direction and Estrella Parkway for the WB direction. This should be supplemented with guide signing at key crossroad intersections, if detour signing is not in place.

An additional guide sign is located on the I-10 mainline at MP 123.71 (EB) and MP 125.83 (WB) reading 'EXIT 124 / State Prison / Wildlife World Zoo / CAMPING'. These panels should also be relocated during the construction phase to provide alternate guide signing to these destinations.

The interim construction sequence proposed for the SR303L interchange includes the construction of an EB off-ramp at Citrus Road and a WB off-ramp at Sarival Avenue. As these ramps are completed and opened to traffic, the guide signing sequence on mainline I-10 can be shifted towards these off-ramps to provide closer and more direct temporary routing to SR303L (to the north) and Cotton Lane (both north and south).

SR 303L to Dysart Road

Due to the addition of a general purpose and HOV lane in the median area of I-10 EB and WB, the following crossroad street name signs will need to be replaced because of their location in the median: Citrus Road, Sarival Avenue, Estrella Parkway/Pebble Creek Parkway, Bullard Avenue, Litchfield Road and Dysart Road. A directional guide sign in the median at Milepost 126.00 for Phoenix International Raceway will also require relocation.

Dysart Road to SR 101L

Due to the addition of a general purpose and HOV lane in the median area of I-10 EB and WB, the following crossroad street name signs will need to be replaced because of their location in the median: Avondale Boulevard (115th Avenue), 107th Avenue and 99th Avenue.

4.7.2 HOV Facility Signing

SR 85 to Citrus Road

No HOV lane is being installed in this segment as part of this study.

Citrus Road to SR 101L

The extensions of the HOV lanes from the I-10/SR 101L interchange to west of the future I-10/SR 303L interchange will require the addition of regulatory signing for the new HOV lane in each direction.

ADOT has established a conventional method of signing a continuous left side HOV lane. Figure 4.1 depicts the proposed sign scheme along the I-10 corridor.

Figure 4.2 illustrates the typical detail used for the beginning and termination of a left side HOV lane configuration. Due to the lack of any bridge overcrossings in the Citrus Road to Cotton Lane area, several key regulatory HOV signs may require overhead mounting from median mounted cantilever sign structures.

4.7.3 Signing/Pavement Marking (Mainline and Transitions)

Mainline

Five primary mainline pavement marking configurations will be used from SR 85 to SR 101L. They are shown in cross-section form on Figure 4.3. Transition areas are not shown on this Figure, but are addressed below.

SR 85 Transition Area

The addition of a third general purpose lane on the median side between SR 85 and SR 303L will require a termination of this lane in the WB direction. This will require a pavement marking taper, advance "Lane Ends" signing, and "Merge Right" signing at the termination point.

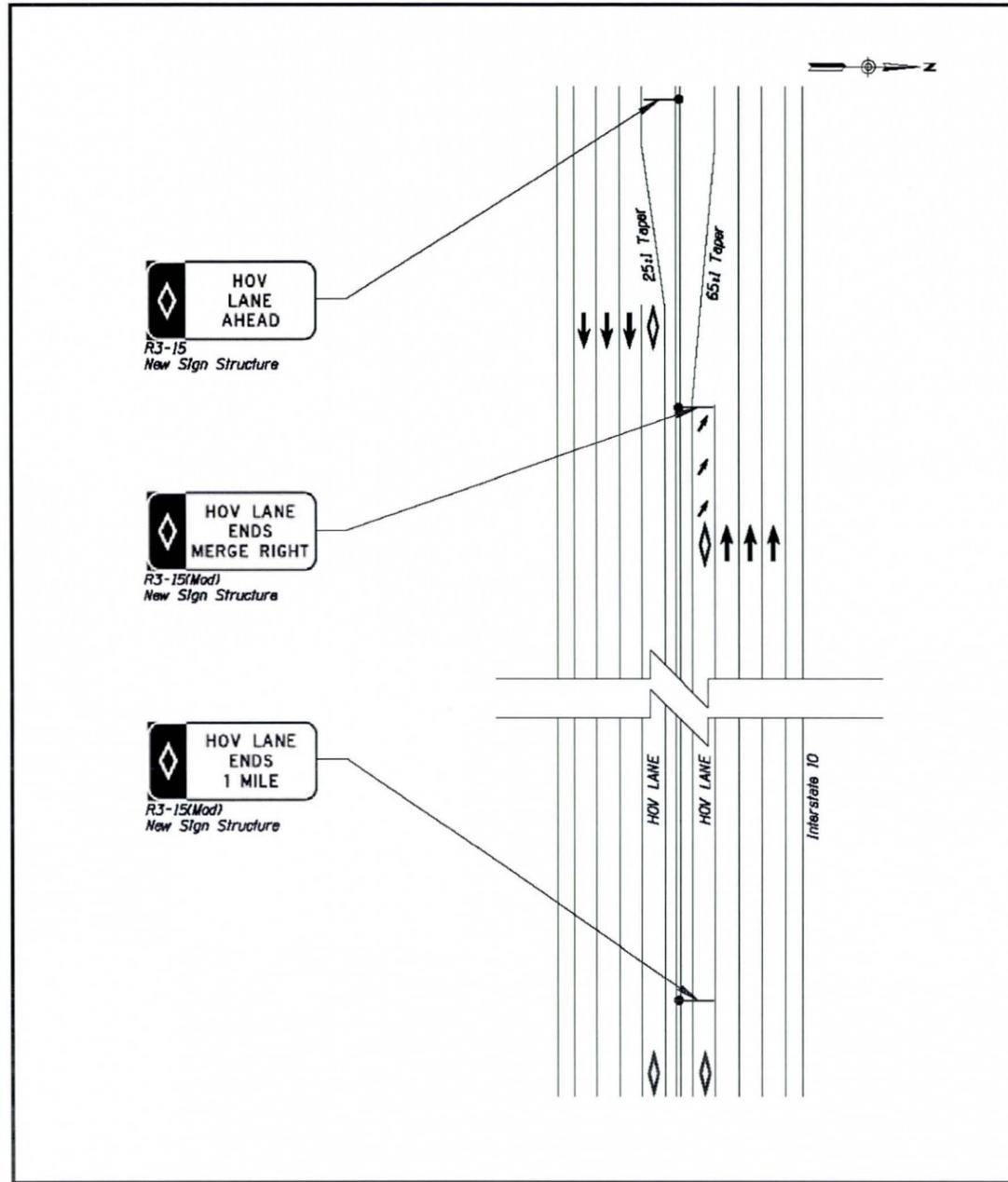
Citrus Road Transition Area

The addition of an HOV lane and/or 4 ft. buffer on the median side between Citrus Road and SR 101L will require the termination of these features in the WB direction. This will require a pavement marking taper, advance "HOV Lane Ends" signing, and "Merge Right" signing at the termination point. More information is provided in paragraph 4.7.2 above.

SR 303L Interchange (Future)

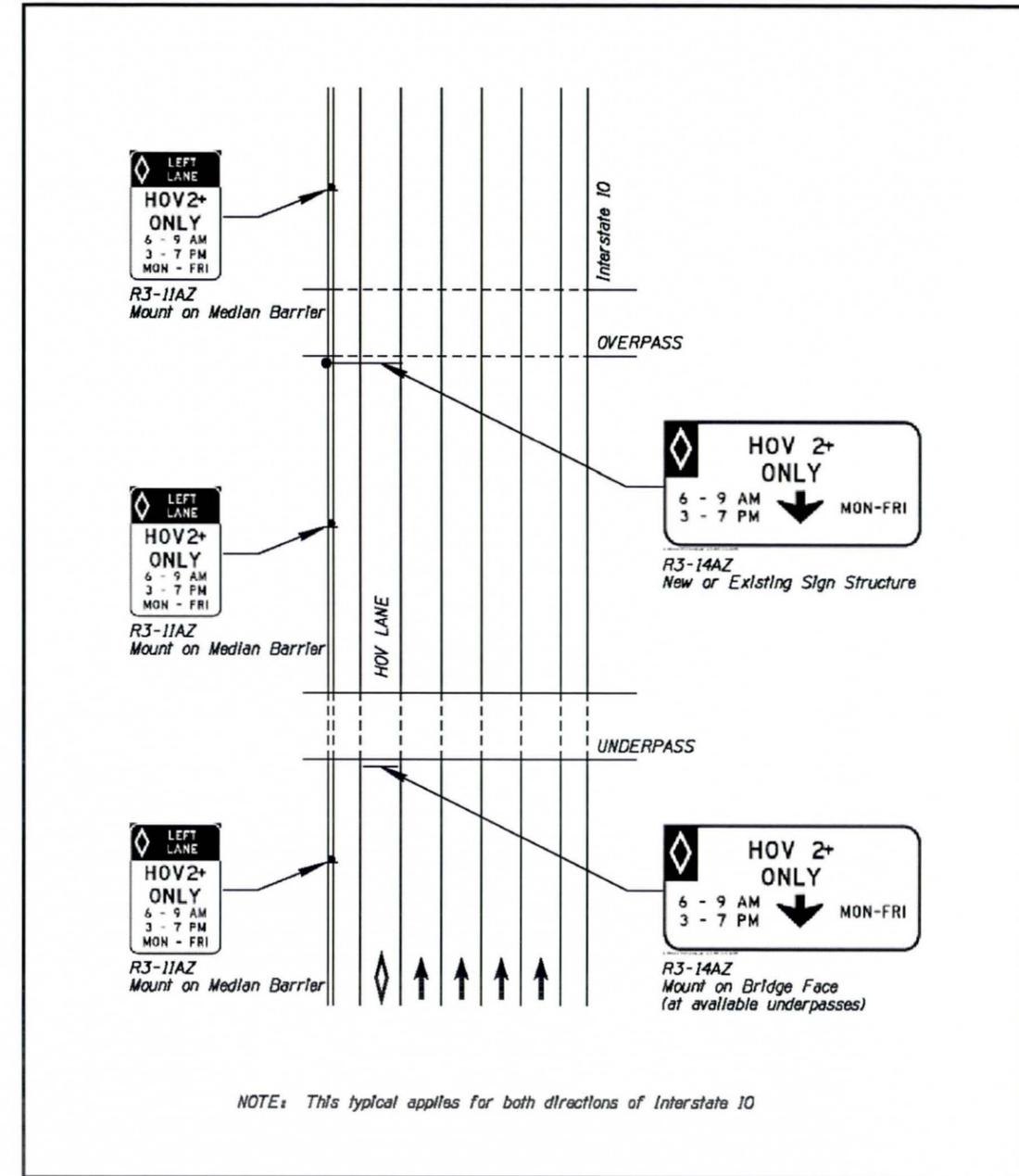
Realignment of I-10 in the vicinity of the SR 303L interchange will be introducing pavement and structure widths to satisfy the ultimate needs of a fully directional freeway-to-freeway interchange. However, some of the added pavement and/or lanes will go temporarily unused, and may not even be paved for an interim period.

The intent is to carry the three general purpose lanes plus the HOV lane with buffer through the interchange area on the median side of each roadway, leaving any future pavement and lane additions to the right side.



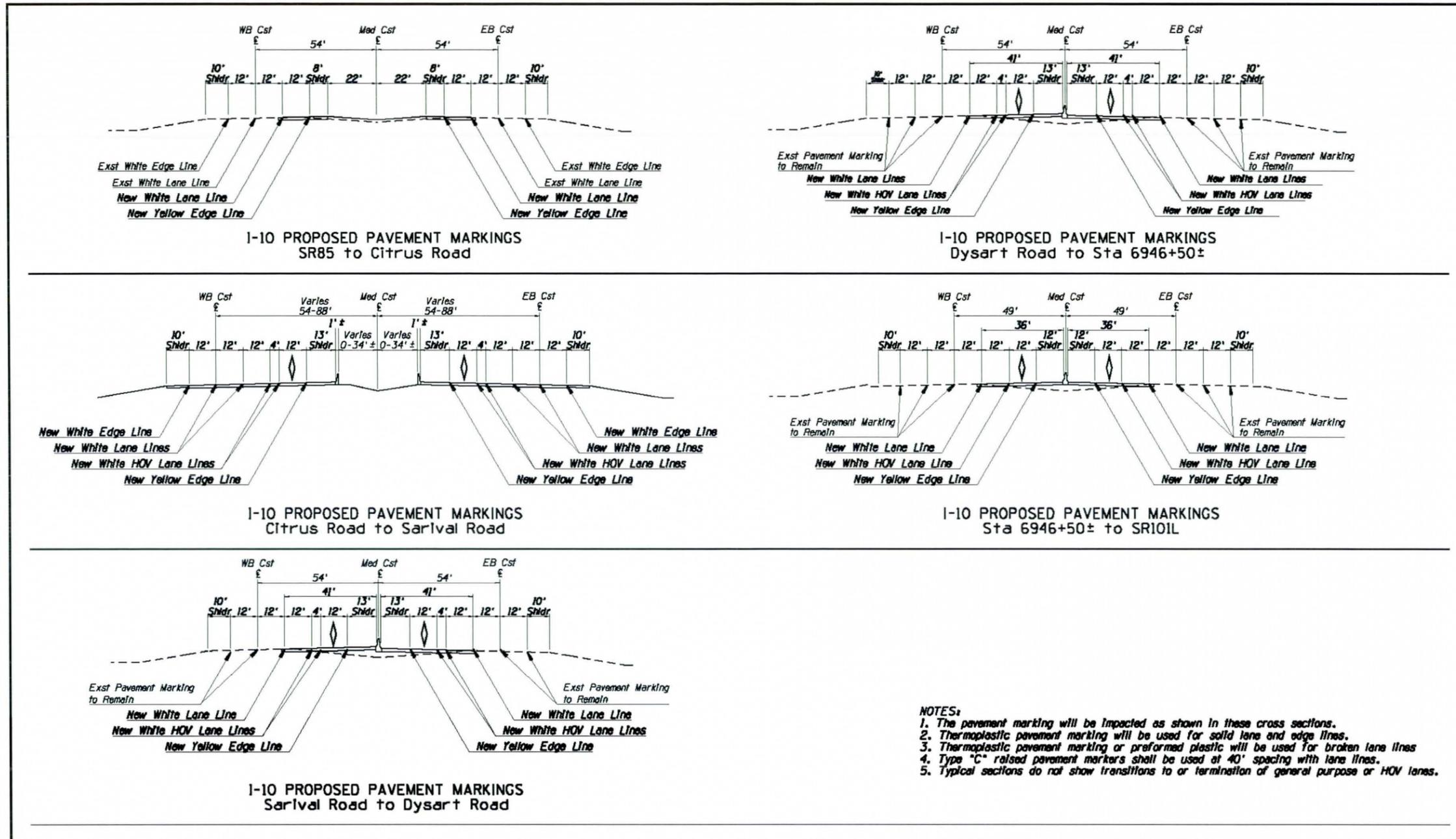
 I-10 West Widening Project	<p>I-10 Median Widening SR 85 to SR 303L TRACS Number 010 MA 113 H6877 01L SR 303L to SR 101L TRACS Number 010 MA 125 H6879 01L</p>	<p>Figure 4.1 Proposed Sign Scheme</p>
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Figure 4.1 – Proposed Sign Scheme



 I-10 West Widening Project	<p>I-10 Median Widening SR 85 to SR 303L TRACS Number 010 MA 113 H6877 01L SR 303L to SR 101L TRACS Number 010 MA 125 H6879 01L</p>	<p>Figure 4.2 Typical Left Side HOV Lane Configuration</p>
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Figure 4.2 – Typical Left Side HOV Lane Configuration



 <p>I-10 West Widening Project</p>	<p>I-10 Median Widening SR 85 to SR 303L TRACS Number 010 MA 113 H6877 01L SR 303L to SR 101L TRACS Number 010 MA 125 H6879 01L</p>	<p>Figure 4.3 Pavement Marking Typical Sections</p>
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Figure 4.3 – Pavement Marking Typical Sections

Dysart Road Transition Area

The fourth general purpose lane will be extended east from Dysart Road. The pavement marking transition will be accomplished by having the EB on-ramp from Dysart Road interchange become the fourth general purpose lane. In the WB direction, the fourth general purpose lane will be terminated by having this lane become a mandatory exit lane to Dysart Road.

SR 101L Transition Area

The introduction of a fourth general purpose lane in each direction between SR 85 and SR 101L will require that some pavement marking revisions be made through the SR 101L interchange area. The extent of these pavement marking revisions depends on whether this fourth general purpose lane is carried through the SR 101L interchange area to near 91st Avenue, or is temporarily terminated west of the interchange area (west of 99th Avenue). This condition would exist until additional lanes are added between the SR 101L interchange and I-17.

Eastbound:

If the fourth general purpose lane is extended to the area west of 91st Avenue, this will become the fourth eastbound through lane.

Currently, the fourth and fifth lanes are added from the SE directional ramp from SR 101L. The fifth lane currently extends to immediately beyond the 75th Avenue EB off-ramp, where it is dropped on the right side.

These two lanes should be merged to one lane just prior to the I-10 mainline entrance to become the fifth lane, while the added general purpose lane becomes the new fourth through lane. General re-striping of the area between 99th Avenue to east of 91st Avenue will be required to accomplish the lateral shifts of the lanes and other miscellaneous changes. See Figure 4.4 for the conceptual plan of this restriping.

Westbound:

Currently the fourth and fifth westbound through lanes become the mandatory exit lanes for the WN directional ramp to SR 101L, leaving three through lanes westbound on I-10.

The 4th lane can be added by converting the **left lane** of the two exit lanes to an optional exit/through lane. (Note: Both the existing and revised conditions are illustrated in Drawing No. M-17 of the ADOT Traffic Signing and Marking Standard Drawings.) This will retain the capacity needed for the directional ramp, but also serve to provide the transition to the fourth westbound lane. Again, general re-striping of the area between 99th Avenue to east of 91st Avenue will be required to accomplish the lateral shifts of the lanes and other miscellaneous changes. Several minor signing changes will also be needed. See Figure 4.4 for the conceptual plan of this restriping.

4.7.4 Lighting

General

FREEWAY MAINLINE

With the exception of eleven median mounted poles between 107th Avenue and the SR 101L interchange, all roadway lighting is currently mounted on the outside of the freeway. The majority of this lighting serves only to illuminate the gore areas of on- and off-ramps, the crossroad intersections, or portions of the ramps. None of this lighting is intended to provide a uniform level of lighting for the freeway mainline.

Uniform lighting levels for the freeway mainline can be best attained by the installation of high mast lighting mounted on the median barrier. The typical installation is a 69 ft. high U-pole with two 400 watt lamps and with a 375 to 450 ft. spacing interval. The desired illumination level and uniformity ratio will be addressed during the design process.

This lighting analysis should take into consideration the addition of any additional lanes along the right shoulder, including future auxiliary lanes. All existing outside lighting will be retained at this time, but will be re-evaluated when the projects involving outside widening are prepared.

Within the interchange areas of future TI construction including Perryville Road and El Mirage Road, this median sequence can be replaced by a series of eight 120 ft. high mast poles, with four 400 watt lamps each, mounted between the mainline right shoulder and the ramps.

GUIDE SIGN LIGHTING

All overhead guide signing located within two miles of a freeway-to-freeway interchange shall be illuminated, in accordance with ADOT Traffic Group's PGP No. 790. For this project, this will apply to the EB direction for the SR 101L interchange. Consideration must also be given for both the EB and WB directions for the future SR 303L interchange. While most locations can be provided with electrical service from right side locations, all locations should also be reviewed for potential electrical service on the median side, if applicable or convenient.

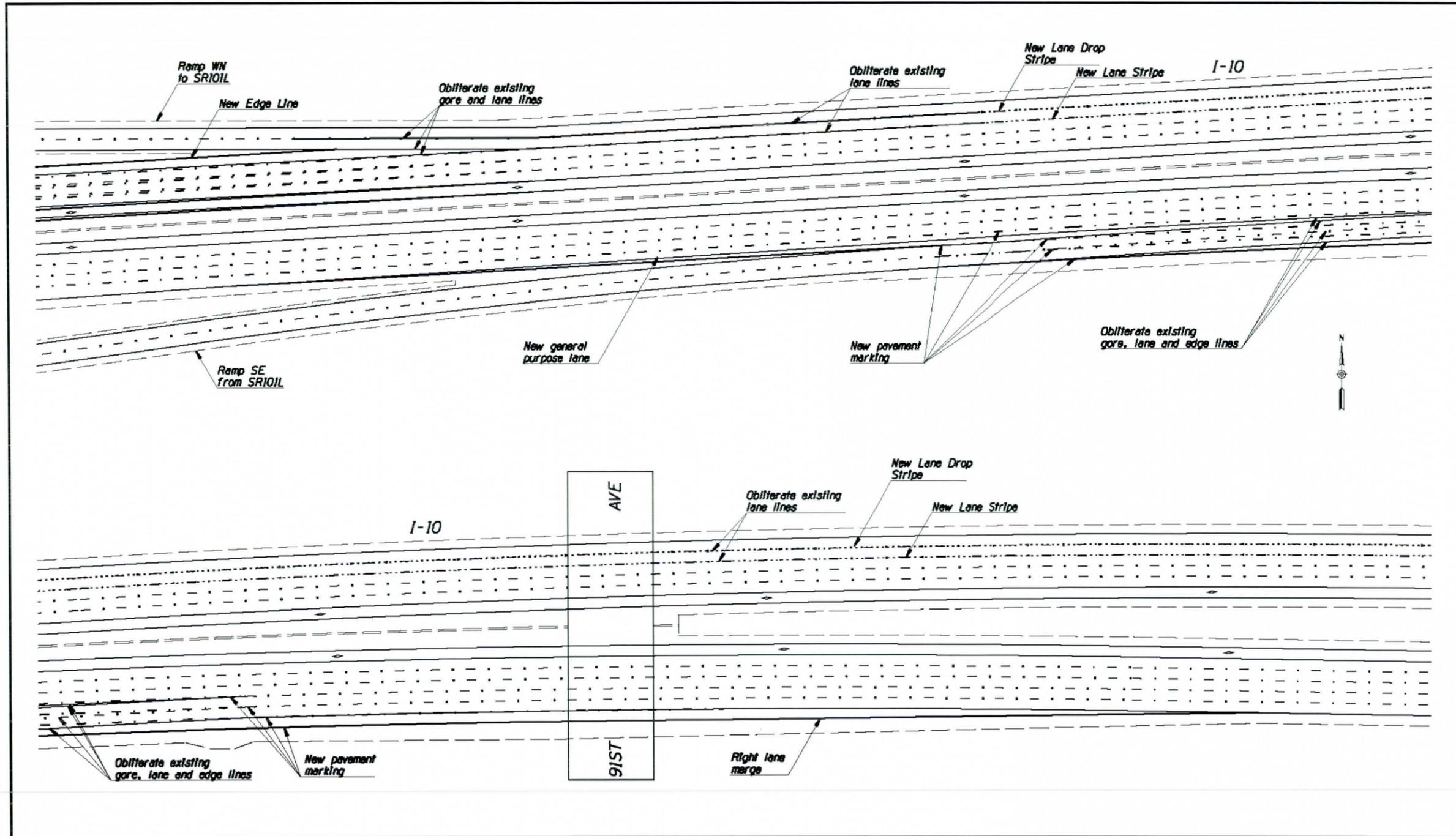
All light fixtures for overhead sign lighting shall be an approved 85 watt induction fluorescent fixture.

BRIDGE UNDERDECK LIGHTING

The median closure between the SR 303L interchange and the SR 101L interchange will have an impact on the level of lighting of the crossroads of the freeway overpasses through this area. One continuous structure over 160+ ft. wide will replace two current 45-50 ft. wide structures with a 70± ft. unrestricted opening in the median. This will minimize the amount of natural light that can be used by the driver in negotiating the crossroad through the interchange areas.

This condition will require the installation of underdeck lights to the structures on the crossroads. This installation can be accomplished by the use of any existing conduit located within the fascia walls of existing bridge abutments and the new structures to be installed. Location of this existing conduit could not be verified in existing as-built drawings or by field review.

Where installed conduit is not available, externally retrofitted conduit and light fixtures may be required.



 	<p>I-10 Median Widening SR 85 to SR 303L TRACS Number 010 MA 113 H6877 01L SR 303L to SR 101L TRACS Number 010 MA 125 H6879 01L</p>	<p>Figure 4.4 Proposed Pavement Marking Revisions</p>
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Figure 4.4 – Proposed Pavement Marking Revisions

SR 85 to SR 303L

FREEWAY MAINLINE

No median barrier is being installed through this section west of Citrus Road and mainline lighting will not be required. However, the Perryville Road EB and WB bridges will be widened and will result in closure of the median within a limited area. Conduit should be placed in the median barrier wall for future use.

GUIDE SIGN LIGHTING

Only locations of overhead guide signs for the EB direction east of Citrus Road should be reviewed for potential electrical service on the median side. Ultimately, the overhead guide signs sequence for the EB direction for the SR 303L interchange will start near the Jackrabbit Road interchange.

BRIDGE UNDERDECK LIGHTING

The closure of the median at the Perryville Road and Citrus Road interchanges will require the analysis and possible installation of underdeck lighting.

SR 303L to Dysart Road

FREEWAY MAINLINE

Continuous median lighting will be installed beginning near Citrus Road and extending east to Dysart Road.

The eastbound and westbound I-10 mainline roadways will be separated through the SR 303L interchange area to allow for directional ramp piers and a future HOV ramp. Therefore, a typical median lighting configuration must be modified, even for temporary conditions.

Typically, 120 ft. high mast poles, with four 400 watt lamps each, would be used to illuminate a freeway-to-freeway interchange area; these poles are located in the right shoulder areas and are not typically located in the median. While the full level of lighting will not be required until the full interchange is constructed and operational, some level of lighting must be provided for the four lanes in each direction of I-10 mainline roadways.

Lighting analysis will be performed to determine if some of these high mast light poles in their ultimate locations can be used. However, if construction phasing conflicts for the full interchange lighting are too significant to allow this installation, then a temporary median lighting configuration will be utilized.

GUIDE SIGN LIGHTING

Ultimately the overhead guide signs sequence for the WB direction for the SR 303L interchange will start near the Bullard Avenue interchange. All locations of overhead guide signs for the WB direction should be reviewed for potential electrical service on the median side.

BRIDGE UNDERDECK LIGHTING

The closure of the median will result in the widening of the EB and WB bridges at Sarival Avenue, Estrella Parkway/Pebble Creek Parkway, Bullard Avenue, Litchfield Road, and Dysart Road. The closure of the median at these interchanges will require the analysis and possible installation of underdeck lighting.

Dysart Road to SR 101L

FREEWAY MAINLINE

Continuous median lighting will be installed, continuing to the east from Dysart Road and connecting to the existing eleven median mounted poles beginning at 107th Avenue. These eleven poles provide the mainline lighting up to the SR 101L interchange.

GUIDE SIGN LIGHTING

The four existing overhead guide signs in the EB direction from MP 131.61 to MP 133.30 all have existing electrical service from the south side of the interstate that will remain in place.

BRIDGE UNDERDECK LIGHTING

The closure of the median will result in the widening of the EB and WB bridges at Avondale Boulevard, 107th Avenue, and 99th Avenue. The closure of the median at these interchanges will require the analysis and possible installation of underdeck lighting.

4.7.5 Freeway Management System (FMS)

SR 85 to SR 303L

An overhead Variable Message sign is currently located on I-10 WB at Milepost 114.06, near the SR 85 interchange. The tubular sign structure will require median protection because the foundation will be within the recovery zone.

SR 303L to SR 101L

Few, if any, FMS features are currently in place along this segment of freeway. A discussion of which features to install, both for present and future use, will be initiated during the Initial design process. Any features requiring the installation of foundations, pullboxes, or other features at median locations for future FMS applications will be initiated. FMS conduit is proposed in the concrete median barrier between Citrus Road and SR 101L and is included as an incidental cost to the median barrier.

4.7.6 Maintaining Cotton Lane Access to I-10

The future I-10/SR 303L system interchange will replace the current diamond interchange at Cotton Lane and its associated ramp movements. The crossroad currently provides north-south continuity of Cotton Lane and serves as the access point to SR 303L north of McDowell Road. Since the implementation plan discussed in Chapter 8 identifies the I-10 Realignment segment to be constructed with the SR 303L system interchange beginning in FY 2013, the existing diamond TI can remain in place until the system

interchange improvements are constructed. However, if the funding for the I-10 realignment segment is advanced, interim access to Cotton Lane will be necessary. Several options have been developed to address this issue and will be pursued further should advancement of funding materialize.

4.8 Construction Phasing and Traffic Control

4.8.1 General

Traffic control will be managed by detailed traffic control plans and by procedures and guidelines specified in Part VI of the *Manual of Uniform Traffic Control Devices (MUTCD)*, 2003 Version, by the Arizona Supplement to Part VI of the MUTCD, 2003 Version, and by the ADOT Traffic Control Design Guidelines, 2003.

4.8.2 SR 85 to Citrus Road

Mainline

Two lanes of traffic in each direction will be maintained on I-10 for the duration of this segment. These lanes will require a shift towards the right shoulder to allow placement of temporary concrete barrier for the median work zone.

Crossroads

The total closure of the median at Perryville Road will require that temporary falsework be erected across Perryville Road for the structure construction. A minimum of one lane in each direction will be maintained. The falsework supports will be protected by temporary concrete barrier.

4.8.3 Citrus Road to Sarival Avenue

Mainline

This segment involves the horizontal and vertical realignment of I-10 towards the north for the future SR 303L interchange. In order to continually maintain two lanes of traffic in each direction, this work will be performed in multiple phases and sub-phases, including the following:

PHASE 1:

- Construct center portion of Citrus Road bridge
- Construct center portion of new RCBC for Regional Drainage System (Sta. 6555±)

PHASE 2:

- Transition existing WB traffic to the left (south) shoulder
- Close existing WB on- and off-ramps at Cotton Lane; detour traffic to/from SR 303L via alternate access routes from Jackrabbit Trail and Estrella Parkway/Pebble Creek Parkway interchanges
- Construct realigned WB I-10 roadway, including new bridges over future SR 303L, NB Frontage Road and SB Frontage Road alignments

- Construct new WB off-ramp at Sarival Avenue
- Construct new WB on-ramp at Citrus Road
- Construct portions of EN, NW, SE, and WS directional ramp structures over new WB I-10 roadway
- Construct northern one-third of new Sarival Avenue bridge
- Construct northern one-half of new RID Canal RCBC
- Construct northern portion of new RCBC for Regional Drainage System (Sta. 6555±)

PHASE 3:

- Shift existing WB I-10 traffic to new realigned WB I-10 roadway
- Demolish existing WB structures at Cotton Lane, RID Canal, and Sarival Avenue
- Construct middle portion of new Sarival Avenue Bridge and southern one-half of new RID Canal RCBC
- Construct realigned EB I-10 roadway, including new bridges over future SR 303L, NB Frontage Road and SB Frontage Road alignments
- Construct portions of EN, NW, SE, and WS directional ramp structures over new EB I-10 roadway
- Close existing EB on- and off-ramps at Cotton Lane; detour traffic to/from SR 303L via alternate access routes from Jackrabbit Trail and Estrella Parkway/Pebble Creek Parkway interchanges
- Detour EB traffic onto newly constructed WB alignment from west of Citrus Road to east of the new RCBC for Regional Drainage System (Sta. 6555±), while the southern one-third of the RCBC for Regional Drainage System is constructed

PHASE 4:

- Shift existing EB I-10 traffic to new realigned EB I-10 roadway
- Demolish existing EB structures at Cotton Lane, RID Canal, and Sarival Avenue
- Demolish any remaining portions of the existing EB I-10 roadway
- Construct any remaining portions on the southern half of the new RID Canal RCBC and Sarival Avenue structures
- Construct new EB off-ramp at Citrus Road
- Construct new EB on-ramp at Sarival Avenue

Crossroads

Three crossroads will be impacted by the mainline construction in this segment, including Citrus Road, Cotton Lane, and Sarival Avenue.

The total closure of the median at Citrus Road will require that temporary falsework be erected across Citrus Road for the structure construction. A minimum of one lane in each direction will be maintained. The falsework supports will be protected by temporary concrete barrier.

The Cotton Lane interchange will be totally closed in stages for this project. Crossroad traffic between Van Buren Street and McDowell Road will be detoured to the Citrus Road and Sarival Avenue crossroads. Cotton Lane traffic seeking access to and from I-10 will be detoured via Van Buren Street or McDowell Road to interchanges at Jackrabbit Road (3 miles to the west) or Estrella Parkway/Pebble Creek Parkway

(2 miles to the east). Detour routes will be altered as the half diamonds at Citrus Road and Sarival Avenue become available for use.

The I-10 bridges across Sarival Avenue will be removed and reconstructed in a staged sequence. The removal of an existing bridge(s) will require a short term closure of Sarival Avenue, with traffic detoured to the Estrella Parkway/Pebble Creek Parkway crossroad. The construction of the replacement bridges across Sarival Avenue will require that temporary falsework be erected across Sarival Avenue for the structure construction. A minimum of one lane in each direction will be maintained. The falsework supports will be protected by temporary concrete barrier.

4.8.4 Sarival Avenue to Dysart Road

Mainline

This segment will consist of closing in the median area with one general purpose lane and one HOV lane in each direction. (The adjacent existing two lane section consists of AC pavement, which will be replaced with PCCP pavement.)

Two lanes of traffic in each direction will be maintained on I-10 for the majority of times for the duration of this project. The exceptions would be for restriping, setting and relocating temporary concrete barrier, and the installation of AR-ACFC, when each direction of I-10 traffic is detoured to local streets during a weekend closure.

This work will be performed in three phases.

Phase 1 will consist of the median closure work. The two lanes in each direction will require a shift towards the right shoulder to allow placement of temporary concrete barrier along the left edge of the inside lane for the median work zone. All median shoulder removal, grading, drainage, structure widening, PCCP pavement widening, barrier placement, lighting, and other work items would be constructed within the existing median.

Phase 2 will consist of removal of existing AC pavement and replacement with PCCP pavement. The two lanes of traffic in each direction will be shifted onto the completed Phase 1 work area. Temporary concrete barrier will be placed along the right shoulder of the outside lane during this phase. This work will require sub-phasing in order to maintain access across the work zone to existing on- and off-ramps at the Estrella Parkway/Pebble Creek Parkway, Bullard Avenue, Litchfield Road, and Dysart Road interchanges. (Note: The outside right shoulder area will remain as AC pending the determination of future outside widening work.)

Phase 3 will consist of the installation of AR-ACFC on the through lanes and left shoulder. During this phase each direction of I-10 traffic is detoured to local streets during a weekend closure.

Crossroads

The total closure of the median at Estrella Parkway/Pebble Creek Parkway, Bullard Avenue, Litchfield Road, and Dysart Road will require that temporary falsework be erected across these roadways for the structure construction. A minimum of two through lanes in each direction will be maintained. Some of the

crossroad left turn lanes for on-ramp access will need to be shortened or closed to allow placement of temporary falsework supports. The falsework supports will be protected by temporary concrete barrier.

4.8.5 Dysart Road to SR 101L

Mainline

This segment will consist of closing in the median area with one general purpose lane and one HOV lane in each direction. (The adjacent existing three lane section already consists of PCCP pavement.)

Three lanes of traffic in each direction will be maintained on I-10 for the majority of times for the duration of this project. The lone exception is for the installation of AR-ACFC, when each direction of I-10 traffic is detoured to local streets during a weekend closure.

This work will be performed in two phases.

Phase 1 will consist of the median closure work. The three existing general purpose lanes would be shifted towards the right, utilizing a portion of the right shoulder for the outside through lane, as needed. All median shoulder removal, grading, drainage, structure widening, PCCP pavement widening, barrier placement, lighting, and other work items would be constructed within the existing median.

Phase 2 will consist of the installation of AR-ACFC on the new lanes shoulder. During this phase each direction of I-10 traffic is detoured to local streets during a weekend closure.

Crossroads

The total closure of the median at Avondale Boulevard, 107th Avenue and 99th Avenue will require that temporary falsework be erected across these roadways for the structure construction. A minimum of two through lanes in each direction will be maintained. Some of the crossroad left turn lanes for on-ramp access will need to be shortened or closed to allow placement of temporary falsework supports. The falsework supports will be protected by temporary concrete barrier.

4.9 Utilities

The proposed construction activity in the median including subgrade preparation, earth moving and respective heavy equipment, and drilling may necessitate relocation of certain underground utilities prior to construction. There a number of utilities that cross underneath I-10 and may require relocation and/or adjustment prior to construction. These utility companies will be contacted during the Initial design phase to assess the need for relocation.

The proposed bridge construction including the use of cranes may necessitate relocation of certain overhead utilities prior to construction. There are a number of utilities that cross over I-10 and may require relocation and/or adjustment prior to construction. These utility companies will be contacted during the Initial design phase to assess the need for relocation.

Using the utility as-built plans for reference, it is anticipated that the following utilities will require relocation and/or adjustment prior to construction.

- APS Overhead Power (12kV at Perryville Road)
- APS Overhead Power (12kV and 69kVat Cotton Lane for I-10 Realignment segment)
- Qwest Fiber Optic (Underground Fiber Optic at Cotton Lane-for I-10 Realignment segment)

During final design, each utility company will receive the initial design plans for review and develop plans for any relocations and/or adjustments necessary.

ADOT Traffic Operations Section, Bill Major (602-712-6793), would like to be notified prior to or immediately after removal of any light poles, if required, so that the non-metered power service agreements can be revised accordingly.

4.10 Bridge Structures and Retaining Walls

Bridges that are located between the SR 101L (Agua Fria Freeway) and the proposed SR 303L (located at Cotton Lane) will be widened toward the median centerline of I-10. Bridges located between SR 303L and SR 85 will be widened for one additional lane towards the median for the bridges that are to be widened only and widened to the median centerline (closing the median) of I-10 for the bridges that are to be replaced. Some bridges that are listed as widenings at the current time for this section may eventually become replacements depending on future demands for the cross-roads. Table 4.5 is a list of bridges that are within the study area of this DCR. Additional information for the individual bridges may be found in the site specific discussions that follow.

This document categorizes the bridges into four separate categories along with a category for retaining walls. The bridge categories are widening of underpass bridges, widening of overpass bridges, new structures and bridge replacements. The following is a brief description of the four classes:

Widening Underpass – Existing underpass bridges that are geometrically and structurally adequate will have I-10 widened underneath them to accommodate the new roadway template. These structures will be discussed in paragraph 4.10.1 and will be presented in direction of increasing stationing from west to east.

Widening Overpass – Existing overpass bridges that are geometrically and structurally adequate will be widened to accommodate the new roadway template. There are nineteen structures within the limits of this project which will require widening. These structures will be discussed in paragraph 4.10.1 and will be presented in direction of increasing stationing from west to east.

New – Some features are proposed to be added to the I-10 corridor within the proposed I-10 / SR 303L system interchange. Features that require major structures are categorized into this category and will be discussed in paragraph 4.10.2.

Replacement – Existing Bridges that are not structurally adequate or those for which the geometry is proposed to be changed will be removed and replaced. There are two structures immediately to the east of the proposed I-10 / SR 303L system interchange that fall within this category and they are also discussed in paragraph 4.10.2.

Retaining Walls – Retaining walls are proposed to be added to the I-10 corridor within the proposed I-10 / SR 303L system interchange. These proposed walls will be discussed in paragraph 4.10.3.

Table 4.5 – Existing and New Bridges

Structure Name	Structure Number	Milepost	Profile Type	Construct Type	Original Project No.	No. of Spans	Existing Super	Length	Exist. Min. Vertical Clearance
Oglesby Road Ramp B	1725	112.75	Under Crossing	None	I-10-2(64)	2	PT Box	274'-0"	17.29
Oglesby Road Ramp C	1726	112.92	Under Crossing	None	I-10-2(64)	2	PT Box	280'-0"	17.56
Miller Road	1728 EB 1729 WB	114.84	Overpass	Widen	I-10-2(64)	3	RC CIP Box	161'-2 1/2"	17.82
Watson Road	1681 EB 1682 WB	116.97	Overpass	Widen	I-10-2(31)	3	RC CIP Box	142'-1 1/2"	16.70
Verrado Way TIUP	2668	120.26	Under Crossing	None	I-10-B-501	2	AASHTO Type IV	242'-0"	17.28
Jackrabbit Trail	1683 EB 1684 WB	121.67	Overpass	Widen	I-10-2(31)	4	RC CIP T-girder	176'-8"	16.72
Perryville Road	1705 EB 1706 WB	122.69	Overpass	Widen	I-10-2(34)	1	PT Box	129'-1/2"	17.21
Citrus Road OP	1707 EB 1708 WB	123.69	Overpass	Widen	I-10-2(34)	1	PT Box	129'-0"	16.61'
SR 303L	N/A	N/A	Overpass	New	N/A	2	N/A	415'-0"	N/A
SR 303L SB Frontage	N/A	N/A	Overpass	New	N/A	2	N/A	105'-0"	N/A
SR 303L NB Frontage	N/A	N/A	Overpass	New	N/A	2	N/A	105'-0"	N/A
I-10 / SR 303L Ramp SE	N/A	N/A	Overpass	New	N/A	TBD	N/A	925'-0"	N/A
I-10 / SR 303L Ramp EN	N/A	N/A	Overpass	New	N/A	TBD	N/A	1000'-0"	N/A
I-10 / SR 303L Ramp WS	N/A	N/A	Overpass	New	N/A	TBD	N/A	775'-0"	N/A
I-10 / SR 303L Ramp NW	N/A	N/A	Overpass	New	N/A	TBD	N/A	900'-0"	N/A
Cotton Lane TI OP	1709 EB 1710 WB	124.69	Overpass	Remove	I-10-2(34)	1	PT Box	153'-0"	16.75'
RID Canal Bridge	1711 EB 1712 WB	125.19	Under Crossing	Remove	I-10-2(34)	3	AASHTO Type III	281'-11 1/2"	15'-7"
Sarival Ave TI OP	1713 EB 1714 WB	125.69	Overpass	Replace	I-10-2(34)	1	PT Box	129'-9"	14.62'
Estrella Parkway	1715 EB 1716 WB	126.67	Overpass	Widen	I-10-2(34)	1	PT Box	153'-0"	15.72' EB
Airport Wash	1849 EB 1850 WB	127.15	Under Crossing	Widen	I-10-2(34)	7	CIP Slab	202'-1 1/4"	N/A
Bullard Ave. OP	1717 EB 1718 WB	127.67	Overpass	Widen	I-IG-10-2(37)	1	PT Box	141'-2 1/4"	16.17' EB
SPRR OP	1719 EB 1720 WB	128.45	Overpass	Widen	I-IG-10-2(37)	3	AASHTO Type II	137'-3"	22.93' EB
Litchfield Road TI OP	1721 EB 1722 WB	128.68	Overpass	Widen	I-IG-10-2(37)	1	PT Box	163'-0"	15.94' EB
Dysart Road TI OP	1723 EB 1724 WB	129.67	Overpass	Widen	I-IG-10-2(37)	1	PT Box	163'-0"	16.24'
Agua Fria River Bridge	1852 EB 1853 WB	130.00	Under Crossing	Widen	I-10-2(44)	20	AASHTO Type IV	1502'-1 1/2"	N/A
Avondale Blvd. TI OP	1856 EB 1857 WB	131.68	Overpass	Widen	I-10-2(78)	1	PT Box	152'-6 3/4"	16.55'
107 th Ave OP	1858 EB 1859 WB	132.66	Overpass	Widen	I-10-2(78)	1	PT Box	128'-4"	16.81'
99 th Ave TI OP	1860 EB 1861 WB	133.66	Overpass	Widen	I-10-2(78)	1	PT Box	152'-6"	16.62'

DESIGN CODES

Structures will be designed using the AASHTO design codes as amended by the Arizona Department of Transportation (ADOT) Bridge Practice Guidelines. Structures that are being widened will be designed using AASHTO Standard Specifications for Highway Bridges, 17th Edition – 2002. Members within the widened structures will be designed by Working Stress Design or Load Factored Design as outlined in the ADOT Bridge Practice Guidelines. Structures that are being replaced and new structures will be designed using AASHTO LRFD Bridge Design Specifications – Customary U.S. Units, 3rd Edition 2004 with current interims (or the current edition accepted by ADOT Bridge Group) as amended by the ADOT Bridge Practice Guidelines for LRFD. ADOT Standard Drawings will be used where applicable for all structures.

4.10.1 Widening Existing I-10 Bridge Structures

Oglesby Road Ramp B

LOCATION

The Oglesby Road Ramp B bridge over I-10 is located at I-10 mile post 112.75 approximately 36 miles west of I-17/I-10 TI. The ramp is part of the system TI connecting I-10 westbound to SR85 southbound. The ramp bridge is in a curved horizontal and vertical alignment as it crosses above I-10 at a skew. The alignment of I-10 under the bridge follows a horizontal curve, and eastbound and westbound profiles are in sag vertical curves. The structure is not considered to have historic significance.

EXISTING STRUCTURES

The bridge superstructure is 6 feet in depth including the 7-1/2 inch deck. The pier is comprised of one column located on the I-10 median construction centerline. The diaphragm abutments are on spread footings founded below original ground. The minimum vertical clearance along the westbound existing edge of median pavement is 18.04 feet. Information for the existing Oglesby Road Ramp B Bridge was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.6 below.

Table 4.6 – Oglesby Ramp B Existing Information

Item	Oglesby Road Ramp B
Structure No.	1725
Route	SR 85/I-10 TI
Mile Post	112.75
Project Number	I-10-2 (64)
Year Built	1976
Skew	21° 46' 49"
Structure Type	CIP Post-Tensioned Box Girder (4 Webs @ 8'-0")
Number of Spans	2
Maximum Span	140'
Structure Length	271'-2"
Roadway Width	22' Clear Roadway
Additional Information:	
Sufficiency Rating	95.62
Minimum Vertical Clearance	17.29'
Barrier	H-2-1 Bridge Rail

PROPOSED CONDITIONS

The I-10 roadway will be widened toward the median by adding one general purpose lane 12 feet wide and increasing the shoulder width. The new 16 foot section of roadway will match the existing roadways cross slope of 2'/ft and reduce the vertical clearance at the westbound interior edge of median pavement by approximately 0.32 feet. Thus, the new minimum vertical clearance at the edge of pavement will be approximately 17.72 feet. This is greater than 16.5 feet and considered adequate for this project. The eastbound vertical clearance will not be affected due to the direction of roadway slope.

CONSTRUCTABILITY

It is not anticipated that the Oglesby Road Ramp B bridge over I-10 will affect the constructability of the widening project.

Oglesby Road Ramp C

LOCATION

The Oglesby Road Ramp C bridge over I-10 is located at I-10 mile post 112.92 approximately 36 miles west of I-17/I-10 TI. The ramp is part of the system TI connecting SR85 northbound to I-10 westbound. The ramp bridge is in a curved horizontal and vertical alignment as it crosses above I-10 at a skew. The alignment of I-10 under the bridge follows a horizontal curve, and eastbound and westbound profiles are in sag vertical curves. The structure is not considered to have historic significance.

EXISTING STRUCTURES

The bridge superstructure is 6 feet in depth including the 7-1/2 inch deck. The pier is comprised of one column located at the I-10 median construction centerline. The ends of the bridge are on integrated abutments supported by steel H piles. The minimum vertical clearance along the westbound existing edge of median pavement is 19.48 feet. Information for the existing Oglesby Road Ramp C Bridge was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.7 below.

Table 4.7 – Oglesby Ramp C Existing Information

Item	Oglesby Road Ramp C UP
Structure No.	1726
Route	SR 85/I-10 TI
Mile Post	112.92
Project Number	I-10-2 (64)
Year Built	1976
Skew	20° 38' 26"
Structure Type	CIP Post-Tensioned Box girder (4 Webs @ 8'-0")
Number of Spans	2
Maximum Span	148'-0"
Structure Length	277'-0"
Roadway Width	22' Clear Roadway
Additional Information:	
Sufficiency Rating	96.66
Minimum Vertical Clearance	17.56'
Barrier and Deck	H-2-1 Bridge Rail

PROPOSED CONDITIONS

The I-10 roadway will be widened toward the median by adding one general purpose lane 12 feet wide and increasing the shoulder width. The new 16 foot section of roadway will match the existing roadways cross slope of 2'/ft and reduce the vertical clearance at the westbound interior edge of median pavement by approximately 0.32 feet. Thus, the new minimum vertical clearance at the edge of pavement will be approximately 19.15 feet. This is greater than 16.5 feet and considered adequate for this project. The eastbound vertical clearance will not be affected due to the direction of roadway slope.

CONSTRUCTABILITY

It is not anticipated that the Oglesby Road Ramp C bridge over I-10 will affect the constructability of the widening project.

Miller Road TI OP

LOCATION

The Miller Road TI bridges on I-10 are located at mile post 114.84 approximately 34 miles west of I-17/I-10 TI. The I-10 mainline profile is elevated and the bridges are in crest vertical curves as they convey traffic on I-10, over Miller Road with a tangent horizontal alignment. Miller Road is at grade and has a tangent alignment, with northbound and southbound profiles following a constant sloping grade. The structures are not considered to have historic significance.

EXISTING STRUCTURES

The parallel overpass bridge superstructures are symmetrical in section about the I-10 median construction centerline and are sloped at 2'/ft toward the exterior. The distance from the eastbound and westbound construction centerlines is 108 feet. The bridges are separated by a clear distance of 69 feet 5 inches. Information for the existing Miller Road TI Bridges was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.8 below.

Table 4.8 – Miller Road TI OP Existing Information

Item	Miller Road TI OP EB	Miller Road TI OP WB
Structure No.	1728	1729
Route	10	10
Mile Post	114.84	114.84
Project Number	I-10-2(64)	I-10-2(64)
Year Built	1976	1976
Skew	20°	20°
Structure Type	CIP RC Box Girder/Moment Frame (6 Webs @ 7'-9")	CIP RC Box Girder/Moment Frame (6 Webs @ 7'-9")
Number of Spans	3	3
Maximum Span	72'	72'
Structure Length	161'-2 1/2"	161'-2 1/2"
Roadway Width	42' Clear Roadway	42' Clear Roadway
Additional Information:		
Sufficiency Rating	92.26	92.26
Minimum Vertical Clearance	17.82'	17.82'
Barrier and Deck	H-2-1 Bridge Rail	H-2-1 Bridge Rail

The superstructures vary one foot in depth with 4 feet 3 inches being the maximum dimension including the 7-1/2 inch deck. No utilities are attached to the superstructure. The two piers are comprised of 3 rectangular sectioned columns that are slanted longitudinally toward the center of the bridge and supported by spread footings. Abutment No. 1 is a spill through type founded on spread footing below the original existing ground line and abutment No. 2 is founded on steel H-piles. The 40' wide Miller Road partially utilizes the main span of the bridge. There is no curb or sidewalk provided under the bridges. A recent ADOT bridge evaluation gives the structures an acceptable live load rating of HS-20 and the as-built plans for the structures indicates that they were designed for a future wearing surface load of 20 psf, which has not been placed yet. The most current inspection report indicates that the components of the structures are in good to fair condition.

PROPOSED CONDITIONS

The I-10 roadway will be widened toward the median by adding one general purpose lane 12 feet wide and increasing the shoulder by 4 feet at the bridge to provide a concrete F-shaped barrier. The total width of additional structure is 16.29 feet per bridge as shown in Figure 4.5 below. The existing exterior H-2-1 barrier will be replaced with vertical concrete parapet barrier. FMS conduit will be included in the outside bridge railing when it is replaced. The cost of widening is estimated to be approximately \$578,000, and the cost of replacement is estimated to be approximately \$1,570,000. Therefore, widening is considered to be the cost effective alternative at this time and will limit impacts to the traveling public.

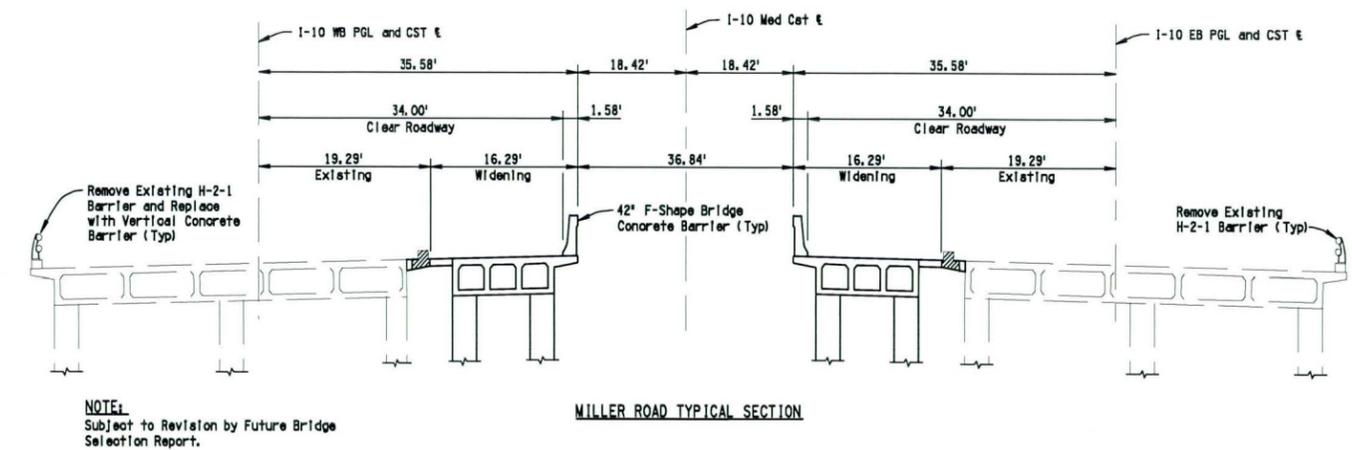


Figure 4.5 – Miller Road Typical Section

The widening will maintain the existing roadway cross slope, and superstructure depth. Therefore, there will be no decrease in the crossroad vertical clearance. The structures are the approximately at the middle of crest vertical curves. Therefore, the proposed drainage pattern will remain the same, flowing off of each end.

It is anticipated that an increased opening below the bridge will be needed to accommodate the future widening of Miller Road. The existing substructure configuration significantly limits the amount of increase possible. ADOT has encouraged the local governments to consider programming their project funds to coincide with the widening of I-10.

CONSTRUCTABILITY / TRAFFIC CONTROL

During the widening project it is anticipated that traffic flow will be maintained in both directions providing 2-12 foot wide travel lanes with 2 feet of shy distance to the barriers. The anticipated work space provided will be approximately 12 feet for construction activities and access to the deck cantilever section of the bridge.

It is anticipated that traffic control will be needed on Miller Road to accommodate construction activities and provide temporary traffic openings. One lane in each direction for Miller Road will be maintained. Temporary vertical clearance of 14'-6" will be maintained during construction.

There is a 1/8 inch lead sheet between the slanted pier ends and their pedestals. An assessment of this should be conducted prior to beginning any construction activities on these components.

Watson Road TI OP

LOCATION

The Watson Road TI bridges on I-10 are located at milepost 116.97 approximately 32 miles west of I-17/I-10 TI. The I-10 mainline profile is elevated and the bridges are in crest vertical curves as they convey traffic on I-10, over Watson Road with a tangent horizontal alignment. Watson Road is at grade and has a tangent alignment, with northbound and southbound profiles are in sag vertical curves. The structures are not considered to have historic significance.

EXISTING STRUCTURES

The parallel overpass bridge superstructures are symmetrical in section about the I-10 median construction centerline and are sloped at 1.5'/ft toward the exterior. The distance from the eastbound and westbound construction centerlines is 108 feet. The bridges are separated by a clear distance of 69 feet 5 inches. Information for the existing Watson Road TI Bridges was taken from the Arizona State Highway System Bridges Record and summarized in Table 4.9.

The superstructures are 3 feet 6 inches in depth including the 7 inch thick deck. No utilities are attached to the superstructure. The two piers are comprised of 2 rectangular sectioned columns that are slanted longitudinally toward the center of the bridge and supported by spread footings. Abutment No. 1 and No. 2 are founded on steel H-piles. The 40 foot wide Watson Road fully utilizes the main span of the bridge including curb and sidewalk provided under the bridges.

Table 4.9 – Watson Road TI OP Existing Information

Item	Watson Road TI OP EB	Watson Road TI OP WB
Structure No.	1681	1682
Route	10	10
Mile Post	116.97	116.97
Project Number	I-10-2(31)	I-10-2(31)
Year Built	1975	1975
Skew	20°	20°
Structure Type	CIP RC Box Girder/Moment Frame (7 Webs @ 6'-6")	CIP RC Box Girder/Moment Frame (7 Webs @ 6'-6")
Number of Spans	3	3
Maximum Span	77'	77'
Structure Length	142'-1 1/2"	142'-1 1/2"
Roadway Width	42' Clear Roadway	42' Clear Roadway
Additional Information:		
Sufficiency Rating	F91.87	F91.87
Minimum Vertical Clearance	16.70'	16.70'
Barrier and Deck	H-2-1 Bridge Rail	H-2-1 Bridge Rail

A recent ADOT bridge evaluation gives the structures an acceptable live load rating of HS-20 and the as-built plans for the structures indicates that they were designed for a future wearing surface load of 20 psf, which has not been placed yet. The most current inspection report indicates that the components of the structures are in good to fair condition.

PROPOSED CONDITIONS

The I-10 roadway will be widened toward the median by adding one general purpose lane 12 feet wide and increasing the shoulder by 4 feet at the bridge to provide a concrete F-shaped barrier. The total width of additional structure is 16.29 feet per bridge as shown in Figure 4.6 below. The existing exterior H-2-1 barrier will be replaced with vertical concrete parapet barrier. FMS conduit will be included in the outside bridge railing when it is replaced. The cost of widening is estimated to be approximately \$509,000, and the cost of replacement is estimated to be approximately \$1,384,000. Therefore, widening is considered to be the cost effective alternative at this time.

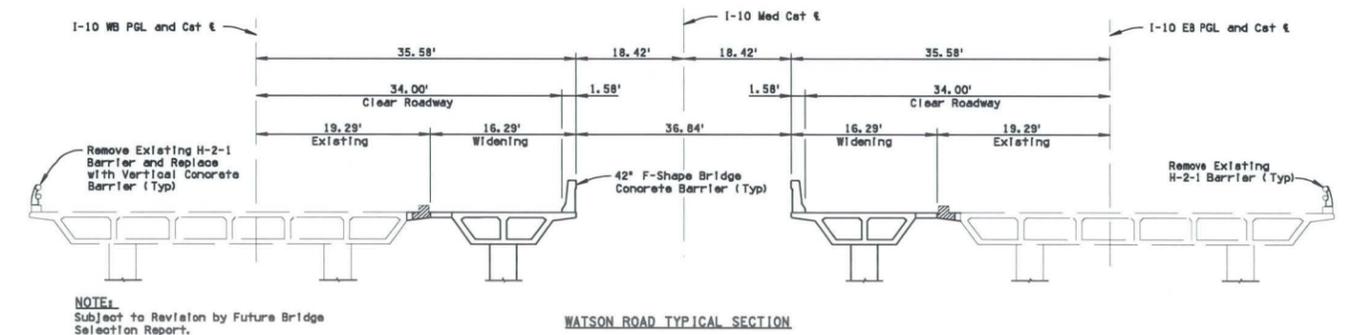


Figure 4.6 – Watson Road Typical Section

The widening will maintain the existing roadway cross slope, and superstructure depth. Therefore, there will be no decrease in the crossroad vertical clearance. The structures are the approximately at the middle of crest vertical curves. Therefore, the proposed drainage pattern will remain the same, flowing off of each end.

It is anticipated that an increased opening below the bridge will be needed to accommodate the future widening of Watson Road. The existing substructure configuration significantly limits the amount of increase possible. ADOT has encouraged the local governments to consider programming their project funds to coincide with the widening of I-10.

CONSTRUCTABILITY / TRAFFIC CONTROL

During the widening project it is anticipated that traffic flow will be maintained in both directions providing 2-12 foot wide travel lanes with 2 feet of shy distance to the barriers. The anticipated work space provided will be approximately 12 feet for construction activities and access to the deck cantilever section of the bridge.

It is anticipated that traffic control will be needed on Watson Road to accommodate construction activities and provide temporary traffic openings. One lane in each direction for Watson Road will be maintained. Temporary vertical clearance of 14'-6" will be maintained during construction.

There is a 1/8 inch lead sheet between the slanted pier ends and their pedestals. An assessment of this should be conducted prior to beginning any construction activities on these components.

Verrado Way TIUP

LOCATION

The Verrado Way bridge over I-10 is located at I-10 mile post 120.26 approximately 28.5 miles west of I-17/I-10 TI. The bridge is in a crest vertical curve as it crosses above I-10 with a skewed tangent horizontal alignment. The alignment of I-10 under the bridge follows a horizontal curve, and eastbound and westbound profiles follow a constant slope.

EXISTING STRUCTURES

The superstructure is 5 feet 11 inches in depth with including 8 inch thick deck. The pier is comprised of three columns located approximately on the I-10 median construction centerline at a tangent. The bridge has spill through abutments supported by a single shallow spread footing. The minimum vertical clearance along the existing edge of median pavement is 18.25 feet along the westbound lanes, and 18.90 at the eastbound lanes. Information for the existing Verrado Way Bridge was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.10.

Table 4.10 – Verrado Way UP Existing Information

Item	Verrado Way UP
Structure No.	2668
Route	Verrado Way
Mile Post	116.97
Project Number	I-010-B-501
Year Built	2003
Skew	15° 09' 33"
Structure Type	AASHTO Modified Type V PS I-girders
Number of Spans	2
Maximum Span	118'
Structure Length	242'-2"
Roadway Width	96' Clear Roadway
Additional Information:	
Sufficiency Rating	99.98
Minimum Vertical Clearance	17.28'
Barrier and Deck	Combination Ped/Traffic

PROPOSED CONDITIONS

The I-10 roadway will be widened toward the median by adding one general purpose lane 12 feet wide and increasing the shoulder by 2 feet. The new 16 foot section of roadway will match the existing roadways superelevation of 0.024 '/ft and increase the vertical clearance at the westbound interior edge of pavement by approximately 0.38 feet. Thus, the new minimum vertical clearance at the edge of median pavement will be approximately 18.52 feet at the eastbound side. This clearance is greater than 16.5 feet and considered adequate for this project. The westbound vertical clearance will be increased due to the direction of roadway slope, and will also be greater than 16.5 feet.

The median widening will require the piers be protected.

CONSTRUCTABILITY

It is not anticipated that the Verrado Way Bridge over I-10 will affect the constructability of the widening project.

Jackrabbit Trail TI OP

LOCATION

The Jackrabbit Trail bridges on I-10 are located at milepost 121.67, approximately 27.5 miles west of I-17/I-10 TI. The I-10 mainline profile is elevated and the bridges are in crest vertical curves as they convey traffic on I-10, over Jackrabbit Trail and a drainage channel with a tangent horizontal alignment. Jackrabbit Trail is at grade and has a tangent alignment, with northbound and southbound profiles following a constant sloping grade. The structures are not considered to have historic significance.

EXISTING STRUCTURES

The parallel overpass bridge superstructures are symmetrical in section about the I-10 median construction centerline and are sloped at 1.5'/ft toward the exterior. The distance from the eastbound and westbound construction centerlines is 108 feet. The bridges are separated by a clear distance of 69 feet 5 inches. Information for the existing Jackrabbit Trail Bridges was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.11 below.

Table 4.11 – Jackrabbit Trail TI OP Existing Information

Item	Jackrabbit Trail TI OP EB	Jackrabbit Trail TI OP WB
Structure No.	1683	1684
Route	10	10
Mile Post	121.67	121.67
Project Number	I-10-2(31)	I-10-2(31)
Year Built	1975	1975
Skew	0°	0°
Structure Type	CIP RC Tee-Girder (7 girders @ 6'-6")	CIP RC Tee-Girder (7 girders @ 6'-6")
Number of Spans	4	4
Maximum Span	59'	59'
Structure Length	176'-8"	176'-8"
Roadway Width	42' Clear Roadway	42' Clear Roadway
Additional Information:		
Sufficiency Rating	91.63	91.63
Minimum Vertical Clearance	16.81'	16.81'
Barrier and Deck	H-2-1 Bridge Rail	H-2-1 Bridge Rail

The superstructures are 3 feet 6 inches in depth including the 7 inch deck. The three piers are comprised of 2 circular sectioned vertical columns supported by spread footings below original ground. The abutments are founded on steel H-piles. The 44 foot wide Jackrabbit Trail fully utilizes the main span of the bridge. There is no curb or sidewalk provided under the bridges.

A recent ADOT bridge evaluation gives the structures an acceptable live load rating of HS-20 and the as-built plans for the structures indicates that they were not designed for a future wearing surface load. The most current inspection report indicates that the components of the structures are in good to fair condition.

The drainage channel running on the west side of, and parallel to, Jackrabbit Trail has a trapezoidal typical section approximately 52 feet wide, measured bank to bank, with 1:1 side slopes. The top of the bank of the channel meets the bridge piers on either side. The channel is lined and flow is from north to south.

PROPOSED CONDITIONS

The I-10 roadway will be widened toward the median by adding one general purpose lane 12 feet wide and increasing the shoulder by 4 feet at the bridge to provide a concrete F-shaped barrier. The total width of additional structure is 16.29 feet per bridge as shown in Figure 4.7. The existing exterior H-2-1 barrier will be replaced with vertical concrete parapet barrier. FMS conduit will be included in the outside bridge railing when it is replaced. The cost of widening is estimated to be approximately \$633,000, and the cost of

replacement is estimated to be approximately \$1,721,000. Therefore, widening is considered to be the cost effective alternative at this time.

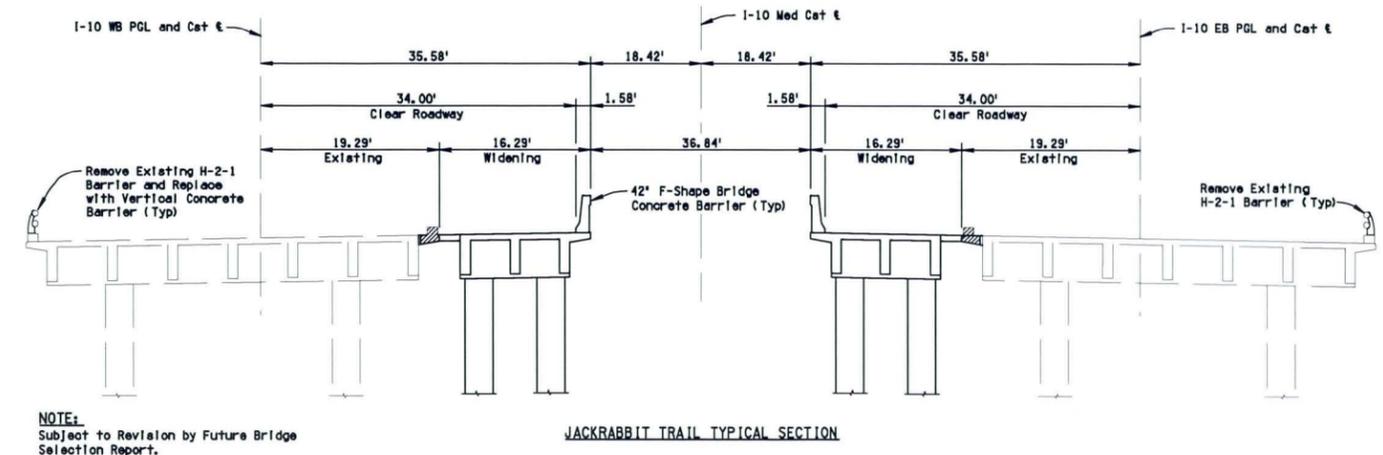


Figure 4.7 – Jackrabbit Trail Typical Section

The widening will maintain the existing roadway cross slope. Therefore, there will be no decrease in the crossroad vertical clearance. The structures are the approximately at the middle of crest vertical curves. Therefore, the proposed drainage pattern will remain the same, flowing off of each end.

It is anticipated that an increased opening below the bridge will be needed to accommodate the future widening of Jackrabbit Trail. The existing substructure configuration significantly limits the amount of increase possible. ADOT has encouraged the local governments to consider programming their project funds to coincide with the widening of I-10.

CONSTRUCTABILITY / TRAFFIC CONTROL

During the widening project it is anticipated that traffic flow on I-10 will be maintained in both directions providing 2-12 foot wide travel lanes with 2 feet of shy distance to the barriers. The anticipated work space provided will be approximately 12 feet for construction activities and access to the deck cantilever section of the bridge.

It is anticipated that traffic control will be needed on Jackrabbit Trail to accommodate construction activities. One lane in each direction for Jackrabbit Trail will be maintained. Temporary vertical clearance of 14'-6" will be maintained during construction.

The existing drainage channel under the bridges is considered waters of the U.S. by the Army Corps of Engineers. It is anticipated that the drainage channel will need to be protected during construction to maintain the necessary conveyance requirement. An assessment of the necessary permit requirements should be completed prior to beginning any construction activities.

Perryville Road OP

LOCATION

The Perryville Road bridges on I-10 are located at milepost 122.69, approximately 26.5 miles west of I-17/I-10 TI. The I-10 mainline profile is elevated and the bridges are in crest vertical curves as they convey traffic on I-10, over Perryville Road and a drainage channel with a tangent horizontal alignment. Perryville Road is at grade and has a tangent alignment, with northbound and southbound profiles following a constant sloping grade. The structures are not considered to have historic significance.

EXISTING STRUCTURES

The parallel overpass bridge superstructures are symmetrical in section about the I-10 median construction centerline and are sloped at 1.5'/ft toward the exterior. The distance from the eastbound and westbound construction centerlines is 108 feet. The bridges are separated by a clear distance of 69 feet 5 inches. Information for the existing Perryville Road Bridges was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.12 below.

Table 4.12 – Perryville Road OP Existing Information

Item	Perryville Road OP EB	Perryville Road OP WB
Structure No.	1705	1706
Route	10	10
Mile Post	122.69	122.69
Project Number	I-10-2(34)	I-10-2(34)
Year Built	1978	1978
Skew	10° 10' 30"	10° 10' 30"
Structure Type	CIP Post-Tension Box girder (5 Webs @ 9'-0")	CIP Post-Tension Box girder (5 Webs @ 9'-0")
Number of Spans	1	1
Maximum Span	126'	126'
Structure Length	129'-1/2"	129'-1/2"
Roadway Width	42' Clear Roadway	42' Clear Roadway
Additional Information:		
Sufficiency Rating	F92.77	F92.77
Minimum Vertical Clearance	17.21'	17.21'
Barrier and Deck	H-2-1 Bridge Rail	H-2-1 Bridge Rail

The superstructures are 5 feet 6 inches in depth including the 8 inch thick deck. No utilities are attached to the superstructure. The abutments are integral type founded on steel H-piles. The 26 feet wide Perryville Road partially utilizes the span of the bridges. There is no curb or sidewalk provide below the bridges.

A recent ADOT bridge evaluation gives the structures an acceptable live load rating of HS-20 and the as-built plans for the structures indicates that they were designed for a future wearing surface load of 20 psf, which has not been placed yet. The most current inspection report indicates that the components of the structures are in good to fair condition.

The drainage channel running on the west side of, and parallel to Perryville Road flows from north to south. The channel is concrete lined, with a trapezoidal cross section, approximately 30 feet wide measured bank to bank. The channel continues to be concrete lined to the south beyond the limits of the project.

Perryville Road is programmed in the Regional Transportation Plan to become a TI prior to this widening project. The TI ramps will be an existing condition at the time of the widening project.

PROPOSED CONDITIONS

The project widening will occur toward the median and completely close it in at the Perryville Road bridges. This will provide one 12 feet wide general purpose lane for immediate use, and additional deck surface to accommodate future lanes on I-10. Concrete F-shaped barriers will be constructed along the interior edge of deck. The total width of additional structure required for this is 34.71 feet per bridge as shown in Figure 4.8 below.

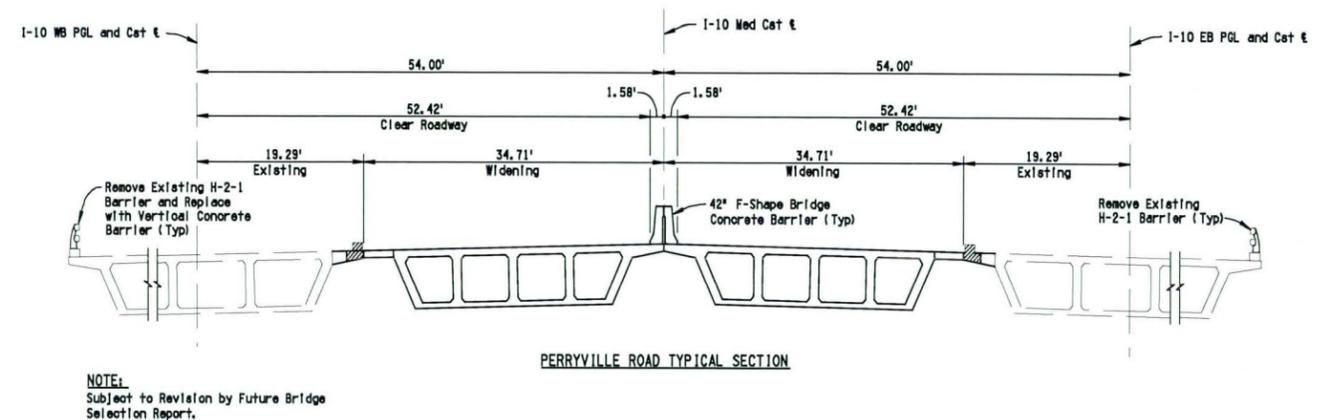


Figure 4.8 – Perryville Road Typical Section

The existing exterior H-2-1 barrier will be replaced with vertical concrete parapet barrier. FMS conduit will be included in the outside bridge railing when it is replaced. The cost of widening is estimated to be approximately \$985,000, and the cost of replacement is estimated to be approximately \$1,637,000. Therefore, widening is considered to be the cost effective alternative at this time.

The widening will maintain the existing roadway cross slope, and occurs on the high side of the roadway. Therefore, there will be no decrease in the crossroad vertical clearance below.

It is anticipated that an increased opening below the bridge will be needed to accommodate the future widening of Perryville Road. The existing substructure configuration limits the amount of increase possible. ADOT has encouraged the local governments to consider programming their project funds to coincide with the widening of I-10.

CONSTRUCTABILITY / TRAFFIC CONTROL

During the widening project it is anticipated that traffic flow will be maintained in both directions providing 2-12 foot wide travel lanes with 2 feet of shy distance to the barriers. The anticipated work space provided will be approximately 12 feet for construction activities and access to the deck cantilever section of the bridge.

It's anticipated that traffic control will be needed on Perryville Road to accommodate construction activities and provide temporary traffic openings. One lane in each direction for Perryville Road will be maintained. Temporary vertical clearance of 14'-6" will be maintained during construction.

A 12 kV overhead power line owned by Arizona Public Service is located along the west side of Perryville Road, and crosses over I-10 at approximately mid-span of the bridge. This line may affect the constructability of certain bridge types and will be assessed further in the bridge selection report stage.

Asbestos sheet packing was used on top of the shear key at abutment No. 2 of both bridges. An assessment of this should be conducted prior to beginning any construction activities on these components.

Citrus Road OP

LOCATION

Citrus Road Overpass Bridge is located west of the proposed I-10/SR 303L system interchange, which is approximately 25.5 miles west of Junction I-10 and I-17.

The alignment of I-10 at the Citrus Road Bridges is in a tangent and the bridges are parallel to each other. The cross-slope of the bridges is at a normal 0.02 '/ft crown. Citrus Road is at grade at the crossing and the mainline is elevated in a crest curve.

EXISTING STRUCTURES

The bridges are cast-in-place post tensioned box girder bridges with an overall bridge length of 129'-0" and an overall bridge width of 44'-7" (42'-0" Clear Width). The eastbound and westbound bridges each support two 12'-0" through lanes with an inside shoulder of 8'-0" and an outside shoulder of 10'-0". The existing bridge rails are the ADOT H-2-1 rail system that has a width of 1'-3½" per bridge rail. The bearings consist of asbestos bearing sheets at the east abutment while the west abutment is a pinned abutment with bituminous joint filler.

The existing bridges were designed for a live load of HS20-44 and/or the Interstate Alternate Loading. The deadload includes an allowance for 25 psf for future wearing surface. The deck at the time of this report does not include the future wearing surface. The ADOT bridge inspection report states that the bridge is in good condition with no components of the bridge rating less than the minimum criteria.

Information for the existing Citrus Road Bridges was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.13.

Table 4.13 – Existing Citrus Road OP Bridge Information

Item	Citrus Road OP EB	Citrus Road OP WB
Structure No.	1707	1708
Route	10	10
Milepost	123.69	123.69
Project Number	I-10-2(34)	I-10-2(34)
Year Built	1978	1978
Skew	0°	0°
Structure Type	Cast-in-Place Post-tensioned Concrete Box Girder Bridge	Cast-in-Place Post-tensioned Concrete Box Girder Bridge
Number of Spans	1	1
Maximum Span	126'-0"	126'-0"
Structure Length	129'-0"	129'-0"
Roadway Width	42' Clear Roadway	42' Clear Roadway
Vertical Clearance:	16.72'	16.64'
Sufficiency Rating	96.83	96.83

The Citrus Road Overpass does not currently provide access to I-10. The road consists of one 12'-0" through lane in each direction. The *Arizona State Highway System Bridges Record* indicates that Citrus road can be widened to 35'-0" on both sides of the centerline before encroaching into the 2:1 foreslope extending from the abutments.

The decks on both bridges drain to the Abutment 1 and onto the embankment.

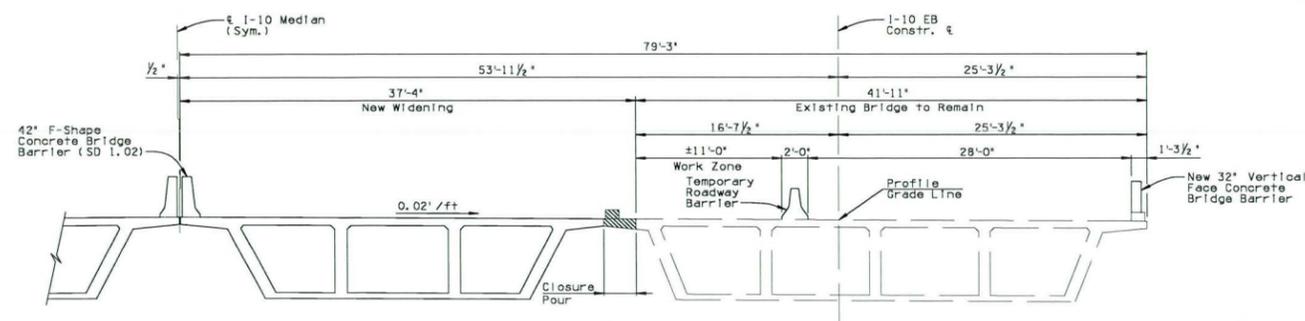
At the toe of the Abutment #2 foreslope there is a 30" diameter reinforced concrete pipe that conveys water from a ditch that is located on the east side of Citrus Road and runs parallel with Citrus Road. In addition, 1¼" and 2" diameter gas lines are located underneath the Citrus Road pavement.

The Citrus Road Overpass is not eligible for the National Register of Historic Places at the current time.

PROPOSED CONDITIONS

The I-10 roadway and Citrus road Overpasses will be widened toward the median to accommodate additional lanes. Approximate costs for widening the existing structure and replacing the entire structure were estimated and compared. The estimated cost for widening the existing structure is \$984,000. The approximate cost for replacing the structure is estimated at \$1,636,000. Considering that the materials and construction methods employed for the existing bridge are still current practices, potential impacts to the traveling public, and economics, the recommendation is to widen the existing structures instead of replacing them.

This project proposes to widen each existing I-10 bridge by 34'-8" into the median for an overall width of 79'-3". The widening will leave a 1" gap between the eastbound and westbound bridges. The existing bridge rail on the widened side of the bridge will be removed and new 42" F-Shape (ADOT SD 1.02) will be placed at the edge of the new deck. The exterior barrier may be replaced with a vertical face barrier as part of this project, depending on the amount of time projected to elapse before of the outside widening project is constructed for this segment of I-10. The cost estimate assumes the cost to modify the exterior H-2-1 barrier to the vertical face concrete barrier and is shown in Figure 4.9.



NOTE:
 The superstructure selection will be finalized during the bridge selection report phase. The superstructure shown is for graphical purposes only.

CITRUS ROAD TYPICAL SECTION

Figure 4.9 – Citrus Road Typical Section

The proposed bridge decks are to drain in a similar manner as the existing bridge; however this shall be verified during final design.

Freeway Management System (FMS) conduit will not be included in the widened portion of the bridge or in the median barrier. In the event the existing H-2-1 bridge rail is replaced with the 32" Vertical Face concrete barrier FMS conduits will be provided in the new barrier. The widened portion of this structure will require conduit and boxes for underdeck lighting.

The existing bridge superstructure has an approximate 5'-6" depth. The new bridge will match the 0.02' /ft cross-slope that rises towards the median; therefore, the maximum depth of the proposed superstructure should be limited 6'-0" in order not to reduce the current in-service vertical clearance. The vertical clearance shall be verified during final design.

CONSTRUCTABILITY / TRAFFIC CONTROL

The existing bridges were constructed using methods and materials that are commonly used today. Several bridge types can be used to widen the bridges without creating issues during construction or service. Providing that the superstructure of the widened portion has similar material and section properties (such as moment of inertia) the reaction of the superstructure under live load will be similar between the existing bridge and the widened portion.

Widening of the bridge can be accomplished by protecting the existing inside deck edge with temporary barrier. The upper area of the wingwalls can be partially removed then the remainder of the wingwall abandoned in place. The substructure will need to be extended most likely on deep foundations due to the restricted area and to approximate the existing conditions.

The proposed traffic control for I-10 during widening will allow two 14'-0" lanes to be maintained. However, during placement of the traffic control and girders, if applicable, the traffic may need to be temporarily restricted to a single lane.

Citrus Road will require intermittent closures during construction of the bridge widenings. If precast or steel girders are to be used, then the roadway will be closed to traffic during placement of the girders and deck forms. If a cast-in-place option is chosen, the roadway will be closed during erection and tear down of the falsework. In addition, the roadway will have to be closed or the traffic protected during the partial removal of the existing bridge deck cantilever. A minimum vertical clearance of 14'-6" shall be maintained during construction while public traffic is maintained on the roadway. The proposed falsework openings allows for one lane in each direction to be maintained after erection of the falsework. Citrus Road should not require closure of the traffic lanes during extension of the abutments; however, some protection from potential debris may be warranted.

Estrella Parkway TI OP

LOCATION

The Estrella Parkway TI OP Structures on I-10 are located at MP 126.67, approximately 22.5 miles west of I-10/I-17 TI. The I-10 West mainline roadway at the Estrella Parkway is symmetrical in section about the I-10 West median construction centerline.

The I-10 West mainline horizontal alignment is on a tangent thru the Estrella Parkway with a normal crown and cross slopes of 0.020 ft/ft. The I-10 West EB and WB vertical profiles are on a crest vertical curve through the crossing. The mainline is fully elevated above existing ground at this location.

EXISTING STRUCTURES

The existing bridges consist of a single span post-tensioned concrete box girder bridge supported on HP-12x53 piles. The bridge is 153'-0" long. The superstructure is 6'-6" deep and consists of four cells at 9'-0" spacing. Currently both the eastbound and westbound structures are 44'-7" wide. The superstructure is built integrally with the abutment. The abutments are supported by steel HP 12x53 vertical and batter piles. The expansion abutment, consist of 2-1/8" thick asbestos bearing sheets. The fixed abutment, consist of a 1 5/8"x10" shear key with #8 dowels spaced at 1'-0" on centers. The I-10 West mainline horizontal alignment is on a tangent through the Estrella Parkway with a normal crown and cross slopes of 0.020 ft/ft. The I-10 West EB and WB vertical profiles are on a crest vertical curve through the crossing. The mainline is fully elevated above existing ground at this location.

The bridge is designed for HS 20-44 and interstate alternate live loading including the 25 psf for FWS. Bridge inspection report indicates that the overall condition of the bridge is good and the overall structural evaluation is better than present minimum criteria. Considering the above factors and with no historical significance – the bridge can be widened.

Due to settlement issues, the approach slab was replaced in 1992 and the top 6" of the remaining subgrade was re-compacted to 100 percent of the maximum density. Information for the existing Estrella Parkway TI OP Structures was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.14.

Table 4.14 – Existing Estrella Parkway TI OP Information

Item	Estrella Parkway TI OP EB	Estrella Parkway TI OP WB
Structure No.	1715	1716
Route	10	10
Milepost	126.67	126.67
Project Number	I-10-2(34)	I-10-2(34)
Year Built	1978	1978
Skew	0°	0°
Structure Type	CIP Post-Tensioned Box Girder (5 webs @ 9'-0")	CIP Post-Tensioned Box Girder (5 webs @ 9'-0")
Number of Spans	1	1
Maximum Span	150'	150'
Structure Length	153'	153'
Roadway Width	42' Clear Roadway	42' Clear Roadway
Sufficiency Rating	95.47	96.48
Barrier & Deck	H-2-1 bridge rail	H-2-1 bridge rail
Vertical Clearance	15.72'	15.77'

PROPOSED CONDITIONS

In order to construct the proposed HOV lanes and a general purpose lane both of the EB and WB bridges will require widening. The westbound bridge will be widened to the south and the eastbound bridge will be widened to the north. Each bridge will be widened by 34'-7½" approximately. The total bridge width after median widening will be 79'-2½". Superstructure widening involves removing the existing inside barrier, partially removing the cantilever overhang, and incorporating the existing rebar into new construction. After the proposed widening the EB and WB roadways will each consist of one outside shoulder, three 12'-0" through lanes, one HOV lane and an inside shoulder. Constraints due to vertical clearances and the number of temporary lane openings for cross road traffic will affect the type of superstructure for widening. The Bridge Selection Report will discuss the superstructure widening alternatives; the typical section shown below is for graphical purposes only. The existing inside edge (median) H-2-1 bridge rail barrier will be removed as part of the widening and a 42" F-shape barrier will be constructed at the edge of the new deck. The exterior barrier replacement with a vertical face barrier will be considered as part of the median widening project, depending on the timing of the outside widening for this segment of I-10. For budgeting purposes the cost to modify the exterior H-2-1 barrier to a vertical face barrier is included in the total cost estimate.

The Bridge Selection Report for Estrella Parkway TI OP will address the proposed substructure and foundation widening concepts. The widened abutment will most likely be supported on deep foundations. Abutment extensions can be accomplished by abandoning the existing wingwalls in place and removing just the upper portion for approach slab clearance.

Currently deck run-off of the mainline bridge decks is carried to the west end of the bridges. No additional drainage improvements are necessary for EB and WB median widening. If the exterior H-2-1 barrier is replaced with vertical face barrier with this project – conduits for FMS will installed in the vertical face barrier. Underdeck lighting will be provided for the existing and widened section of the bridges. The bridges will support no other new utilities. See Figure 4.10 for details.

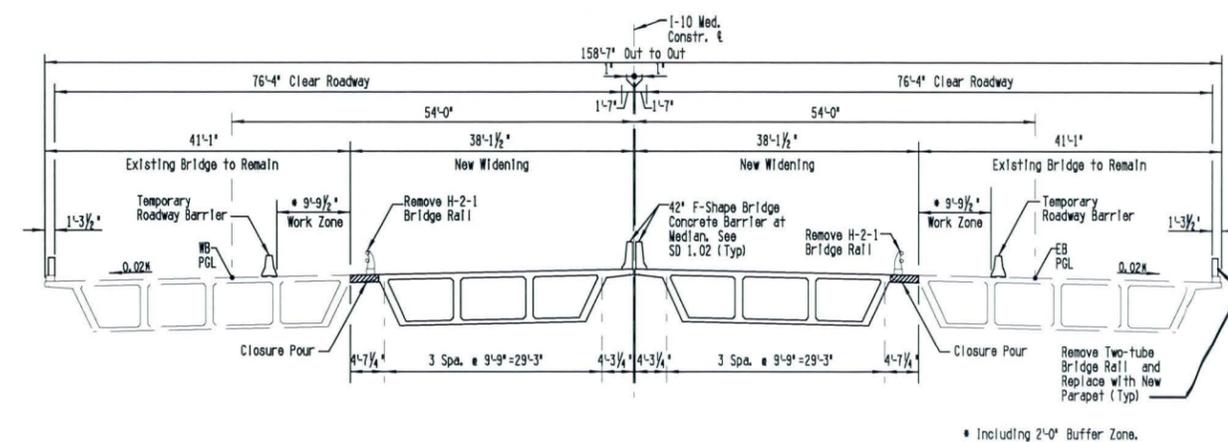


Figure 4.10 – Estrella Parkway TI OP Typical Section

The structure is over 27 years old. Most of the construction materials and methods to match the existing structure are still employed today. The estimated construction cost for the widening is \$1,283,000. The estimated cost to replace with an entire new structure is \$1,939,000. Hence, widening the existing structure is more economical than replacing with a new structure. In addition, potential impacts to the traveling public are reduced.

CONSTRUCTABILITY / TRAFFIC CONTROL

Median widening will require installation of temporary barrier. Due to the horizontal work area behind the barrier, the temporary barrier will not require bolting to the existing deck. Traffic control setup is required during the placement of the temporary barrier. No detour of I-10 will be required for construction activities. It is anticipated that two 12'-0 lanes, plus 2'-0 shy distance to the barriers along with 9'-9" work area (as shown in figure) will be maintained on the bridge throughout the duration of construction. The 9'-9" work area includes a two feet buffer zone for the lateral movement of temporary barrier from direct vehicle collisions. However, Estrella Parkway will require closures during removal of cantilever overhang, falsework or stay-in-place forms and concrete placement. Additional closures may be necessary during falsework removal and painting after construction is complete. A minimum of one lane in each direction of Estrella Parkway plus one left turn lane each to EB I-10 and WB I-10 will be maintained during the entire duration of the construction except for the closures as mentioned above. A minimum temporary vertical clearance of 14'-6" for Estrella Parkway shall be maintained during construction

Bullard (Airport) Wash Bridges

LOCATION

The Bullard Wash Bridges on I-10 are located at MP 127.15, approximately 22.1 miles west of I-10/I-17 TI. The I-10 West mainline roadway at the Bullard Wash Bridges is symmetrical in section about the I-10 West median construction centerline.

The I-10 West mainline horizontal alignment is on a tangent through the Bullard (Airport) Wash crossing with a normal crown and cross slopes of 0.020'/ft. The I-10 West EB and WB profiles are independent and are on sag vertical curves through the crossing. The mainline is fully elevated above existing ground at this location.

EXISTING STRUCTURES

The existing bridges consist of seven span continuous concrete slab structure supported on HP-10x42 piles. The bridges are 202'-1 1/4" long. The five interior spans are 30'-0" long and the two exterior spans are 24'-6" long. The depth of the superstructure is 1'-3 1/2". Currently both the eastbound and westbound structures are 44'-7" wide. The bridge is being currently widened in kind on the outside by approximately 12'-1 1/2" for the auxiliary lane addition under the Bullard Avenue TI Project (TRACS NO. 010 MA 126 H6780 01 C). The bridge width after Bullard Avenue TI construction will be 56'-8 1/2". The abutments and piers are supported by steel HP 10x42 bearing piles and are skewed 15° 03' 19" left to the I-10 West median construction centerline. The abutments are supported by a single row of seven HP 10x42 steel piles. The piers are supported by a single row of ten HP10x42 steel piles.

In 1994 ADOT performed a scour analysis of the existing bridge based on a 500-year peak run-off of 8500 cfs. This evaluation determined that the bridge is scour vulnerable. FCDMC also has completed a routing study and has planned wash improvements both upstream and downstream of the bridges. Both of these projects are expected to have an impact on the existing hydraulics of the two bridges. Based on this routing study, the 100-year and 500-year peak discharges are 3200 cfs and 5440 cfs respectively. Scour analysis based on the reduced flow of 5440 cfs for 500-year event indicate the bridge to be still scour vulnerable and scour countermeasures are recommended. ADOT Bridge Group directed that the scour countermeasures will be constructed in conjunction with the City of Goodyear channel lining project in the future, which will allow median widening to take place first plus minimizes the interference with the retrofit.

The bridge is designed for HS 20-44 and interstate alternate live loading including the 25 psf for FWS. The ADOT Bridge inspection report indicates that the overall condition of the bridge is satisfactory and the overall structural evaluation is equal to present minimum criteria except for the scour. Considering the above factors and with no historical significance and assuming the scour countermeasures will be constructed – the bridge can be widened. Information for the existing Bullard Wash Bridges was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.15

Table 4.15 – Existing Airport (Bullard) Wash Bridge Information

Item	Airport (Bullard) Wash OP EB	Airport (Bullard) Wash OP WB
Structure No.	1849	1850
Route	10	10
Milepost	127.15	127.15
Project Number	I-10-2(34)	I-10-2(34)
Year Built	1978	1978
Skew	15°	15°
Structure Type	CIP Concrete Slab	CIP Concrete Slab
Number of Spans	7	7
Maximum Span	30'	30'
Structure Length	202'-1 1/4"	202'-1 1/4"
Roadway Width	42' Clear Roadway	42' Clear Roadway
Sufficiency Rating	95.26	95.26
Barrier & Deck	H-2-1 bridge rail	H-2-1 bridge rail
Vertical Clearance	Not Applicable	Not Applicable
Q 100 Year	5000 cfs	5000 cfs
100 Year DHW Elev.	992.5 feet	992.8 feet
Q 500 Year	8500 cfs	8500 cfs
Bank Protection	Concrete Lining	Concrete Lining

PROPOSED CONDITIONS

In order to construct the proposed HOV lanes and a general purpose lane, both of the EB and WB bridges will require widening. The westbound bridge will be widened to the south and the eastbound bridge will be widened to the north. Each bridge will be widened by 34'-7 1/2" approximately. To be consistent with the ongoing auxiliary lane widening project, the bridge will likely be widened in kind for the median widening. The total bridge width after median widening will be 91'-4". After the proposed widening the EB and WB roadways each consist of one outside shoulder, one 12'-0" auxiliary lane, three 12'-0" through lanes, one HOV lane and an inside shoulder. The existing inside edge (median) H-2-1 bridge rail barrier will be removed as part of the widening and a 42" F-shape barrier will be constructed at the edge of the new deck. As part of the auxiliary lane widening the exterior H-2-1 bridge rail barrier is being removed and a 32" F-shape barrier will be constructed.

The outside bridge widening for the auxiliary lane widening is being supported by two-24" diameter drilled shafts per abutment and pier. Again, to be consistent with the ongoing auxiliary lane widening, the substructure median widening of the bridge will consist of 24" diameter drilled shafts to support the abutments and the piers.

Currently drainage of the mainline bridge decks is drained via deck drains along the curb of the H-2-1 bridge rail. The deck drains will be removed during the auxiliary lane widening and the surface drainage will be collected by scuppers at the east end of the bridges. The drainage from the scupper will be intercepted by ditches located at the toe of the embankment. No additional drainage improvements are necessary for median widening. Conduits for FMS are being provided in the 32" F-shape exterior barrier. The bridges will support no new utilities. See Figure 4.11 below for details.

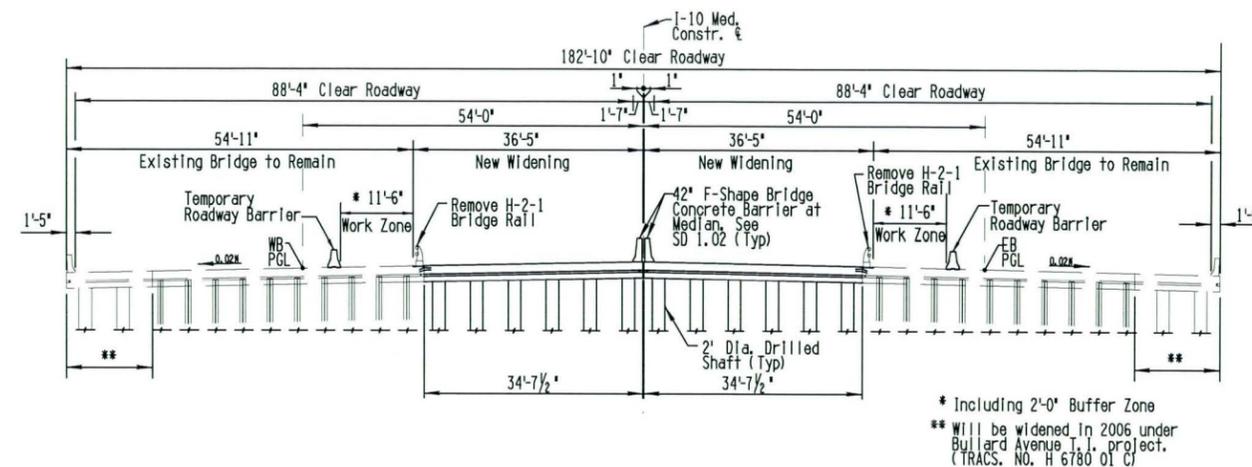


Figure 4.11 – Airport (Bullard) Wash Bridge Typical Section

The structure is over 27 years old. Most of the construction materials and methods to match the existing structure are still employed today. The estimated construction cost for the widening is \$1,553,000. The estimated cost to replace with an entire new structure is \$2,953,000. Hence, widening the existing structure is more economical than replacing with a new structure. In addition, potential impacts to the traveling public are reduced.

CONSTRUCTABILITY / TRAFFIC CONTROL

Median widening will require installation of temporary barrier. Due to the horizontal work area behind the barrier, the temporary barrier will not require bolting to the existing deck. Traffic control setup is required during the placement of the temporary barrier. No detour of I-10 will be required for construction activities. It is anticipated that two 12'-0 lanes, a 12'-0 auxiliary lane and 2'-0 shy distance to the barriers along with 11'-6" work area will be maintained on the bridge throughout the duration of construction. The 11'-6" work area includes a two feet buffer zone for the lateral movement of temporary barrier from direct vehicle collisions.

Bullard Avenue OP

LOCATION

The Bullard Avenue OP structures on I-10 are located at MP 127.67, approximately 21.5 miles west of I-10/I-17 TI. The I-10 West mainline roadway at Bullard Avenue is symmetrical in section about the I-10 West median construction centerline.

The I-10 West mainline horizontal alignment at Bullard Avenue is partially on a curve and transitions from a curve to a tangent. The super-elevations vary from 3.9% to 2.0%. The I-10 West EB and WB profiles are independent and are on crest vertical curves through the crossing. The mainline is fully elevated above existing ground at this location. The Bullard Avenue roadway at I-10 is being currently widened under Bullard Avenue TI Project (TRACS No. 010 MA 126 H6780 01C) from one-lane in each direction to three-thru lanes in each direction. The widening will also include dual left-turn lanes for I-10 Eastbound and one left-turn lane for I-10 Westbound. Soil Nail Walls will be constructed under Bullard Avenue OP bridges to accommodate the roadway widening. The Soil Nail schedule for the wall will include wider nail spacing to accommodate future drilled shaft construction.

EXISTING STRUCTURES

The existing bridges consist of a single span post-tensioned concrete box girder bridge supported on HP-12x53 piles. The bridge is 141'-2¼" long. The superstructure is 6'-0 deep and consists of four cells at 9'-0 spacing. Currently both the eastbound and westbound structures are 44'-7" wide. The superstructure is built integrally with the abutment. The abutments are supported by steel HP 12x53 vertical and batter piles. The abutments are skewed 19° 20' 56" left to the I-10 West median construction centerline. The expansion abutment, consist of 2-¼" thick asbestos bearing sheets. The fixed abutment, consist of a 2"x12" shear key with #8 dowels spaced at 1'-0 on centers.

The bridge is designed for HS 20-44 and interstate alternate live loading including the 25 psf for FWS. The Bridge inspection report indicates that the overall condition of the bridge is good and the overall structural evaluation is better than present minimum criteria. Considering the above factors and with no historical significance – the bridge can be widened. Information for the existing Bullard Avenue OP Structures was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.16.

Table 4.16 – Existing Bullard Avenue OP Information

Item	Bullard Avenue OP EB	Bullard Avenue OP WB
Structure No.	1717	1718
Route	10	10
Milepost	127.67	127.67
Project Number	I-IG-10-2(37)	I-IG-10-2(37)
Year Built	1978	1978
Skew	19° 20' 56"	19° 20' 56"
Structure Type	CIP Post-Tensioned Box Girder (5 webs @ 9'-0")	CIP Post-Tensioned Box Girder (5 webs @ 9'-0")
Number of Spans	1	1
Maximum Span	138'	138'
Structure Length	141'-2¼"	141'-2¼"
Roadway Width	42' Clear Roadway	42' Clear Roadway
Sufficiency Rating	87.70	87.70
Barrier & Deck	H-2-1 bridge rail	H-2-1 bridge rail
Vertical Clearance	16.17'	16.45'

PROPOSED CONDITIONS

In order to construct the proposed HOV lanes and a general purpose lane, both of the EB and WB bridges will require widening. The westbound bridge will be widened to the south and the eastbound bridge will be widened to the north. Each bridge will be widened by 34'-7½" approximately. The total bridge width after median widening will be 79'-2½". Superstructure widening involves in removing the existing inside barrier, partially removing the cantilever overhang, and incorporating the existing rebar into new construction. After the proposed widening the EB and WB roadways will each consist of one outside shoulder, three 12'-0" through lanes, one HOV lane and an inside shoulder. Constraints due to vertical clearances and the number of temporary lane openings for cross road traffic will affect the type of superstructure for widening. The Bridge Selection Report will discuss the superstructure widening alternatives. Typical section shown below is for graphical purposes only. The existing inside edge (median) H-2-1 bridge rail barrier will be removed as part of the widening and a 42" F-shape barrier will be constructed at the edge of the new deck. The exterior barrier replacement with a vertical face barrier will be considered as part of the median widening project, depending on the timing of the outside widening for this segment of I-10. For budgeting purposes the cost to modify the exterior H-2-1 barrier to a vertical face barrier is included in the total cost estimate.

The Bridge Selection Report for Bullard Avenue OP will address the proposed substructure and foundation widening concepts. The widened abutment will most likely be supported on deep foundations. Abutment extensions can be accomplished by abandoning the existing wingwalls in place and removing just the upper portion for approach slab clearance.

The bridge is on a crest vertical curve. Currently drainage of the mainline bridge decks is carried to the ends of the bridges. No additional drainage improvements are necessary for EB bridge median widening. However, drainage improvements for the WB bridge will be necessary at the ends of the bridge. If the exterior H-2-1 barrier is replaced with vertical face barrier with this project – conduits for FMS will installed in the vertical face barrier. Underdeck lighting will be provided for the existing and widened section of the bridges. The bridges will support no new utilities. See Figure 4.12 for details.

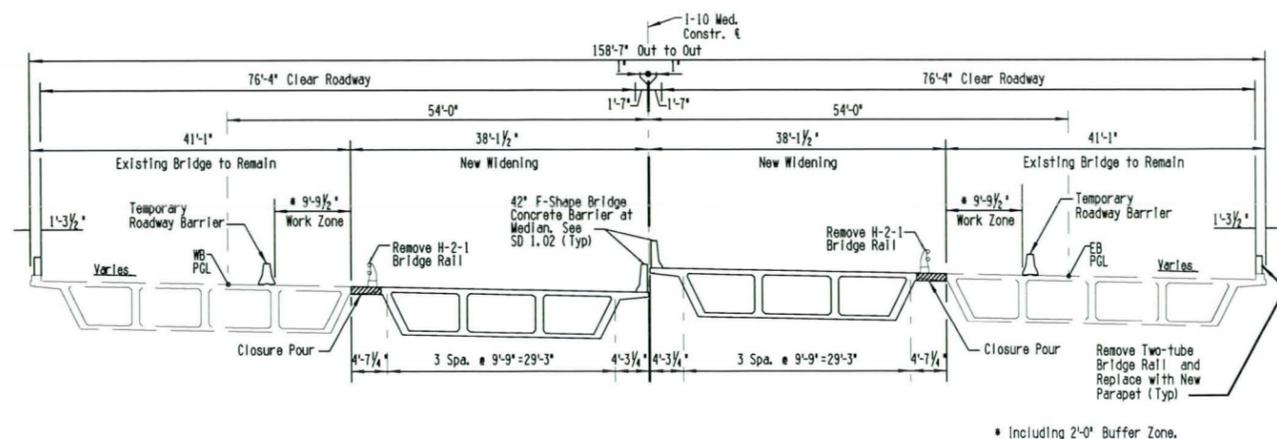


Figure 4.12 – Bullard Avenue OP Typical Section

The bridge is built in 1978 and is over 27 years old. Most of the construction materials and methods to match the existing structure are still employed today. The estimated construction cost for the widening is \$1,206,000. The estimated cost to replace with an entire new structure is \$1,789,000. Hence, widening the existing structure is more economical than replacing with a new structure. In addition potential impacts to the traveling public are reduced.

CONSTRUCTABILITY / TRAFFIC CONTROL

Median widening will require installation of temporary barrier. Due to the horizontal work area behind the barrier, the temporary barrier will not require bolting to the existing deck. Traffic control setup is required during the placement of the temporary barrier. No detour of I-10 will be required for construction activities. It is anticipated that two 12'-0 lanes, plus 2'-0 shy distance to the barriers along with 9'-9" work area (as shown in figure) will be maintained on the bridge throughout the duration of construction. The 9'-9" work area includes a two feet buffer zone for the lateral movement of temporary barrier from direct vehicle collisions. However, Bullard Avenue will require closures during removal of cantilever overhang, falsework and concrete placement. Additional closures may be necessary during falsework or stay-in-place forms removal and painting after construction is complete. A minimum of two lanes in each direction of Bullard Avenue plus the left turn lanes will be maintained during the entire duration of the construction except for the closures as mentioned above. A minimum temporary vertical clearance of 14'-6" for Bullard Avenue shall be maintained during construction.

SPRR OP

LOCATION

The Southern Pacific Railroad (SPRR) OP structures on I-10 are located at MP 128.45, approximately 20.8 miles west of I-10/I-17 TI. The I-10 West mainline roadway at SPRR is non-symmetrical in section about the I-10 West median construction centerline and has varying roadway width. SPRR is also referred to as the Litchfield Spur line elsewhere in the document.

The I-10 West mainline horizontal alignment over SPRR is on a tangent. The WB entrance and EB exit ramps are partially on a curve and transitions from a curve to a tangent. The cross slope for the mainline is 0.02ft/ft. The super-elevations for the ramps vary. The I-10 West EB and WB mainline profiles are on an ascending grade from west to east and the ramps are on crest vertical curves through the crossing. The mainline is fully elevated above existing ground at this location.

EXISTING STRUCTURES

The existing bridges are a three-span AASHTO Type II girder bridge. The bridges are 137'-3" long. The interior span is 54'-0 long and the two exterior spans are 40'-0 long. The total structure depth is 3'-9". The eastbound bridge width varies from 75'-5 7/8" at abutment #1 to 85'-5 1/2" at abutment #2. The westbound bridge width varies from 70'-1 1/2" at abutment #1 to 73'-3 1/4" at abutment #2. The abutments are supported by steel HP 10x42 vertical piles. The pier consists of multi-column bents supported on isolated spread footings. The abutment diaphragm is integrally built with the abutment cap. Asbestos base sheets are used in the slope paving construction joints. The abutments and piers are skewed at 90° 00' 00" left to the I-10 West median construction centerline.

The bridge is designed for HS 20-44 and interstate alternate live loading including the 25 psf for FWS. The ADOT Bridge inspection report indicates that the overall condition of the bridge is good and the overall structural evaluation is better than present minimum criteria. Considering the above factors and with no historical significance – the bridge can be widened. The following table provides additional information of the existing bridges. Information for the existing SPRR OP Structures was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.17 below.

Table 4.17 – Existing SPRR OP Information

Item	SPRR OP EB	SPRR OP WB
Structure No.	1719	1720
Route	10	10
Milepost	128.45	128.45
Project Number	I-IG-10-2(37)	I-IG-10-2(37)
Year Built	1978	1978
Skew	0°	0°
Structure Type	Precast AASHTO Type II Girder (9 lines @ 6'-1 1/2", 5 lines @ varies)	Precast AASHTO Type II Girder (11 lines @ 6'-1 1/2", 1 line @ varies)
Number of Spans	3	3
Maximum Span	54'	54'
Structure Length	137'-3"	137'-3"
Roadway Width	40' Clear Roadway (I-10) 24' Clear Roadway (Ramp)	40' Clear Roadway (I-10) 24' Clear Roadway (Ramp)
Sufficiency Rating	96.28	96.28
Barrier & Deck	H-2-1 bridge rail	H-2-1 bridge rail
Vertical Clearance	22.93'	23.05'

PROPOSED CONDITIONS

In order to construct the proposed HOV lanes and a general purpose lane, both of the EB and WB bridges will require widening. The westbound bridge will be widened to the south and the eastbound bridge will be widened to the north. Each bridge will be widened by 34'-7½" approximately. The EB width after widening, will vary from 110'-1¾" to 120'-1". The total WB width will vary from 104'-9" to 107'-10¾". Superstructure widening involves in removing the existing inside barrier, partially removing the cantilever overhang, and incorporating the existing rebar into new construction. After the proposed widening the EB and WB roadways will each consist of one outside shoulder, one 14'-0" ramp lane, three 12'-0" through lanes, one HOV lane and an inside shoulder. The existing inside edge (median) H-2-1 bridge rail barrier will be removed as part of the widening and a 42" F-shape barrier will be constructed at the edge of the new deck. The exterior barrier replacement with a vertical face barrier will be considered as part of the median widening project, depending on the timing of the outside widening for this segment of I-10. For budgeting purposes the cost to modify the exterior H-2-1 barrier to a vertical face barrier is included in the total cost estimate.

The Bridge Selection Report will address the proposed substructure and foundation widening concepts. The widened abutment will most likely be supported on deep foundations. Abutment extensions can be accomplished by abandoning the existing wingwalls in place and removing just the upper portion for approach slab clearance.

Currently drainage of the mainline bridge decks is carried to the ends of the bridges. The deck run-off from the ramp portion (defined by the varying superelevation) of the bridges is drained via the deck drains.

The as-builts indicate one deck drain per exterior span. There are a total of four deck drains – two each per WB and EB. The deck drains are located at the face of the exterior bridge barrier. No additional drainage improvements are necessary for median widening. If the exterior H-2-1 barrier is replaced with vertical face barrier with this project – conduits for FMS will be installed in the vertical face barrier. The bridges will support no new utilities. See Figure 4.13 below for details.

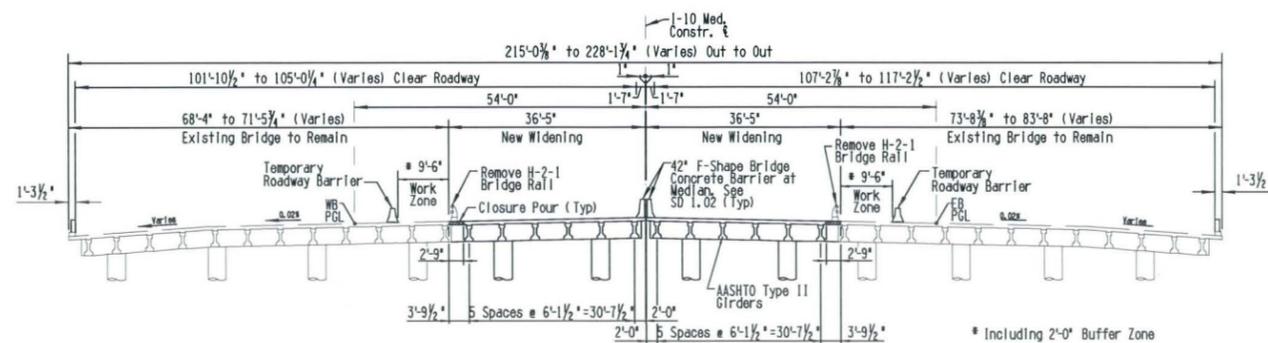


Figure 4.13 – SRPP OP Typical Section

The bridges were built in 1978 and are over 27 years old. Most of the construction materials and methods to match the existing structure are still employed today. The estimated construction cost for the widening is \$1,132,000. The estimated cost to replace with an entire new structure is \$2,431,000. Hence, widening the existing structure is more economical than replacing with a new structure. In addition, potential impacts to the traveling public are reduced.

CONSTRUCTABILITY / TRAFFIC CONTROL

Median widening will require installation of temporary barrier. Due to the horizontal work area behind the barrier, the temporary barrier will not require bolting to the existing deck. Traffic control setup is required during the placement of the temporary barrier. No detour of I-10 will be required for construction activities. It is anticipated that two 12'-0" lanes, 2'-0" shy distance to the barriers along with 9'-6" work area (as shown in figure) will be maintained on the bridge throughout the duration of construction. The 9'-6" work area includes a two feet buffer zone for the lateral movement of temporary barrier from direct vehicle collisions. Bridge construction will not be subjected to any railroad restriction, since the spur line is currently inactive and ADOT ROW plans indicate that ADOT owns the SPRR ROW under the bridges.

Litchfield Road TI OP

LOCATION

The Litchfield Road TI OP structures on I-10 are located at MP 128.68, approximately 20.5 miles west of I-10/I-17 TI. The I-10 West mainline roadway at Litchfield Road is symmetrical in section about the I-10 West median construction centerline.

The I-10 West mainline horizontal alignment is on a tangent through the Litchfield Road with a normal crown and cross slopes of 0.020 ft/ft. The I-10 West EB and WB vertical profiles are independent and are on a descending grade from west through east through the crossing. The mainline is fully elevated above existing ground at this location.

EXISTING STRUCTURES

The existing bridges consist of a single span post-tensioned concrete box girder bridge supported on HP-12x53 piles. The bridge is 163'-0" long. The superstructure is 7'-0" deep and consists of four cells at 9'-0" spacing. Currently both the eastbound and westbound structures are 44'-7" wide including the H-2-1 bridge rails. The superstructure is built integrally with the abutment. The abutments are supported by steel HP 12x53 vertical and batter piles. The abutments are skewed at 90° 00' 00" left to the I-10 West median construction centerline. The expansion abutment, consist of 2-½" thick asbestos bearing sheets. The fixed abutment, consist of a 2"x12" shear key with #6 dowels spaced at 3'-0" on centers.

The bridge is designed for HS 20-44 and interstate alternate live loading including the 25 psf for FWS. Bridge inspection report indicates that the overall condition of the bridge is good and the overall structural evaluation is better than present minimum criteria. Considering the above factors and with no historical significance – the bridge can be widened. Information for the existing Litchfield TI OP Structures was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.18.

Table 4.18 – Existing Litchfield Road TI OP Information

Item	Litchfield Road TI OP EB	Litchfield Road TI OP WB
Structure No.	1721	1722
Route	10	10
Milepost	128.68	128.68
Project Number	I-IG-10-2(37)	I-IG-10-2(37)
Year Built	1978	1978
Skew	0°	0°
Structure Type	CIP Post-Tensioned Box Girder (5 webs @ 9'-0")	CIP Post-Tensioned Box Girder (5 webs @ 9'-0")
Number of Spans	1	1
Maximum Span	160'	160'
Structure Length	163'	163'
Roadway Width	42' Clear Roadway	42' Clear Roadway
Sufficiency Rating	93.53	93.53
Barrier & Deck	H-2-1 bridge rail	H-2-1 bridge rail
Vertical Clearance	15.94'	16.2'

PROPOSED CONDITIONS

In order to construct the proposed HOV lanes and a general purpose lane both of the EB and WB bridges will require widening. The westbound bridge will be widened to the south and the eastbound bridge will be widened to the north. Each bridge will be widened by 34'-7½" approximately. The total bridge width after median widening will be 79'-2½". Superstructure widening involves in removing the existing inside barrier, partially removing the cantilever overhang, and incorporating the existing rebar into new construction. After the proposed widening the EB and WB roadways will each consist of one outside shoulder, three 12'-0" through lanes, one HOV lane and an inside shoulder. Constraints due to vertical clearances and the number of temporary lane openings for cross road traffic will affect the type of superstructure for widening. Bridge Selection Report will discuss the superstructure widening alternatives. Typical section shown below is for informational purposes only. The existing inside edge (median) H-2-1 bridge rail barrier will be removed as part of the widening and a 42" F-shape barrier will be constructed at the edge of the new deck. The exterior barrier replacement with a vertical face barrier will be considered as part of the median widening project, depending on the timing of the outside widening for this segment of I-10. For budgeting purposes the cost to modify the exterior H-2-1 barrier to a vertical face barrier along with additional traffic control is included in the total cost estimate.

The Bridge Selection Report for Litchfield Road TI OP will address the proposed substructure and foundation widening concepts. The widened abutment will most likely be supported on deep foundations. Abutment extensions can be accomplished by abandoning the existing wingwalls in place and removing just the upper portion for approach slab clearance.

Both the bridges are on a descending grade from west to east. Currently drainage of the mainline bridge decks is carried to the east end of the bridges. No additional drainage improvements are necessary for EB and WB median widening. If the exterior H-2-1 barrier is replaced with vertical face barrier with this project, conduits for FMS will be installed in the vertical face barrier. Underdeck lighting will be provided for the existing and widened section of the bridges. The bridges will support no new utilities. See Figure 4.14 for details.

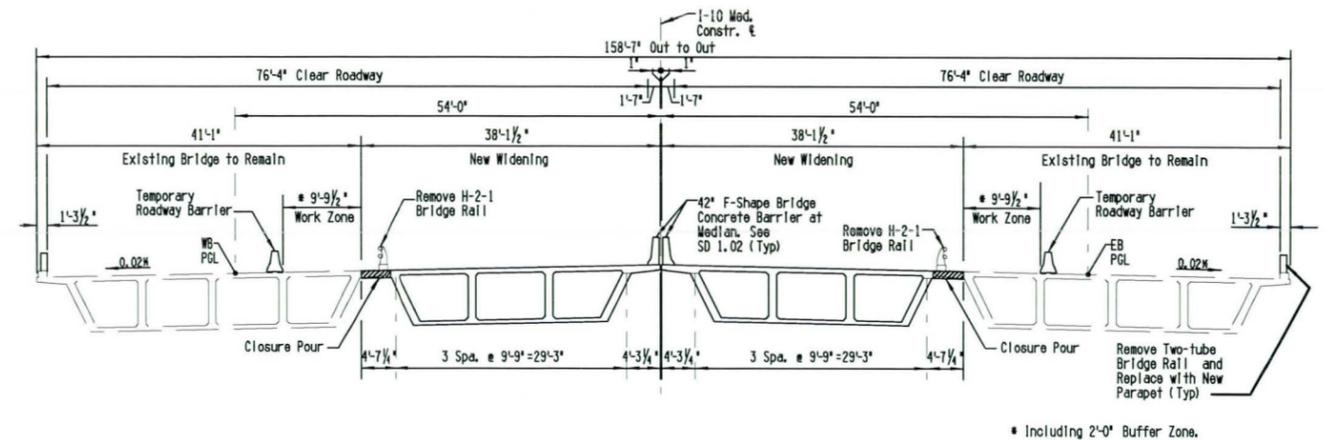


Figure 4.14 – Litchfield Road TI OP Typical Section

The existing bridges were built in 1978 and are over 27 years old. Most of the construction materials and methods to match existing structure are still employed today. The estimated construction cost for the widening is \$1,417,000. The estimated cost to replace with an entire new structure is \$2,066,000. Hence, widening the existing structure is more economical than replacing with a new structure. In addition, potential impacts to the traveling public are reduced.

CONSTRUCTABILITY / TRAFFIC CONTROL

Median widening will require installation of temporary barrier. Due to the horizontal work area behind the barrier, the temporary barrier will not require bolting to the existing deck. Traffic control setup is required during the placement of the temporary barrier. No detour of I-10 will be required for construction activities. It is anticipated that two 12'-0" lanes, plus 2'-0" shy distance to the barriers along with 9'-9" work area (as shown in figure) will be maintained on the bridge throughout the duration of construction. The 9'-9" work area includes a two feet buffer zone for the lateral movement of temporary barrier from direct vehicle collisions. Construction activities will not require closures of I-10 mainline. However, Litchfield Road will require closures during removal of cantilever overhang, falsework or stay-in-place forms and concrete placement. Additional closures may be necessary during falsework removal and painting after construction is complete. A minimum of two lanes in each direction of Litchfield Road plus the left turn lanes will be maintained during the entire duration of the construction except for the closures as mentioned above.

Dysart TI OP

LOCATION

The Dysart Road TI OP is a traffic interchange on Interstate 10 located at milepost 129.67 in the City of Avondale, which is approximately 19.5 miles west from the I-10 / I-17 system interchange.

The alignment of I-10 at the Dysart Road Bridges is in a tangent and the bridges are parallel to each other. The cross-slope of the bridges is at a normal 0.02 %/ft crown. Dysart Road is at grade at the crossing and the mainline is elevated in a crest curve.

EXISTING STRUCTURES

The bridges are cast-in-place post tensioned box girder bridges with an overall bridge length of 163'-0" and an overall bridge width of 44'-7" (42'-0" clear width). The eastbound and westbound bridges each support two 12'-0" through lanes with an inside shoulder of 8'-0" and an outside shoulder of 10'-0". The existing bridge rails are the ADOT H-2-1 rail system that has a width of 1'-3½" per bridge rail. The bearings consist of asbestos bearing sheets at the east abutment while the west abutment is a pinned abutment with bituminous joint filler.

The existing bridges were designed for a live load of HS20-44 and/or the Interstate Alternate Loading. The deadload includes an allowance for 25 psf for future wearing surface. The deck at the time of this report does not include the future wearing surface with the exception of the west approach slabs. The ADOT bridge inspection report states that the bridge is in good condition with no components of the bridge rating less than the minimum criteria. Information for the existing Dysart Road TI OP Structures was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.19 below.

The 2:1 paved foreslope in front of the abutments was removed in 2005 under project I-010-B-201 by the City of Avondale and replaced with a retaining wall for widening of Dysart Road. The retaining wall stems are located approximately 9'-0" in front of the pile cap toe. The retaining wall was designed by the use of the *ADOT Structure Section Standard Drawings, June 1992*. See As-Built plans and ADOT standards for more information. Final design efforts should quantify potential impacts on the retaining wall due to construction and service associated with widening of the Dysart Road bridges.

Dysart Road has a 116'-0" typical section which comprises of two 12'-0" and a 14'-0" through lanes, a 12'-0" and 14'-0" left turn lane in the southbound direction, and a 12'-0" and a 14'-0" through lanes, two 12'-0" left turn lanes in the northbound direction separated by a 4'-0" median. The roadway is bordered by 6'-0" sidewalks in both directions.

The decks on both bridges drain to the abutments and exits onto the embankment.

Table 4.19 – Existing Dysart Road TI OP Information

Item	Dysart Road TI OP EB	Dysart Road TI OP WB
Structure No.	1723	1724
Route	I-10	I-10
Milepost	129.67	129.67
Project Built:	I-IG-10-2(37)	I-IG-10-2(37)
Year As-Built:	1979	1979
Skew:	0° 00' 00"	0° 00' 00"
Superstructure Type:	CIP Post Tensioned Box Girder (4 cells @ 9'-0")	CIP Post Tensioned Box Girder (4 cells @ 9'-0")
Number Spans:	1	1
Maximum Span Length:	160'-0"	160'-0"
Overall Length:	163'-0"	163'-0"
Overall Width (Existing):	44'-7"	44'-7"
Clear Width (Existing):	42'-0"	42'-0"
Vertical Clearance:	16.33'	16.24'
Sufficiency Rating	93.36	92.78

The Dysart Road TI OP is not eligible for the National Register of Historic Places at the current time.

PROPOSED CONDITIONS

The I-10 roadway and Dysart Road TI OP will be widened toward the median to accommodate additional lanes. Approximate costs for widening the existing structure and replacing the entire structure were estimated and compared. The estimated cost for widening the existing structure is \$1,243,000. The approximate cost for replacing the structure is estimated at \$2,067,000. Considering that the materials and construction methods employed for the existing bridge are still current practices, potential impacts to the traveling public, and economics, the recommendation is to widen the existing structures instead of replacing them.

This project proposes to widen each existing I-10 bridge by 34'-8" into the median for an overall width of 79'-3". The widening will leave a 1" gap between the eastbound and westbound bridges. The existing bridge rail on the widened side of the bridge will be removed and new 42" F-Shape (ADOT SD 1.02) will be placed at the edge of the new deck. The exterior barrier may be replaced with a vertical face barrier as part of this project, depending on the amount of time projected to elapse before of the outside widening project is constructed for this segment of I-10. The cost estimate assumes the cost to modify the exterior H-2-1 barrier to the vertical face concrete barrier and is shown in figure below. See Figure 4.15 below for details.

The proposed bridge decks are to drain in a similar manner as the existing bridge; however this shall be verified during final design.

Freeway Management System (FMS) conduit will not be included in the widened portion of the bridge or in the median barrier. In the event the existing H-2-1 bridge rail is replaced with the 32" Vertical Face concrete barrier FMS conduits will be provided in the new barrier. The widened portion of this structure will require conduit and boxes for underdeck lighting.

The existing bridge superstructure has an approximate 7'-0" depth. The new bridge will match the 0.02' /ft cross-slope that rises towards the median; therefore, the maximum depth of the proposed superstructure should be limited to 7'-8" in order not to reduce the current in-service vertical clearance. The vertical clearance shall be verified during final design.

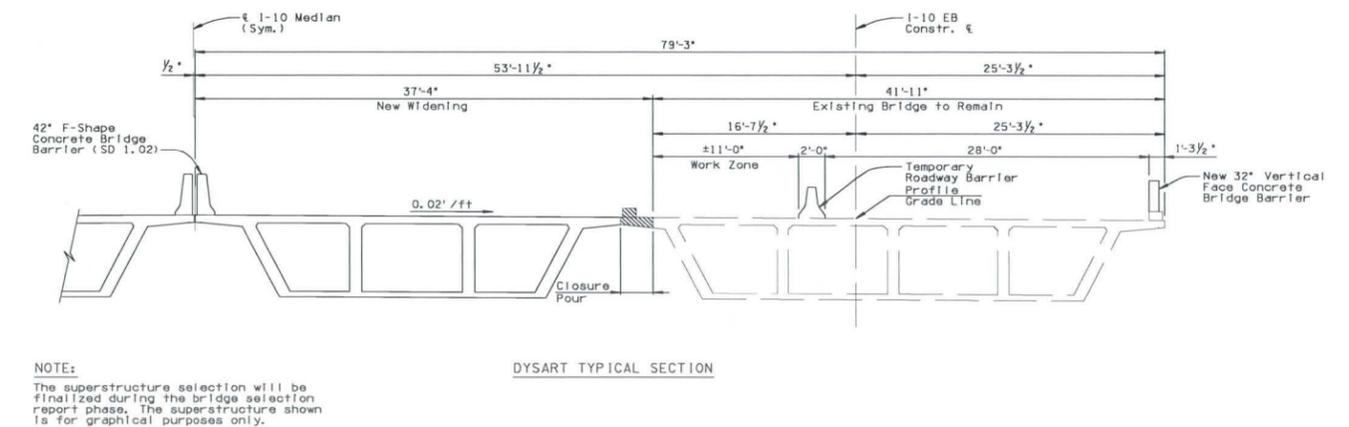


Figure 4.15 – Dysart Road Typical Section

CONSTRUCTABILITY/TRAFFIC CONTROL

The existing bridges were constructed using methods and materials that are commonly used today. Several bridge types can be used to widen the bridges without creating issues during construction or service. Providing that the superstructure of the widened portion has similar material and section properties (such as moment of inertia) the reaction of the superstructure under live load will be similar between the existing bridge and the widened portion.

Widening of the bridge can be accomplished by protecting the existing inside deck edge with temporary barrier. The upper area of the wingwalls can be partially removed then the remainder of the wingwall abandoned in place. The substructure will need to be extended most likely on deep foundations due to the restricted area and to approximate the existing conditions.

The proposed traffic control for I-10 during widening will allow two 14'-0" lanes to be maintained. However, during placement of the traffic control and girders, if applicable, the traffic may need to be temporarily restricted to a single lane.

Dysart Road will require intermittent closures during construction of the bridge widenings. If precast or steel girders are to be used, then the roadway will be closed to traffic during placement of the girders and deck forms. If a cast-in-place option is chosen, the roadway will be closed during erection and tear down of the falsework. In addition, the roadway will have to be closed or the traffic protected during the partial removal of the existing bridge deck cantilever. A minimum vertical clearance of 14'-6" shall be maintained during construction while public traffic is maintained on the roadway. The proposed falsework openings allows for two lanes in each direction to be maintained after erection of the falsework. Dysart Road sidewalks and possibly the outer lane in each direction will require closure for protection of traffic and work space during the construction of the abutments.

Agua Fria River Bridge

LOCATION

Agua Fria River Bridge is a bridge on Interstate 10 located at milepost 129.67 in the City of Avondale which is approximately 19.2 miles from the I-10 / I-17 system interchange.

The alignment of I-10 at the Agua Fria River Bridges is in a tangent and the bridges are parallel to each other. The cross-slope of the bridges is at a normal 0.02 '/ft crown. I-10 is in a vertical tangent and is slightly elevated at this site.

EXISTING STRUCTURES

The bridges are precast prestressed AASHTO Type III girder bridges with an overall bridge length of 1502'-1 1/2" and a varying overall bridge width. The eastbound bridge width is 61'-2" (58'-0" clear width). The westbound overall bridge width is 61'-2" with the exception of span 1 where the width tapers on the outside edge from 70'-6 1/4". The eastbound and westbound bridges each support three 12'-0" through lanes with an inside shoulder of 10'-0" and an outside shoulder of 12'-0". The existing bridge rails are the ADOT Type A Modified concrete bridge barrier system that has a width of 1'-7" per bridge rail. The following table provides additional information of the existing bridges.

The existing bridges were designed for a live load of HS20-44 and/or the Interstate Alternate Loading. The deadload includes an allowance for 25 psf for future wearing surface. The report stated that there was some deck spalling at Pier #4; however the deck was rated as satisfactory. The deck at the time of this report does not include the future wearing surface. The ADOT bridge inspection report states that the bridge is in good condition with no components of the bridge rating less than the minimum criteria. Information for the existing Agua Fria River Bridges was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.20 below.

Table 4.20 – Existing Agua Fria River Bridge Information

Item	Agua Fria River Bridge EB	Agua Fria River Bridge WB
Structure No.	1852	1853
Route	I-10	I-10
Milepost	130.00	130.00
Project Built:	I-10-2(44)	I-10-2(44)
Year As-Built:	1979	1979
Skew:	15° 00' 00" Rt	15° 00' 00" Rt
Superstructure Type:	Prestressed Precast AASHTO Type III (8 Spaces @ 6'-9")	Prestressed Precast AASHTO Type III (8 Spaces @ 6'-9")
Number Spans:	20	20
Maximum Span Length:	75'-0"	75'-0"
Overall Length:	1502'-1 1/2"	1502'-1 1/2"
Overall Width (Existing):	61'-2"	61'-2"
Clear Width (Existing):	58'-0"	58'-0"
Vertical Clearance:	18'±	18'±
Sufficiency Rating:	95.31	95.31

The Agua Fria River Bridge is not eligible for the National Register of Historic Places at the current time.

The piers consist of multiple column bents founded on spread footings approximately 30'-0" below the streambed of the Agua Fria River. A preliminary scour analysis, conducted by HDR, indicates that the Agua Fria River Bridges are not scour vulnerable.

PROPOSED CONDITIONS

The I-10 roadway and the Agua Fria River Bridges will be widened toward the median to accommodate additional lanes. Approximate costs for widening the existing structure and replacing the entire structure were estimated and compared. The estimated cost for widening the existing structure is \$10,038,000. The approximate cost for replacing the structure is estimated at \$22,021,000. Considering that the materials and construction methods employed for the existing bridge are still current practices, potential impacts to the traveling public, and economics, the recommendation is to widen the existing structures instead of replacing them.

This project proposes to widen each existing bridge by 30'-4 1/2" into the median for an overall width of 91'-6 1/2". The widening will leave a 1" gap between the eastbound and westbound bridges. The existing bridge rail on the widened side of the bridge will be removed and new 42" F-Shape (ADOT SD 1.02) will be placed at the edge of the new deck. See Figure 4.16 for details.

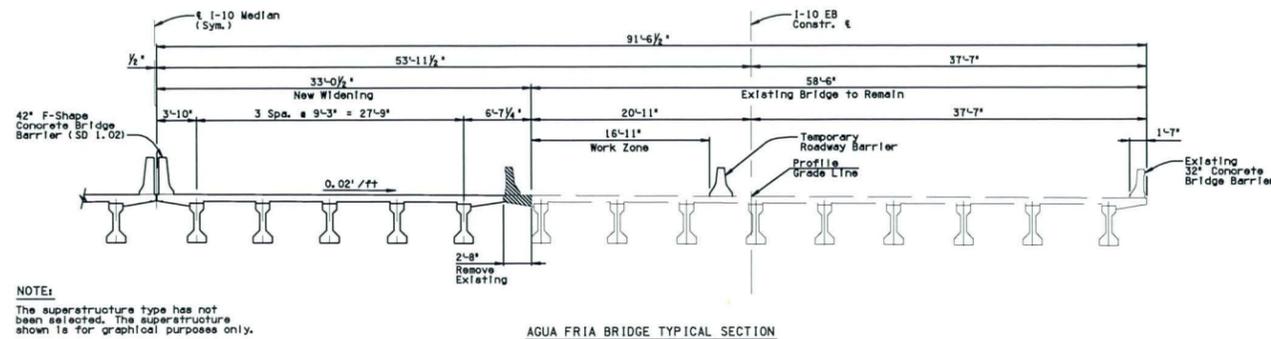


Figure 4.16 – Agua Fria River Bridge Typical Section

The deck drains to the outside barrier and exits the bridge via drainage holes in the deck of the bridges. A preliminary hydraulic analysis was performed by HDR which concluded that the existing deck drain holes provide adequate drainage for the existing and widened portions combined for the bridges. Therefore, no new drainage features will be required for the bridge.

Freeway Management System (FMS) conduit will not be included in the widened portion of the bridge or in the median barrier.

The new bridge will match the 0.02 %/ft cross-slope that rises towards the median. Since the project is not widening to the outside of the bridge, the available freeboard will not change.

CONSTRUCTABILITY/TRAFFIC CONTROL

The existing bridges were constructed using methods and materials that are commonly used today. Several bridge types can be used to widen the bridges without creating issues during construction or service. Providing that the superstructure of the widened portion has similar material and section properties (such as moment of inertia) the reaction of the superstructure under live load will be similar between the existing bridge and the widened portion.

Widening of the bridge can be accomplished by protecting the existing inside deck edge with temporary barrier. As shown in the figure, a work zone width of 16'-11" will be available on the existing bridge during the widening. This work zone allows for two 14'-0" through lanes and one 12'-0" through lane to be kept open during construction.

Widening of the bridge can be accomplished by protecting the existing inside deck edge with temporary barrier. The upper area of the wingwalls can be partially removed then the remainder of the wingwall abandoned in place. The substructure will need to be extended most likely on deep foundations due to the restricted area and to approximate the existing conditions.

The proposed traffic control for I-10 during widening will allow three lanes to be maintained consisting of two 14'-0" lanes and a 12'-0" center lane. However, during placement of the traffic control and girders, if applicable, the traffic may need to be temporarily restricted to two lanes.

Avondale Boulevard TI OP

LOCATION

Avondale Boulevard TI OP is a traffic interchange on Interstate 10 located at milepost 131.68 which is approximately 13.5 miles from the I-10 / I-17 system interchange.

The alignment of I-10 at the Avondale Boulevard Bridges is in a tangent and the bridges are parallel to each other. The cross-slope of the bridges is at a normal 0.02 %/ft crown. Avondale Boulevard is at grade at the crossing and the mainline is elevated in a crest curve.

EXISTING STRUCTURES

The bridges are cast-in-place post tensioned box girder bridges with an overall bridge length of 152'-6 3/4" and an overall bridge width of 61'-2" (58'-0" clear width). The eastbound and westbound bridges each support three 12'-0" through lanes with an inside shoulder of 10'-0" and an outside shoulder of 12'-0". The existing bridge rails are the ADOT Type A Modified concrete bridge barrier system that has a width of 1'-7" per bridge rail. The bearings consist of asbestos bearing sheets at the east abutment while the west abutment is a pinned abutment with bituminous joint filler.

The existing bridges were designed for a live load of HS20-44 and/or the Interstate Alternate Loading. The deadload includes an allowance for 25 psf for future wearing surface. The deck at the time of this report does not include the future wearing surface. The ADOT bridge inspection report states that the bridge is in good condition with no components of the bridge rating less than the minimum criteria. Information for the existing Avondale Boulevard TI OP Bridges was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.21 below.

Table 4.21 – Existing Avondale Boulevard TI OP Bridge Information

Item	Avondale Boulevard TI OP EB	Avondale Boulevard TI OP WB
Structure No.	1856	1857
Route	I-10	I-10
Milepost	131.68	131.68
Project Built:	I-10-2(78)	I-10-2(78)
Year As-Built:	1981	1981
Skew:	11 ° 48' 20" Rt	11 ° 48' 20" Rt
Superstructure Type:	CIP Post Tensioned Box Girder (6 cells @ 8'-9")	CIP Post Tensioned Box Girder (6 cells @ 8'-9")
Number Spans:	1	1
Maximum Span Length:	150'-0"	150'-0"
Overall Length:	152'-6 3/4"	152'-6 3/4"
Overall Width (Existing):	61'-2"	61'-2"
Clear Width (Existing):	58'-0"	58'-0"
Vertical Clearance:	16.55'	16.55'
Sufficiency Rating:	89.93	89.93

Avondale Boulevard has an 80'-0" typical section which comprises of a 12'-0" and 14'-0" through lane, and a 14'-0" left turn lane in the each direction. The roadway is bordered by 6'-0" sidewalks in both directions.

The existing bridge decks drain to the outside barrier and exits both abutments onto the embankment.

The Avondale Boulevard TI OP is not eligible for the National Register of Historic Places at the current time.

PROPOSED CONDITIONS

The I-10 roadway and the Avondale Boulevard TI OP will be widened toward the median to accommodate additional lanes. Approximate costs for widening the existing structure and replacing the entire structure were estimated and compared. The estimated cost for widening the existing structure is \$852,000. The approximate cost for replacing the structure is estimated at \$2,115,000. Considering that the materials and construction methods employed for the existing bridge are still current practices, potential impacts to the traveling public, and economics, the recommendation is to widen the existing structures instead of replacing them.

This project proposes to widen each existing bridge by 25'-4½" into the median for an overall width of 86'-6½". The widening will leave a 1" gap between the eastbound and westbound bridges. The existing bridge rail on the widened side of the bridge will be removed and new 42" F-Shape (ADOT SD 1.02) will be placed at the edge of the new deck. See Figure 4.17 below for details.

The proposed bridge decks are to drain in a similar manner as the existing bridge; however this shall be verified during final design.

Freeway Management System (FMS) conduit will not be included in the widened portion of the bridge or in the median barrier. The widened portion of this structure will require conduit and boxes for underdeck lighting.

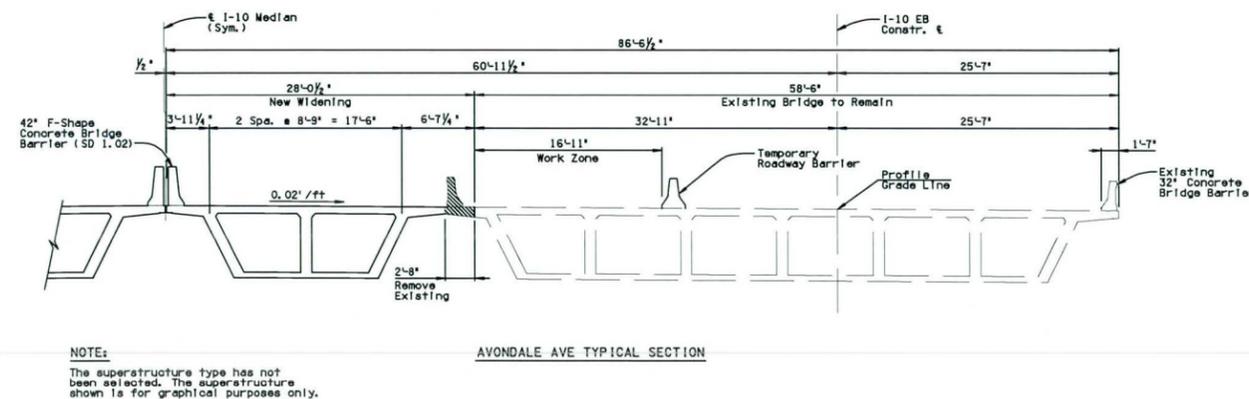


Figure 4.17 – Avondale Boulevard TI OP Typical Section

The existing bridge superstructure has an approximate 6'-6" depth. The new bridge will match the 0.02 '/ft cross-slope that rises towards the median; therefore, the maximum depth of the proposed superstructure should be limited 7'-4" in order not to reduce the current in-service vertical clearance. The vertical clearance shall be verified during final design

CONSTRUCTABILITY / TRAFFIC CONTROL

The existing bridges were constructed using methods and materials that are commonly used today. Several bridge types can be used to widen the bridges without creating issues during construction or service. Providing that the superstructure of the widened portion has similar material and section properties (such as moment of inertia) the reaction of the superstructure under live load will be similar between the existing bridge and the widened portion.

Widening of the bridge can be accomplished by protecting the existing inside deck edge with temporary barrier. The upper area of the wingwalls can be partially removed then the remainder of the wingwall abandoned in place. The substructure will need to be extended most likely on deep foundations due to the restricted area and to approximate the existing conditions.

The proposed traffic control for I-10 during widening will allow three lanes to be maintained consisting of two 14'-0" lanes and a 12'-0" center lane. However, during placement of the traffic control and girders, if applicable, the traffic may need to be temporarily restricted to two lanes.

Avondale Boulevard will require intermittent closures during construction of the bridge widenings. If precast or steel girders are to be used, then the roadway will be closed to traffic during placement of the girders and deck forms. If a cast-in-place option is chosen, the roadway will be closed during erection and tear down of the falsework. In addition, the roadway will have to be closed or the traffic protected during the partial removal of the existing bridge deck cantilever. A minimum vertical clearance of 14'-6" shall be maintained during construction while public traffic is maintained on the roadway. The proposed falsework openings allows for two lanes in each direction to be maintained after erection of the falsework. Avondale Boulevard shoulders will require closure for protection of traffic during the construction of the abutments.

107th Avenue TI OP

LOCATION

107th Avenue TI OP is a traffic interchange on Interstate 10 located at milepost 132.66 which is approximately 12.5 miles from the I-10 / I-17 system interchange.

The alignment of I-10 at the 107th Avenue Bridges is in a tangent and the bridges are parallel to each other. The cross-slope of the bridges is at a normal 0.02 '/ft crown. 107th Avenue is at grade at the crossing and the mainline is elevated in a crest curve.

EXISTING STRUCTURES

The bridges are cast-in-place post tensioned box girder bridges with an overall bridge length of 128'-4". The eastbound bridge as an overall bridge width of 61'-2" (58'-0" clear width) supporting three 12'-0" through lanes with an inside shoulder of 10'-0" and an outside shoulder of 12'-0". The westbound bridge was widened 12'-0" in 1998 for the SR 101L connection. The westbound bridge has an overall bridge width of 73'-2" (70'-0" clear width) which supports three 12'-0" through lanes along with the merging Ramp SW

from the SR 101L and I-10 system interchange. The existing bridge rails are the ADOT Type A Modified Concrete Bridge Barrier system that has a width of 1'-7" per bridge rail with the exception of the outside edge of the westbound bridge which is a ADOT Type B Modified concrete bridge barrier. The bearings consist of asbestos bearing sheets at the east abutment while the west abutment is a pinned abutment with bituminous joint filler.

The existing bridges were designed for a live load of HS20-44 and/or the Interstate Alternate Loading. The deadload includes an allowance for 25 psf for future wearing surface. The deck at the time of this report does not include the future wearing surface. The ADOT bridge inspection report states that the bridge is in good condition with no components of the bridge rating less than the minimum criteria. Information for the existing 107th Avenue TI OP Bridges was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.22 below.

Table 4.22 – Existing 107th Avenue TI OP Bridge Information

Item	107 th Ave. TI OP EB	107 th Ave. TI OP WB
Structure No.	1858	1859
Route	I-10	I-10
Milepost	132.66	132.66
Project Built:	I-10-2(78)	I-10-2(78) RAM-600-0-523 (Widening)
Year As-Built:	1981	1981
Skew:	0° 0' 0"	0° 0' 0"
Superstructure Type:	CIP Post Tensioned Box Girder (6 cells @ 8'-9")	CIP Post Tensioned Box Girder (6 cells @ 8'-9" and 1 cell
Number Spans:	1	1
Maximum Span Length:	126'-0"	126'-0"
Overall Length:	128'-4"	128'-4"
Overall Width (Existing):	61'-2"	73'-2"
Clear Width (Existing):	58'-0"	58'-0"
Vertical Clearance:	17.07'	16.81'
Sufficiency Rating:	F 91.29	F 91.29

107th Avenue has an 80'-0" typical section which comprises of a 12'-0" and 14'-0" through lane, and a 12'-0" left turn lane in the each direction separated by a 4'-0" raised median. The roadway is bordered by 5'-0" sidewalks in both directions.

The existing bridge decks drain to the outside barrier and exits both abutments onto the embankment.

The 107th Avenue TI OP is not eligible for the National Register of Historic Places at the current time.

PROPOSED CONDITIONS

The I-10 roadway and the 107th Avenue TI OP will be widened toward the median to accommodate additional lanes. Approximate costs for widening the existing structure and replacing the entire structure were estimated and compared. The estimated cost for widening the existing structure is \$716,000. The approximate cost for replacing the structure is estimated at \$1,779,000. Considering that the materials and construction methods employed for the existing bridge are still current practices, potential impacts to the

traveling public, and economics, the recommendation is to widen the existing structures instead of replacing them.

This project proposes to widen each existing bridge by 25'-4½" into the median for an overall eastbound width of 86'-6½" and westbound width of 98'-6½". The widening will leave a 1" gap between the eastbound and westbound bridges. The existing bridge rail on the widened side of the bridge will be removed and new 42" F-Shape (ADOT SD 1.02) will be placed at the edge of the new deck. See Figures 4.18 and 4.19 below for details.

The proposed bridge decks are to drain in a similar manner as the existing bridge; however this shall be verified during final design.

Freeway Management System (FMS) conduit will not be included in the widened portion of the bridge or in the median barrier. The widened portion of this structure will require conduit and boxes for underdeck lighting.

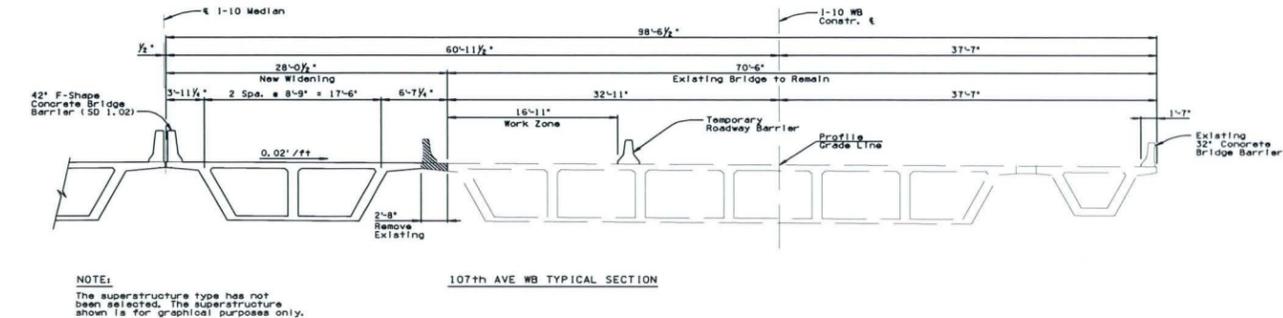


Figure 4.18 – 107th Ave WB Typical Section

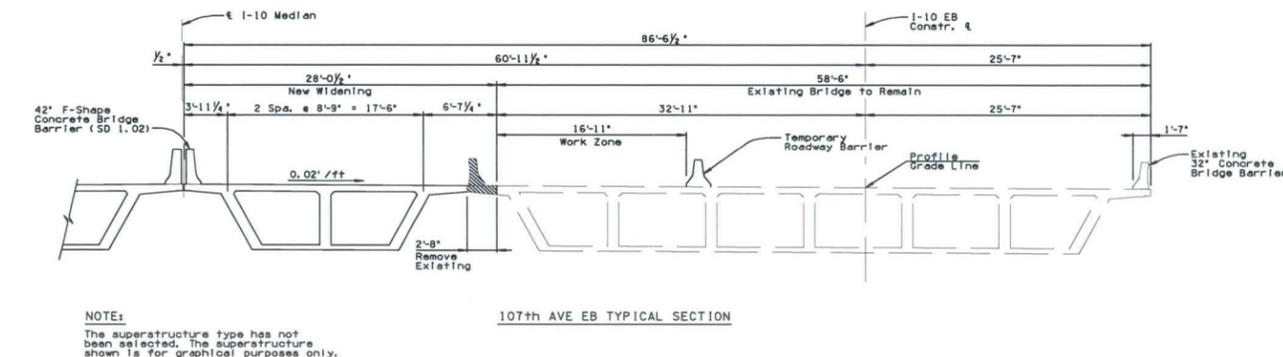


Figure 4.19 – 107th Ave EB Typical Section

The existing bridge superstructure has an approximate 5'-6" depth. The new bridge will match the 0.02 '/ft cross-slope that rises towards the median; therefore, the maximum depth of the proposed superstructure should be limited 6'-3" in order not to reduce the current in-service vertical clearance. The vertical clearance shall be verified during final design.

CONSTRUCTABILITY / TRAFFIC CONTROL

The existing bridges were constructed using methods and materials that are commonly used today. Several bridge types can be used to widen the bridges without creating issues during construction or service. Providing that the superstructure of the widened portion has similar material and section properties (such as moment of inertia) the reaction of the superstructure under live load will be similar between the existing bridge and the widened portion.

Widening of the bridge can be accomplished by protecting the existing inside deck edge with temporary barrier. The upper area of the wingwalls can be partially removed then the remainder of the wingwall abandoned in place. The substructure will need to be extended most likely on deep foundations due to the restricted area and to approximate the existing conditions.

The proposed traffic control for eastbound I-10 during widening will allow three lanes to be maintained consisting of two 14'-0" lanes and a 12'-0" center lane. Similarly, the proposed traffic control for westbound I-10 during widening will allow four lanes to be maintained consisting of two 14'-0" lanes and two 12'-0" center lanes. However, during placement of the traffic control and girders, if applicable, the traffic may need to be temporarily restricted to two lanes.

107th Avenue will require intermittent closures during construction of the bridge widenings. If precast or steel girders are to be used, then the roadway will be closed to traffic during placement of the girders and deck forms. If a cast-in-place option is chosen, the roadway will be closed during erection and tear down of the falsework. In addition, the roadway will have to be closed or the traffic protected during the partial removal of the existing bridge deck cantilever. A minimum vertical clearance of 14'-6" shall be maintained during construction while public traffic is maintained on the roadway. The proposed falsework openings allows for two lanes in each direction to be maintained after erection of the falsework. 107th Avenue shoulders will require closure for protection of traffic during the construction of the abutments.

99th Avenue TI OP

LOCATION

99th Avenue TI OP is a traffic interchange on Interstate 10 located at milepost 131.68 which is approximately 11.5 miles from the I-10 / I-17 system interchange.

The alignment of I-10 at the 99th Avenue Bridges is in a tangent and the bridges are parallel to each other. The cross-slope of the bridges is at a normal 0.02 '/ft crown. 99th Avenue is at grade at the crossing and the mainline is elevated in a crest curve.

EXISTING STRUCTURES

The bridges are cast-in-place post tensioned box girder bridges with an overall bridge length of 152'-6³/₄" and an overall bridge width of 61'-2" (58'-0" clear width). The eastbound and westbound bridges each support three 12'-0" through lanes with an inside shoulder of 10'-0" and an outside shoulder of 12'-0". The

existing bridge rails are the ADOT Type A Modified Concrete Bridge Barrier system that has a width of 1'-7" per bridge rail. The bearings consist of asbestos bearing sheets at the east abutment while the west abutment is a pinned abutment with bituminous joint filler.

The existing bridges were designed for a live load of HS20-44 and/or the Interstate Alternate Loading. The deadload includes an allowance for 25 psf for future wearing surface. The deck at the time of this report does not include the future wearing surface. The ADOT bridge inspection report states that the bridge is in good condition with no components of the bridge rating less than the minimum criteria. Information for the existing 99th Avenue TI OP Bridges was taken from the *Arizona State Highway System Bridges Record* and summarized in Table 4.23 below.

99th Avenue has an 80'-0" typical section which comprises of a 12'-0" and 14'-0" through lane, and a 12'-0" left turn lane in the each direction separated by a 4'-0" raised median. The roadway is bordered by 5'-0" sidewalks in both directions.

The existing bridge decks drain to the outside barrier and exits both abutments onto the embankment.

The 99th Avenue TI OP is not eligible for the National Register of Historic Places at the current time.

PROPOSED CONDITIONS

The I-10 roadway and the 99th Avenue TI OP will be widened toward the median to accommodate additional lanes. Approximate costs for widening the existing structure and replacing the entire structure were estimated and compared. The estimated cost for widening the existing structure is \$851,000. The approximate cost for replacing the structure is estimated at \$2,114,000. Considering that the materials and construction methods employed for the existing bridge are still current practices, potential impacts to the traveling public, and economics, the recommendation is to widen the existing structures instead of replacing them.

Table 4.23 – 99th Avenue TI OP Bridge Information

Item	99 th Ave. TI OP EB	99 th Ave. TI OP WB
Structure No.	1860	1861
Route	I-10	I-10
Milepost	133.66	133.66
Project Built:	I-10-2(35)	I-10-2(35)
Year As-Built:	1981	1981
Skew:	0° 0' 0"	0° 0' 0"
Superstructure Type:	CIP Post Tensioned Box Girder (6 cells @ 8'-9")	CIP Post Tensioned Box Girder (6 cells @ 8'-9")
Number Spans:	1	1
Maximum Span Length:	150'-0"	150'-0"
Overall Length:	152'-6"	152'-6"
Overall Width (Existing):	61'-2"	61'-2"
Clear Width (Existing):	58'-0"	58'-0"
Vertical Clearance:	16.82'	16.62'
Sufficiency Rating:	97.00	94.53

This project proposes to widen each existing bridge by 25'-4½" into the median for an overall width of 86'-6½". The widening will leave a 1" gap between the eastbound and westbound bridges. The existing bridge rail on the widened side of the bridge will be removed and new 42" F-Shape (ADOT SD 1.02) will be placed at the edge of the new deck. See Figure 4.20 below for details.

The proposed bridge decks are to drain in a similar manner as the existing bridge; however this shall be verified during final design.

Freeway Management System (FMS) conduit will not be included in the widened portion of the bridge or in the median barrier. The widened portion of this structure will require conduit and boxes for underdeck lighting.

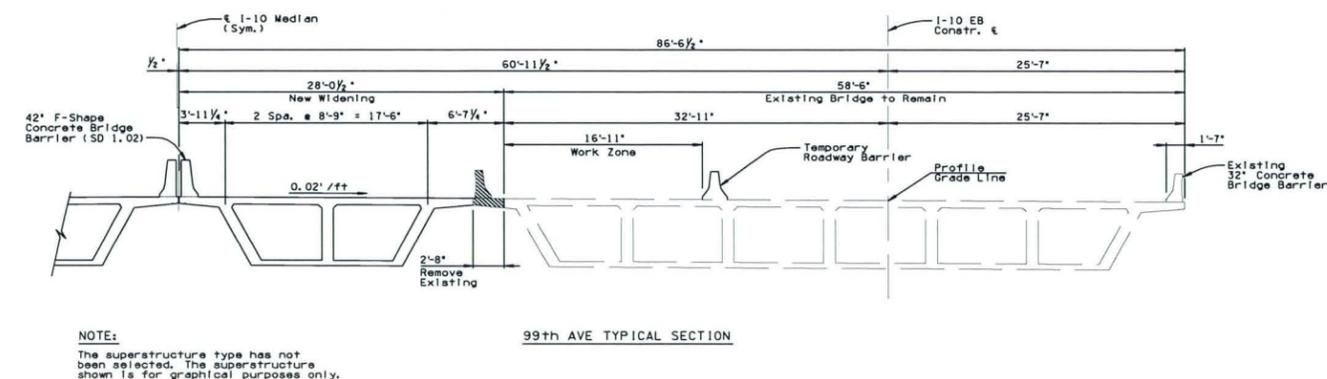


Figure 4.20 – 99th Ave Typical Section

The existing bridge superstructure has an approximate 5'-6" depth. The new bridge will match the 0.02' /ft cross-slope that rises towards the median; therefore, the maximum depth of the proposed superstructure should be limited 6'-4" in order not to reduce the current in-service vertical clearance. The vertical clearance shall be verified during final design.

CONSTRUCTABILITY / TRAFFIC CONTROL

The existing bridges were constructed using methods and materials that are commonly used today. Several bridge types can be used to widen the bridges without creating issues during construction or service. Providing that the superstructure of the widened portion has similar material and section properties (such as moment of inertia) the reaction of the superstructure under live load will be similar between the existing bridge and the widened portion.

Widening of the bridge can be accomplished by protecting the existing inside deck edge with temporary barrier. The upper area of the wingwalls can be partially removed then the remainder of the wingwall abandoned in place. The Bridge Selection Report will discuss the proposed substructure and foundation. The superstructure will be widened by partially removing the deck cantilever in order to incorporate the new deck steel of the widening.

The proposed traffic control for I-10 during widening will allow three lanes to be maintained consisting of two 14'-0" lanes and a 12'-0" center lane. However, during placement of the traffic control the traffic may need to be temporarily restricted to a fewer lanes.

Widening of the bridge can be accomplished by protecting the existing inside deck edge with temporary barrier. The upper area of the wingwalls can be partially removed then the remainder of the wingwall abandoned in place. The substructure will need to be extended most likely on deep foundations due to the restricted area and to approximate the existing conditions.

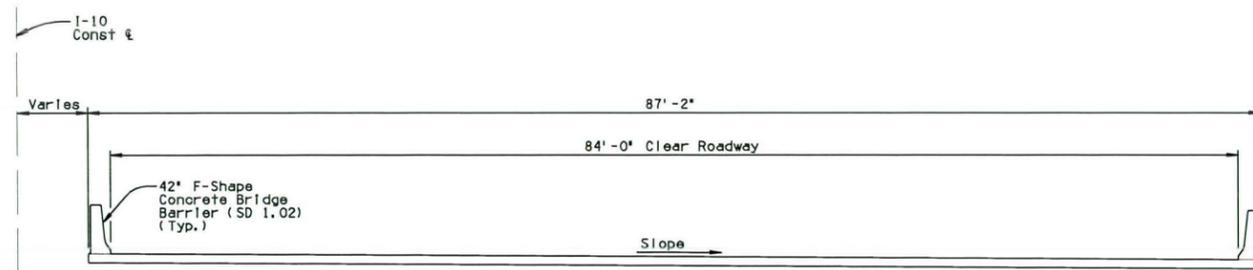
The proposed traffic control for I-10 during widening will allow three lanes to be maintained consisting of two 14'-0" lanes and a 12'-0" center lane. However, during placement of the traffic control and girders, if applicable, the traffic may need to be temporarily restricted to two lanes. 99th Avenue shoulders will require closure for protection of traffic during the construction of the abutments.

4.10.2 Construction of New I-10 Structures at I-10/SR 303L System Interchange

The proposed I-10/SR 303L System Interchange was evaluated in a separate Initial Design Concept Report (IDCR), prepared by URS, titled *Initial Design Concept Report SR 303L, I-10 to US 60*, dated May 26, 2004. The I-10 Median Widening Study will only address the SR 303L system interchange structures affected by the I-10 realignment. This section evaluates each bridge site to identify specific criteria and constraints, to confirm roadway alignment and profile grade design and to establish base information for the future structure type selection. The bridges within the system interchange are categorized with the same classes as the remainder of the IDCR. Based on discussion in the *Initial SR 303L DCR*, only two classes, replacement and new, need consideration for I-10. Common criteria and constraints for the two classes include:

Replaced I-10 mainline bridges: Two structures within the I-10 realignment section will need to be replaced, which include RID Canal Bridge and Sarival Ave TI OP. Replacement of these structures is solely based upon geometric differences between the proposed realigned section and existing condition. Consideration was given to utilizing portions of the existing structures at each of these locations for the realigned section; however, the proposed vertical alignment was significant enough that the existing structures could not be used. These structures are not eligible for the National Register of Historic Places thus enabling them to be replaced.

New I-10 mainline and directional ramp bridges: New structures within the I-10 realigned section include SR 303L Overpass, SR 303L NB and SB Frontage Road Overpasses, Ramp SE, Ramp EN, Ramp WS and Ramp NW. Realigned I-10 is elevated approximately 7 feet from its current vertical alignment through the system interchange to accommodate passing over the future SR 303L and its frontage road system. SR 303L is proposed as one level below existing grade to pass under McDowell Road. The frontage roads will be at existing grade. This proposed vertical alignment results in I-10 at two levels above SR 303L and one level above both the NB and SB frontage roads. The proposed horizontal alignment of I-10 is shifted to the north approximately 250 feet from its present location. Eastbound and westbound I-10 are separated by a median wide enough to accommodate upper level ramp pier placement. This horizontal alignment results in the need for two individual bridges to carry I-10 over each SR 303L and the NB and SB frontage roads. Typical Sections of the bridges are shown in Figure 4.21.



I-10 OVER SR 303L & NB & SB FRONTAGE ROADS

Figure 4.21 – Realigned I-10 Bridges Typical Section

The first phase of the system interchange is to reconstruct I-10 in its final configuration. I-10 WB will be constructed first, traffic shifted onto it and then the EB lanes will be constructed. The proposed horizontal alignment shift of I-10 provides enough pavement width in both phases of construction to allow full lane widths to occur while constructing the new bridges. During the construction of the realigned I-10, on-and off-ramps at Cotton Lane will be closed to permit construction of the new bridges on I-10. The current phasing plan does not include any temporary reconnection to Cotton Lane. If a temporary reconnection is proposed, some lane restrictions may be required on existing Cotton Lane to construct the SR 303L overpass. A significant amount of earthwork is required for the reconstruction of I-10 with limited right of way. Construction and earthmoving equipment impacts to the bridges should be considered during final design.

The directional ramps are not scheduled for construction until the final system interchange is constructed. Typical sections of the directional ramps identified in the I-10/SR 303L DCR are shown in Figure 4.22. However, ADOT has expressed a desire to do a partial build-out of the system interchange directional ramps over I-10 so that future construction activities do not interfere with I-10 traffic. This study evaluates preliminary ramp span arrangements to the extent necessary to determine logical termination points for partial ramp construction and the related costs. The implementation plan for constructing the median widening project includes advanced projects to provide an interim increase in capacity of I-10 and even the ultimate build-out of I-10 prior to the construction of the full SR 303L system interchange. Consideration will be given to not constructing the ramps as a means of deferring the ramp funding to advance the interim projects. The results of this study will provide the cost estimates used for the implementation plan.

Site specific criteria and constraints are given in the following sections. Each bridge site will require detailed evaluation during the structure type selection process. The information presented below is the base information for such items as location, typical section, approximate length, site issues and constructability/construction sequencing in order to establish the best possible early cost estimate.

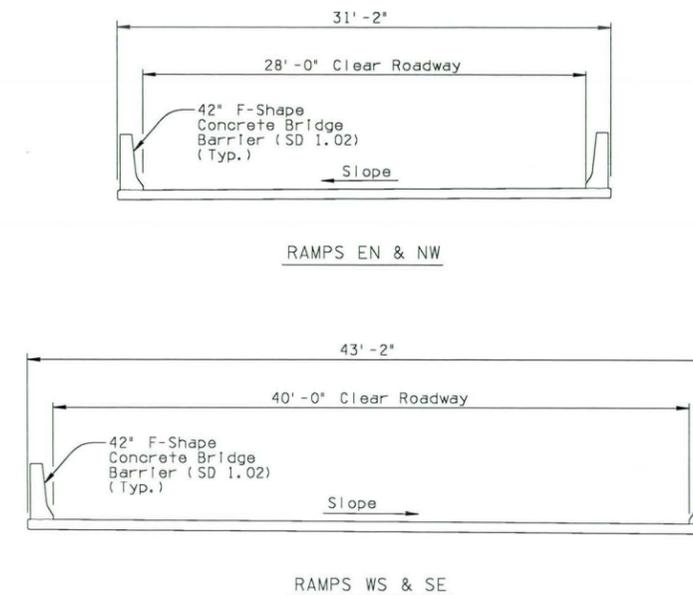


Figure 4.22 – I-10/SR 303L Directional Ramps Typical Sections

SR 303L

Cotton Lane TI OP is a diamond interchange on Interstate 10 located at milepost 124.69. The bridges are cast-in-place, post-tensioned box girder superstructures supported by integral abutments. The bridges have an overall length of 153'-0" and a width of 44'-7" (42'-0" clear width). The eastbound and westbound bridges each support two 12'-0" through lanes with an inside shoulder of 6'-0" and an outside shoulder of 12'-0". The existing bridge rails are the ADOT H-2-1 rail system with a width of 1'-3 1/2" per rail. The bearing system contains asbestos bearing sheets at the east abutment.

SR 303L closely follows the Cotton Lane alignment. The system interchange IDCR proposes shifting the SR 303L alignment approximately 250 feet to the west of existing Cotton Lane. This horizontal shift of the alignment requires the removal of the existing Cotton Lane TI OP bridges and replaced with the new bridges carrying I-10 over SR 303L. The proposed I-10 bridge typical section in each direction is 4-12'-0" general purpose lanes, 1-12'-0" HOV lane, a 2'-0" buffer area, a 10'-0" median shoulder and a 12'-0" outside shoulder. The overpass will have a 42-inch, F-shape concrete traffic barrier on each side. The deck cross slope will vary as the roadway geometry is transitioning from the I-10 realignment horizontal curve to its original tangent alignment. The bridge must span both directions of SR 303L, additional median width from the HOV lane drop taper and 3:1 maximum side slopes. A preliminary layout of the bridge indicates a structure length of approximately 415 feet is required. Freeway Management System (FMS) conduit will be included in the bridge or in the barrier, and will be further discussed in the Bridge Selection Report. The estimated construction cost for the new bridges is \$5,788,000.

SR 303L SB Frontage Road

The proposed I-10 bridge typical section in each direction is 4-12'-0" general purpose lanes, 1-12'-0" HOV lane, a 2'-0" buffer area, a 10'-0" median shoulder and a 12'-0" outside shoulder. The overpass will have a 42-inch, F-shape concrete traffic barrier on each side. The bridge must span a two-lane frontage road with a curb to curb width of 28 feet and 3:1 maximum side slopes. A preliminary layout of the bridge indicates a structure length of approximately 105 feet is required. Freeway Management System (FMS) conduit will be included in the bridge or in the barrier, and will be further discussed in the Bridge Selection Report. The estimated construction cost for the new bridge is \$1,464,000.

SR 303L NB Frontage Road

The proposed I-10 bridge typical section in each direction is 4-12'-0" general purpose lanes, 1-12'-0" HOV lane, a 2'-0" buffer area, a 10'-0" median shoulder and a 12'-0" outside shoulder. The overpass will have a 42-inch, F-shape concrete traffic barrier on each side. The bridge must span a two-lane frontage road with a curb to curb width of 28 feet and 3:1 maximum side slopes. A preliminary layout of the bridge indicates a structure length of approximately 105 feet is required. Freeway Management System (FMS) conduit will be included in the bridge or in the barrier, and will be further discussed in the Bridge Selection Report. The estimated construction cost for the new bridge is \$1,464,000.

I-10/SR 303L Ramp SE

Ramp SE carries traffic from southbound SR 303L to eastbound I-10 on a 5°15' horizontal curve and is located on level 4 of the system interchange. The major features the ramp crosses are McDowell Road at level 2, SR 303L mainline at level 1, WB and NB Frontage Roads at level 2 and I-10 mainline at level 3. Ramp SE must also pass under the two level 5 ramps. The ramp is on a crest vertical curve with the VPI at approximately the centerline of SR 303L. All of the intersecting features, except SR 303L and McDowell Road are critical to the vertical clearance requirements of the ramp.

The proposed Ramp SE bridge typical section includes 2-12'-0" lanes and a 6'-0" and 10'-0" shoulder. The ramp will have a 42-inch, F-shape concrete traffic barrier on each side. A preliminary layout of the bridge indicates a structure length of approximately 2950 feet is required. Key areas for pier placement and span optimization include McDowell Road clearance requirements, the sharp skew angle and median width of SR 303L, the skew angle with I-10 EB and the NB Frontage Road bridge location. At McDowell Road, Ramp SE must span the west end of the McDowell Road bridge and accommodate the alignment of Ramp SW. The skew angle with SR 303L makes the ramp structure prohibitively long for practical span lengths without introducing a pier in the median. The ultimate plan for SR 303L shows a closed median. Ramp SE pier and SR 303L median width must be considerations for optimum span length. Relative to the skew angle with I-10 EB, pier placement in the I-10 median and at the south side of I-10 appear to be the most logical location for an optimized span arrangement. The south side pier placement requires coordination with location of the NB Frontage Road alignment and the east abutment of the Frontage Road bridge.

For the purposes of this study, consideration is given to three and four span frame units as the most desirable layout to determine partial bridge length construction. The preliminary bridge layout indicates a logical length of partial bridge to construct is the southernmost 4-span frame unit (approximately 925 feet) over relocated I-10. This frame would start at the east abutment and end with a cantilever hinge at the north end to allow the rest of the ramp to be constructed at a later date. The east abutment with partial wing walls and four piers are required for this phase of bridge construction. An evaluation of the partial

bridge length shows the interim end-of-bridge construction occurs near the crest of the vertical curve. Deck drainage can be accommodated by conveying the water towards the east abutment. Consideration should be given to collecting the water in deck scuppers/downdrains at permanent pier locations and catch basins near the east abutment during the interim period. The estimated construction cost for the new bridge is \$3,394,000.

I-10/SR 303L Ramp EN

Ramp EN carries traffic from eastbound I-10 to northbound SR 303L on a 4° 30' horizontal curve and is located on level 5 of the system interchange. The major features the ramp crosses are Ramp ES at level 3, SR 303L mainline at level 1, SB and WB Frontage Roads at level 2, Ramps SE and NW at level 4, the I-10 mainline at level 3, the future HOV ramp at level 4 and McDowell Road at level 2. The ramp is on a crest vertical curve with the VPI at approximately the centerline of I-10 WB. The future HOV ramp and Ramps NW and SE are critical to the vertical clearance requirements of the ramp.

The proposed Ramp EN bridge typical section includes a 12'-0" lane and a 6'-0" and 10'-0" shoulder. The ramp will have a 42-inch, F-shape concrete traffic barrier on each side. A preliminary layout of the bridge indicates a structure length of approximately 5125 feet is required. Key areas of interest for pier placement include the future HOV ramp location, spanning over Ramp WN and the sharp skew angle and median width of I-10 and SR 303L. Relative to the future HOV ramp, pier placement on both sides of the HOV ramp and at the east side of SR 303L appear to be the most logical location for an optimized span arrangement. The pier placement on the north side of the HOV ramp requires coordination with the location of the future HOV ramp, existing Cotton Lane and McDowell Road. Consideration of a straddle bent is required due to the sharp skew angle with Ramp WN. Ramp EN must span I-10 and SR 303L consecutively resulting in pier locations that alternate from outside edge of roadway to median to outside edge of roadway. Freeway median widths and clear zone requirements will influence final pier location.

For the purposes of this study, consideration is given to three and four span frame units as the most desirable layout to determine partial bridge length construction. The preliminary bridge layout indicates a logical length of partial bridge to construct is an internal 4-span frame unit (approximately 1000 feet) over relocated I-10 and the future SR 303L. This frame would be constructed with a cantilever hinge at each end to allow the rest of the ramp to be constructed at a later date. Five piers are required for this phase of bridge construction. The west end of the interim end-of-bridge construction occurs near the crest of the vertical curve. Slight adjustment of the VPI to the west of the current location should be considered to convey all deck drainage in one direction to the north end of the ramp. Deck scuppers / downdrains at the northern most pier should be constructed for the interim condition to alleviate water flow over the north edge of the partial bridge. The estimated construction cost for the new bridge is \$2,649,000.

I-10/SR 303L Ramp WS

Ramp WS carries traffic from westbound I-10 to southbound SR 303L on a 4° horizontal curve and is located on level 5 of the system interchange. The major features the ramp crosses are the future HOV ramp at level 4, SR 303L mainline at level 1, EB and NB Frontage Roads at level 2, Ramps SE and NW at level 4, Ramp ES at level 3 and I-10 mainline at level 3. The ramp is on a crest vertical curve with the VPI at approximately the centerline of I-10 EB. The future HOV ramp and Ramps NW and SE are critical to the vertical clearance requirements of the ramp.

The proposed Ramp WS bridge typical section includes 2-12'-0" lanes and a 6'-0" and 10'-0" shoulder. The ramp will have a 42-inch, F-shape concrete traffic barrier on each side. A preliminary layout of the bridge indicates a structure length of approximately 2925 feet is required. Key areas of interest for pier placement include the future HOV ramp location and the sharp skew angle and median width of I-10 and SR 303L. Pier placement on both sides of the HOV ramp appears to be the most likely location for optimum span length. Piers located in this area may need to consider flexibility in the HOV ramp alignment. Ramp WS must span I-10 and SR 303L consecutively resulting in pier locations that alternate from outside edge of roadway to median to outside edge of roadway. Pier placement on the north side of I-10 also requires coordination with the location of the east abutment of the Frontage Road bridge.

For the purposes of this study, consideration is given to three and four span frame units as the most desirable layout to determine partial bridge length construction. The preliminary bridge layout indicates a logical length of partial bridge to construct is the second 3-span frame unit (approximately 775 feet) over relocated I-10. This frame would be constructed with a cantilever hinge at each end to allow the rest of the ramp to be constructed at a later date. Four piers are required for this phase of bridge construction. The crest of the vertical curve occurs approximately at the mid-point of the interim bridge length. Deck scuppers / downdrains at the end pier should be constructed for the interim condition to alleviate water flow over both ends of the partial bridge. The estimated construction cost for the new bridge is \$2,844,000.

I-10/SR 303L Ramp NW

Ramp NW carries traffic from northbound SR 303L to westbound I-10 on a 5°15' horizontal curve and is located on level 4 of the system interchange. The major features the ramp crosses are the RID Canal at level 2, ramp NE at level 3, SR 303L mainline at level 1, EB and SB Frontage Roads at level 2 and I-10 mainline at level 3. Ramp NW must also pass under the two level 5 ramps. The ramp is on a crest vertical curve with the VPI at approximately the centerline of SR 303L. All of the intersecting features, except SR 303L and the RID Canal are critical to the vertical clearance requirements of the ramp.

The proposed Ramp NW bridge typical section includes a 12'-0" lane and a 6'-0" and 10'-0" shoulder. The ramp will have a 42-inch, F-shape concrete traffic barrier on each side. A preliminary layout of the bridge indicates a structure length of approximately 2150 feet is required. Key areas of interest for pier placement include RID Canal clearance requirements, the sharp skew angle with Ramp NE, and the median width of I-10. The RID Canal is proposed to be enclosed in a box culvert under Ramp NW. Pier placement will most likely occur on either side of the box culvert and the cross influence of loading must be considered. The sharp skew angle with Ramp NE may require considering introduction of a straddle bent pier. The I-10 HOV taper is nearing its end under Ramp NW causing the median width to become a possible constraint to the pier location.

For the purposes of this study, consideration is given to three and four span frame units as the most desirable layout to determine partial bridge length construction. The preliminary bridge layout indicates a logical length of partial bridge to construct is the northernmost 4-span frame unit (approximately 900 feet) over relocated I-10. This frame would start at the west abutment and end with a cantilever hinge at the south end to allow the rest of the ramp to be constructed at a later date. The west abutment with partial wing walls and four piers are required for this phase of bridge construction. An evaluation of the partial bridge length shows the interim end-of-bridge construction occurs near the crest of the vertical curve. Deck drainage can be accommodated by conveying the water towards the west abutment. Consideration should be given to collecting the water in deck scuppers/downdrains at permanent pier locations and catch basins

near the west abutment during the interim period. The estimated construction cost for the new bridge is \$2,384,000.

RID Canal Bridge

LOCATION

The RID canal crosses under I-10 east of the proposed I-10/SR303L System Interchange, which is approximately 24 miles west of Junction I-10 and I-17. The *Initial SR 303L DCR* preferred alternative configured the planned I-10 realignment such that the RID canal would not have to be relocated. The proposed I-10 alignment will be shifted approximately 178 feet to the north at the RID crossing. Although the proposed eastbound bridge would tie in to the existing westbound bridge horizontally, the vertical profile grade of the realigned I-10 section is approximately 14 feet higher than existing grade, thus requiring full replacement of both structures.

EXISTING STRUCTURES

The existing structures are parallel overpass bridges on a crest vertical curve supported on steel H-piles at the abutments and on drilled shafts at the piers. The bridges are four-span precast, prestressed AASHTO Type III concrete girder bridges with a 30° right skew that span over the RID canal and an approximate 105'-0" channel designed to handle offsite drainage. The third pier for both the eastbound and westbound structure is located inside the RID canal, which will require coordination with RID for removal of the existing pier columns and drilled shafts.

EVALUATION OF ALTERNATIVES

Two alternatives are being investigated for the RID canal crossing. The first alternative is the bridge replacement alternative similar to the existing crossing and as proposed in the *Initial SR 303L DCR*, and the second is replacing the crossing with a concrete box culvert. The basis for investigating the second alternative is that the Roosevelt Irrigation District indicated they would prefer the RID canal through the section of the I-10 realignment be enclosed in a concrete box culvert, which would minimize maintenance concerns for the RID. Changing the RID canal from an open channel section to a box culvert would eliminate the need for the eastbound and westbound bridges, as well as future bridges required for the I-10/SR 303L system interchange at the RID crossing, and would result in a significant cost savings.

The concrete box culvert alternative would require the RID canal to be realigned due to the location of the existing pier in the center of the canal, which may require an adjustment in the RID right-of-way. A realignment of the canal would be advantageous since it would allow the existing canal to remain operational during construction of the new concrete box culvert. In addition, maintaining the RID canal during construction would eliminate the need for using a temporary canal, which would otherwise be required since the dry-up period is very short (lasting only eleven days) and the RID restricts the usage of precast box culverts.

Although there is a potential for large cost savings associated with replacing the bridges with a concrete box culvert, the feasibility of utilizing a concrete box culvert must be further evaluated. Offsite drainage currently conveyed north to south in a channel adjacent to the RID Canal would require additional concrete box culverts. The design flow for the existing channel per as-built plans was 2380 cfs for a 50-year design event based on a drainage area of 8.54 square miles; however, recent hydrologic analyses conducted for

this area in the *Initial SR 303L DCR* indicates reduced values based on development in this area, and are on the order of 650 cfs. A discussion of the proposed concrete box culvert for conveying this flow is presented in paragraph 4.5.4 of this report.

There is sufficient space under the existing bridges to place multi-barreled concrete box culverts to handle both the RID canal and offsite drainage requirements. For purposes of this IDCR, a double 10'x8' box culvert will be assumed for the RID canal, which is based on an equivalent area for the existing trapezoidal section. Additional requirements for the RID canal and offsite drainage are discussed in paragraph 4.5.

Maintenance roads for the RID would no longer be required with the placement of the concrete box culvert; however, RID would require the box be long enough to allow a large truck (possibly WB-50) to turn around to the opposite side maintenance road. This condition should be evaluated as part of the initial design.

An additional feature impacted by the I-10 realignment at the RID crossing is an existing sump, which is owned by SunCor Development. Discussions with SunCor indicated that the water in the sump is currently used for construction and farming in the surrounding area. This sump would require relocation with either the bridge replacement alternative or the concrete box culvert alternative if still in operation when the project is constructed.

PROPOSED CONDITION

Although the concrete box culvert alternative would require additional drainage structures to convey offsite drainage, this alternative is advantageous over the bridge replacement alternative due to the significant cost savings. The cost of construction for the new eastbound and westbound bridges is approximately \$6,040,000, compared to the cost of construction for the concrete box culvert alternative, which is approximately \$4,566,000. The cost for the concrete box alternative includes the approximate cost of the roadway embankment and the additional box culvert required to convey offsite drainage for a length that will accommodate the I-10 realigned section. Additional length will be required for the offsite drainage structure once the I-10/SR 303L system interchange is in place; however, the cost of this additional length would be significantly less than the cost of three additional bridges that would be required to accommodate the frontage roads identified in the *Initial SR 303L DCR*.

Because of the potentially large cost savings and feasibility of utilizing a concrete box culvert, this option will be recommended as part of this DCR. This modification to the *Initial SR 303L DCR* will require coordination and concurrence with the *Final SR 303L DCR*.

CONSTRUCTABILITY / TRAFFIC CONTROL

There are no unique advantages between the two considered alternatives for traffic control. Each alternative would require construction of the new facilities to be done in three phases as is required for the SR 303L structures discussed previously. Each alternative would utilize the existing structures to maintain traffic; however each would require temporary shifts in alignment. The concrete box culvert alternative has the advantage of a shorter duration for the temporary shifts since construction of the box culvert requires less time than new bridges.

Refer to paragraph 4.8 for additional details on maintenance of traffic during construction.

Sarival Avenue TI OP

LOCATION

Sarival Avenue Overpass Bridge is located east of the proposed I-10/SR 303L system interchange, which is approximately 23.5 miles west of Junction I-10 and I-17. The existing structures are parallel overpass bridges on a crest vertical curve serving eastbound and westbound directional flow along I-10. As previously discussed, the Sarival Avenue Overpass Bridges warrant replacement due to the vertical difference in profile grade of approximately 3 feet between existing and proposed realignment section of I-10. In addition, horizontal control for the proposed bridges is to the north of the existing bridges and on a different bearing.

EXISTING STRUCTURES

The existing overpass bridges are single-span cast-in-place post-tensioned concrete box girder bridges with an overall bridge length of 129'-0" and an overall bridge width of 44'-7" (42'-0" clear width) supported on steel H-piles. The eastbound and westbound bridges each support two 12'-0" through lanes with an inside shoulder of 8'-0" and an outside shoulder of 10'-0".

The Sarival Avenue Overpass does not currently provide access to I-10. Sarival Avenue consists of one 12'-0" through lane in each direction. The *Arizona State Highway System Bridges Record* indicates that Sarival Avenue can be widened to 24'-6" on both sides of the centerline before encroaching into the 2:1 foreslope extending from the abutments.

PROPOSED CONDITION

The proposed eastbound and westbound bridges will accommodate the ultimate roadway section, which includes four 12'-0" general purpose lanes, a 12'-0" HOV lane with a 4'-0" buffer, four 12'-0" directional ramp lanes, and two 12'-0" outside shoulders. The interim roadway section excludes one of the general purpose lanes and the four 12'-0" directional ramp lanes, which will be built with the I-10/SR 303L system interchange, resulting in a larger bridge width than roadway section. A temporary concrete bridge barrier will be utilized to maintain the interim roadway section. The approximate out to out bridge width will be 139'-6½" for each bridge, which will be separated by a 1" gap.

The median edge of deck will have a 42" F-Shape Concrete Bridge Barrier (SD 1.02) while the outer edge of deck will have a 32" F-Shape Concrete Bridge Barrier (SD 1.01) to accommodate the ultimate section. The bridge deck will have a 0.02 'ft cross-slope that rises to the median. A preliminary layout of the bridge indicates a structure length of approximately 170'-0". See Figure 4.23 for the typical deck section.

Freeway Management System (FMS) conduit will be included in the bridge or in the barrier, and will be further discussed in the Bridge Selection Report. The cost of construction for the new eastbound and westbound bridges is estimated at \$3,769,000.

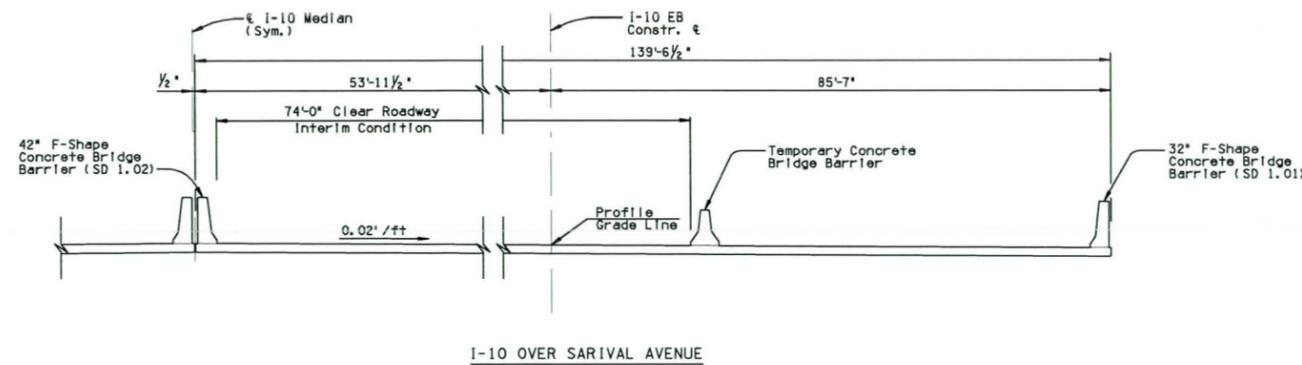


Figure 4.23 – I-10 Over Sarival Avenue Typical Section

CONSTRUCTABILITY / TRAFFIC CONTROL

The proposed traffic control for I-10 in the realignment section will allow two 12'-0" lanes with 2'-0" shy distance for the barrier to be maintained; however, during placement of the traffic control the traffic may need to be temporarily restricted to a single lane. Construction of the new Sarival Avenue Bridges will be accomplished in phases since the new westbound bridge will horizontally be located over the existing westbound bridge. Traffic can be maintained on the existing bridges while a portion of the new westbound bridge is constructed. Traffic can then be shifted onto the new portion of the westbound bridge while the existing westbound bridge is removed and replaced with the remaining bridge. Once the new westbound bridge is complete, it can be utilized to maintain two-way traffic while the new eastbound bridge is constructed. Other constructability options will be further investigated in the Bridge Selection Report.

One lane in each direction can be maintained on Sarival Avenue during construction of the new bridges; however, intermittent closures will be required. If precast or steel girders are to be used, then the roadway will be closed to traffic during placement of the girders and deck forms. If a cast-in-place option is chosen, the roadway will be closed during erection and tear down of the falsework. A minimum vertical clearance of 14'-6" shall be maintained during construction while public traffic is maintained on the roadway. Refer to section 4.8 for additional details on maintenance of traffic during construction.

4.10.3 Construction of New Retaining Walls at I-10/SR 303L System Interchange

The noise mitigation for this corridor is under study and review. If the results of the noise mitigation study recommend sound walls as the preferred noise mitigation, the Final Design Concept Report will include discussion for the sound walls.

Retaining walls required for the project are for new bridges located in the proximity of the I-10/SR 303L system interchange. These retaining walls are identified in the *Initial SR 303L DCR*, and have been designated with a naming convention which will be carried through this IDCR. The majority of these identified retaining walls will be built with the I-10/SR 303L system interchange and will not be discussed in this report; only retaining walls necessary to maintain the I-10 realigned section and partial directional ramps will be included with this project, which are identified in Table 4.24.

Table 4.24 – Retaining Wall Summary Table

Location	Wall No.	Length	Average Height
I-10 Ramp NW Cst CL	NW2	20'-0"	25'-0"
I-10 Ramp SE Cst CL	SE2	50'-0"	20'-0"
I-10 Median Cst CL, SB Frontage	M1	12'-9"	25'-0"
	M2	16'-2"	25'-0"
I-10 Median Cst CL, SR 303L OP	M3	23'-9"	25'-0"
	M4	37'-3"	25'-0"
I-10 Median Cst CL, NB Frontage	M5	45'-3"	25'-0"
	M6	48'-7"	25'-0"

Portions of the I-10/SR 303L system interchange directional ramps will be built with the I-10 realignment section in order to minimize impacts to traffic during construction of the system interchange. Some of these directional ramps were identified as needing retaining walls. This report proposes to construct only portions of those required retaining walls to contain abutment embankments until the system interchange is built. Retaining walls will also be required at the SR 303L OP bridges, and eastbound and westbound I-10 bridges over the southbound and northbound frontage roads. These proposed retaining walls would connect the eastbound and westbound bridge abutments to maintain a constant section at the crossings (walls M1 through M6). Locations of these walls can be found in the roadway plan sheets. The approximate cost of construction for the retaining walls is \$357,600.

Retaining walls specified in the *Initial SR 303L DCR* at the RID crossing will no longer be required with the concrete box alternative.

Final design of all retaining walls shall be in accordance with Load Resistance Factor Design (LRFD), ADOT Bridge Practice Guidelines and the recommendations of the Geotechnical Report.

4.11 Preliminary Pavement Design

Preliminary pavement structural sections were developed, considering the existing pavement sections as discussed in Chapter 1, and the anticipated future traffic loadings. Calculations of pavement structural section requirements and component thicknesses were not made. The preliminary pavement sections were developed for estimating purposes only. Preliminary pavement sections are presented in Table 4.25.

Table 4.25 – Preliminary Pavement Structural Sections

Locations/Segment	AB (Class 2) (Inches)	AC (Inches)	PCCP (Inches)	ACFC (Inches)	AR-ACFC (Inches)	Total Thickness (Inches)
SR 85 – 3300' east of Citrus Road (begin realignment)	4 (lane)	10 (shldr)	13 (lane)	0.5 (lane)	---	10 (shldr) 17.5 (lane)
3300' east of Citrus Road – 1700' east of Sarival Avenue (end realignment)	4	---	13	---	1	18
1700' east of Sarival Avenue – Dysart Road (replace existing AC with PCCP)	4	---	13	---	1	18
Dysart Road – SR 101L	4	---	13	---	1	18

5.0 ITEMIZED ESTIMATE OF PROBABLE COSTS

The estimate of probable project costs is \$287,267,000. A summary of costs is shown in Table 5.1 below. Itemized estimates of probable project costs are shown in Table 5.2 through Table 5.6.

Table 5.1 – Summary of Probable Project Costs (In Thousands)

	Length (miles)	Construction	Design/R/W	Total Estimate	Program Amount	Current or Proposed Program (Design)	Current or Proposed Program (Construction)
SR 85 to 3300' East of Citrus Road	11.99	\$57,317	\$3,439/\$0	\$60,756	\$106,000	FY 2021	FY 2023
I-10 Realignment (3300' East of Citrus Rd to 1700' East of Sarival Avenue)	1.90	\$95,728	\$5,744/\$19,040	\$120,512	1	FY 2007-2010	FY 2011-2013
1700' East of Sarival Avenue to Dysart Road (Median Widening)	3.68	\$38,444 ³	\$2,307/\$0	\$40,751	\$88,620 ²	FY 2009	FY 2011
Dysart Road to SR 101L	4.29	\$49,840	\$2,990/\$0	\$52,830	\$53,805	FY 2012	FY 2014
SUB-TOTAL	21.86	\$241,329	\$14,480/\$19,040	\$274,849	\$248,425		
1700' East of Sarival Avenue to Dysart Road (AC to PCCP Pavement Replacement)		\$11,715	\$703/\$0	\$12,418	None		
TOTAL	21.86	\$253,044	\$15,183/\$19,040	\$287,267	\$248,425		

Notes:
¹ I-10 Realignment program amount was included as part of the overall System TI program amount.
² 1700' East of Sarival Avenue to Dysart Road Median Widening program amount includes one additional lane to the outside in each direction so cost and program comparisons are not necessarily applicable.
³ Interim Median Widening Cost from Cotton Lane Ramps to 1700' East of Sarival = \$8,731,000.

A list of assumptions used in developing the estimates is shown below:

- No landscaping costs are included.
- New lighting or lighting conduit is provided in concrete median barrier locations only.
- Costs shown reflect construction in four separate bid packages and do not include potential phasing or temporary pavement costs.
- Right-of-way costs in the I-10 realignment segment were estimated at \$80,000 per acre.
- Pavement structural sections were assumed based on similar projects and will require evaluation during initial design process.
- FMS conduit will be provided within concrete median barrier from SR 303L to SR 101L only. Costs are assumed to be included in the unit cost for the concrete median barrier.
- Costs for expanding existing FMS devices such as mainline automatic traffic counters are included in the cost of the paving items.
- Utility costs were estimated based upon discussions with utility companies and will be refined during initial design.

Table 5.2 – Estimate of Probable Project Costs - SR 85 to 3300' East of Citrus Road

Estimate of Probable Project Costs -- SR 85 to Citrus Road				
Item	Unit	Quantity	Unit Price	Amount
REMOVAL OF STRUCTURES AND OBSTRUCTIONS	L.SUM	1	\$40,000.00	\$ 40,000.00
REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	51,190	\$3.50	\$ 179,000.00
ROADWAY EXCAVATION	CU.YD.	41,200	\$4.75	\$ 196,000.00
BORROW	CU.YD.	222,600	\$5.50	\$ 1,224,000.00
PORTLAND CEMENT CONCRETE PAVEMENT (13" OVER 4" AB)	SQ.YD.	164,990	\$50.00	\$ 8,250,000.00
ASPHALTIC CONCRETE PAVEMENT (10")	SQ.YD.	174,500	\$30.00	\$ 5,235,000.00
ACFC OVERLAY (1/2 INCH)	SQ.YD.	173,650	\$2.50	\$ 434,000.00
PIPE, CORRUGATED METAL, 28" X 20"	L.FT.	420	\$45.00	\$ 19,000.00
PIPE, REINFORCED CONCRETE (24")	L.FT.	120	\$75.00	\$ 9,000.00
ADJUST CATCH BASIN TO GRADE	EACH	37	\$1,000.00	\$ 37,000.00
CONCRETE CATCH BASIN (MEDIAN DIKE) (C-15.90)	EACH	21	\$2,200.00	\$ 46,000.00
GUIDE SIGN PANEL	SQ.FT.	96	\$25.00	\$ 2,000.00
IMPACT ATTENUATION DEVICE(SAND BARREL CRASH CUSHION, TYPE A)	EACH	13	\$6,000.00	\$ 78,000.00
PAVEMENT MARKING (WHITE SPRAYED THERMOPLASTIC)(0.060")	L.FT.	43,680	\$0.25	\$ 11,000.00
PAVEMENT MARKING (YELLOW SPRAYED THERMOPLASTIC)(0.060")	L.FT.	174,720	\$0.25	\$ 44,000.00
PAVEMENT MARKER, RAISED, TYPE C	EACH	2,912	\$3.75	\$ 11,000.00
PERMANENT PAVEMENT MARKING (PAINTED) (WHITE)	L.FT.	116,480	\$0.10	\$ 12,000.00
PERMANENT PAVEMENT MARKING (PAINTED) (YELLOW)	L.FT.	116,480	\$0.10	\$ 12,000.00
MEDIAN CABLE BARRIER (	L.FT.	60,480	\$15.00	\$ 907,000.00
MEDIAN CABLE BARRIER ANCHOR (	EACH	13	\$2,500.00	\$ 33,000.00
GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	2,150	\$18.00	\$ 39,000.00
GUARD RAIL TERMINAL (	EACH	6	\$2,500.00	\$ 15,000.00
GUARD RAIL TRANSITION, W-BEAM TO THRIE BEAM	EACH	12	\$1,500.00	\$ 18,000.00
THRIE-BEAM GUARD RAIL TRANSITION SYSTEM	EACH	12	\$3,000.00	\$ 36,000.00
NOISE BARRIER	SQ.FT.	426,400	\$25.00	\$ 10,660,000.00
MILLER ROAD TIOP - STRUCTURE NOS 1728 & 1729	SQ.FT.	5,252	\$110.00	\$ 578,000.00
WATSON ROAD TIOP - STRUCTURE NOS 1681 & 1682	SQ.FT.	4,630	\$110.00	\$ 509,000.00
JACKRABBIT TRAIL TIOP - STRUCTURE NOS 1683 & 1684	SQ.FT.	5,756	\$110.00	\$ 633,000.00
PERRYVILLE ROAD OP - STRUCTURE NOS 1705 & 1706	SQ.FT.	8,958	\$110.00	\$ 985,000.00
CITRU'S ROAD OP, STRUCTURE NOS 1707 & 1708	SQ.FT.	8,944	\$110.00	\$ 984,000.00
UTILITY RELOCATION	L.SUM	1	\$50,000.00	\$ 50,000.00

SUBTOTAL -- ABOVE ITEMS:			\$ 31,286,000.00
Maintenance and Protection of Traffic (15%)	0.15		\$ 4,693,000.00
Dust and Water Palliative (2%)	0.02		\$ 626,000.00
Quality Control (2%)	0.02		\$ 626,000.00
Construction Surveying (4%)	0.04		\$ 1,251,000.00
Erosion Control (1%)	0.01		\$ 313,000.00
SUBTOTAL:			\$ 7,759,000.00
Unidentified Items (20%)	0.20		\$ 7,759,000.00
SUBTOTAL -- CONSTRUCTION ITEMS:			\$ 46,554,000.00
Mobilization (8%)	0.08		\$ 3,724,000.00
TOTAL CONSTRUCTION ITEMS:			\$ 50,278,000.00
Construction Engineering (9%)	0.09		\$ 4,525,000.00
Construction Contingencies (5%)	0.05		\$ 2,514,000.00
TOTAL CONSTRUCTION COST:			\$ 57,317,000.00
Engineering Design (w/ Surveying & Geotechnical) (6%)	0.06		\$ 3,439,000.00
Right-of-Way		\$80,000 /acre	\$ -
TOTAL PROJECT COST:			\$ 60,756,000.00

Table 5.3 – Estimate of Probable Project Costs - I-10 Realignment (3300' East of Citrus Road to 1700' East of Sarival Avenue)

Estimate of Probable Project Costs -- I-10 Realignment (Citrus Road to Sarival Avenue)				
Item	Unit	Quantity	Unit Price	Amount
REMOVAL OF STRUCTURES AND OBSTRUCTIONS	L.SUM	1	\$200,000.00	\$ 200,000.00
BRIDGE REMOVAL - COTTON LANE EB & WB	L.SUM	1	\$250,000.00	\$ 250,000.00
BRIDGE REMOVAL - RID CANAL EB & WB	L.SUM	1	\$250,000.00	\$ 250,000.00
BRIDGE REMOVAL - SARIVAL AVE. TIOP EB & WB	L.SUM	1	\$250,000.00	\$ 250,000.00
REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	80,000	\$3.50	\$ 280,000.00
DRAINAGE EXCAVATION	CU.YD.	2,150,000	\$3.75	\$ 8,063,000.00
PORTLAND CEMENT CONCRETE PAVEMENT (13" OVER 4" AB)	SQ.YD.	185,000	\$50.00	\$ 9,250,000.00
ASPHALTIC CONCRETE PAVEMENT (10")	SQ.YD.	20,371	\$30.00	\$ 611,000.00
1-INCH AR-ACFC (ASPHALTIC CONCRETE FRICTION COURSE)	SQ.YD.	185,000	\$4.00	\$ 740,000.00
ACFC OVERLAY (1/2 INCH)	SQ.YD.	12,220	\$2.50	\$ 31,000.00
STORM DRAIN PIPE, 24"	L.FT.	4,900	\$75.00	\$ 368,000.00
CONCRETE CATCH BASIN	EACH	28	\$2,500.00	\$ 70,000.00
MISCELLANEOUS WORK (CAP EXST CATCH BASIN)	EACH	15	\$325.00	\$ 5,000.00
ADJUST CATCH BASIN TO GRADE	EACH	6	\$1,000.00	\$ 6,000.00
MEDIAN SIGN STRUCTURE (TWO-SIDED)	EACH	1	\$25,000.00	\$ 25,000.00
FOUNDATION FOR MEDIAN SIGN STRUCTURE (TWO-SIDED)	EACH	1	\$5,600.00	\$ 5,600.00
FOUNDATION FOR BRIDGE SIGN STRUCTURE	EACH	4	\$5,000.00	\$ 20,000.00
REGULATORY, WARNING OR MARKER SIGN PANELS	SQ.FT.	265	\$15.00	\$ 4,000.00
GUIDE SIGN PANEL	SQ.FT.	500	\$25.00	\$ 13,000.00
PAVEMENT MARKING (WHITE SPRAYED THERMOPLASTIC)(0.060")	L.FT.	245,940	\$0.25	\$ 61,000.00
PAVEMENT MARKING (YELLOW SPRAYED THERMOPLASTIC)(0.060")	L.FT.	51,470	\$0.25	\$ 13,000.00
PAVEMENT SYMBOL (EXTRUDED THERMOPLASTIC) (ALKYD) (0.090")	EACH	70	\$150.00	\$ 11,000.00
PAVEMENT MARKING, PREFORMED, TYPE II WHITE STRIPE	L.FT.	12,980	\$3.50	\$ 45,000.00
PAVEMENT MARKER, RAISED, TYPE C	EACH	2,860	\$3.75	\$ 11,000.00
MEDIAN LIGHT POLE (TYPE U) (69")	EACH	23	\$4,000.00	\$ 92,000.00
MEDIAN LIGHT POLE FOUNDATION	EACH	23	\$4,000.00	\$ 92,000.00
ELECTRICAL CONDUIT AND CONDUCTORS	L.FT.	11,570	\$7.50	\$ 87,000.00
BARRIER PULLBOX	EACH	23	\$500.00	\$ 12,000.00
LOAD CENTER CABINET AND FOUNDATION	EACH	2	\$9,500.00	\$ 19,000.00
LUMINAIRE (HIGH MAST) (HPS 400 WATT)	EACH	47	\$500.00	\$ 24,000.00
CONCRETE MEDIAN HALF BARRIER -- 42" WITH GUTTER	L.FT.	2,392	\$59.00	\$ 141,000.00
CONCRETE MEDIAN HALF BARRIER -- 42"	L.FT.	11,790	\$55.00	\$ 648,000.00
CONCRETE MEDIAN BARRIER -- 42", DUAL HEIGHT	L.FT.	3,490	\$80.00	\$ 279,000.00
NOISE BARRIER	SQ.FT.	27,000	\$25.00	\$ 675,000.00
REINFORCED CONCRETE PIPE, 72"	L.FT.	3,400	\$375.00	\$ 1,275,000.00
ABANDON 36" CMP CULVERT	L.FT.	1,400	\$7.50	\$ 11,000.00
REINFORCED CONCRETE BOX CULVERT, DOUBLE BARREL (10'X 6')	L.FT.	630	\$1,600.00	\$ 1,008,000.00
REINFORCED CONCRETE BOX CULVERT (6'X 4')	L.FT.	90	\$325.00	\$ 29,000.00
SR-303L SB FRONTAGE - STRUCTURE NO TBD	SQ.FT.	18,305	\$80.00	\$ 1,464,000.00
SR-303L - STRUCTURE NO TBD	SQ.FT.	72,349	\$80.00	\$ 5,788,000.00
SR-303L NB FRONTAGE - STRUCTURE NO TBD	SQ.FT.	18,305	\$80.00	\$ 1,464,000.00
I-10 / SR-303L RAMP SE, STRUCTURE NO TBD	SQ.FT.	39,930	\$85.00	\$ 3,394,000.00
I-10 / SR-303L RAMP EN, STRUCTURE NO TBD	SQ.FT.	31,167	\$85.00	\$ 2,649,000.00
I-10 / SR-303L RAMP WS, STRUCTURE NO TBD	SQ.FT.	33,455	\$85.00	\$ 2,844,000.00
I-10 / SR-303L RAMP NW, STRUCTURE NO TBD	SQ.FT.	28,050	\$85.00	\$ 2,384,000.00
RID CANAL BOX CULVERT	L.SUM	1	\$3,022,000.00	\$ 3,022,000.00
SARIVAL AVE TIOP - STRUCTURE NO TBD	SQ.FT.	47,118	\$80.00	\$ 3,769,000.00
UTILITY RELOCATION	L.SUM	1	\$500,000.00	\$ 500,000.00

SUBTOTAL -- ABOVE ITEMS:				\$ 52,252,000.00
Maintenance and Protection of Traffic (15%)	0.15			\$ 7,838,000.00
Dust and Water Palliative (2%)	0.02			\$ 1,045,000.00
Quality Control (2%)	0.02			\$ 1,045,000.00
Construction Surveying (4%)	0.04			\$ 2,090,000.00
Erosion Control (1%)	0.01			\$ 523,000.00
SUBTOTAL:				\$ 64,793,000.00
Unidentified Items (20%)	0.20			\$ 12,959,000.00
SUBTOTAL -- CONSTRUCTION ITEMS:				\$ 77,752,000.00
Mobilization (8%)	0.08			\$ 6,220,000.00
TOTAL CONSTRUCTION ITEMS:				\$ 83,972,000.00
Construction Engineering (9%)	0.09			\$ 7,557,000.00
Construction Contingencies (5%)	0.05			\$ 4,199,000.00
TOTAL CONSTRUCTION COST:				\$ 95,728,000.00
Engineering Design (w/ Surveying & Geotechnical) (6%)	0.06			\$ 5,744,000.00
Right-of-Way	\$90,000 /acre			\$ 19,040,000.00
TOTAL PROJECT COST:				\$ 120,512,000.00

Table 5.4 – Estimate of Probable Project Costs – 1700' East of Sarival Avenue to Dysart Road (No AC to PCCP Replacement)

Estimate of Probable Project Costs -- 1,700 LF East of Sarival Ave to Dysart Rd (Median Widening)				
Item	Unit	Quantity	Unit Price	Amount
REMOVAL OF STRUCTURES AND OBSTRUCTIONS	L.SUM	1	\$20,000.00	\$ 20,000.00
REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	41,400	\$3.50	\$ 145,000.00
ROADWAY EXCAVATION	CU.YD.	3,500	\$4.75	\$ 17,000.00
BORROW	CU.YD.	50,000	\$5.50	\$ 275,000.00
GRADING ROADWAY FOR PAVEMENT	SQ.YD.	15,291	\$6.50	\$ 99,000.00
PORTLAND CEMENT CONCRETE PAVEMENT (13" OVER 4" AB)	SQ.YD.	165,790	\$50.00	\$ 8,290,000.00
1-INCH AR-ACFC (ASPHALTIC CONCRETE FRICTION COURSE)	SQ.YD.	165,790	\$4.00	\$ 663,000.00
STORM DRAIN PIPE, 24"	L.FT.	850	\$75.00	\$ 64,000.00
CONCRETE CATCH BASIN	EACH	4	\$2,500.00	\$ 10,000.00
MISCELLANEOUS WORK (CAP EXST CATCH BASIN)	EACH	15	\$325.00	\$ 5,000.00
MEDIAN SIGN STRUCTURE (TWO-SIDED)	EACH	4	\$25,000.00	\$ 100,000.00
FOUNDATION FOR MEDIAN SIGN STRUCTURE (TWO-SIDED)	EACH	4	\$5,600.00	\$ 22,000.00
FOUNDATION FOR BRIDGE SIGN STRUCTURE	EACH	2	\$5,000.00	\$ 10,000.00
REGULATORY, WARNING OR MARKER SIGN PANELS	SQ.FT.	935	\$15.00	\$ 14,000.00
GUIDE SIGN PANEL	SQ.FT.	1,700	\$25.00	\$ 43,000.00
PAVEMENT MARKING (WHITE SPRAYED THERMOPLASTIC)(0.060")	L.FT.	172,500	\$0.25	\$ 43,000.00
PAVEMENT MARKING (YELLOW SPRAYED THERMOPLASTIC)(0.060")	L.FT.	72,730	\$0.25	\$ 18,000.00
PAVEMENT SYMBOL (EXTRUDED THERMOPLASTIC) (ALKYD) (0.090")	EACH	100	\$150.00	\$ 15,000.00
PAVEMENT MARKING, PREFORMED, TYPE II WHITE STRIPE	L.FT.	9,340	\$3.50	\$ 33,000.00
PAVEMENT MARKER, RAISED, TYPE C	EACH	2,040	\$3.75	\$ 8,000.00
MEDIAN LIGHT POLE (TYPE U) (69")	EACH	31	\$4,000.00	\$ 124,000.00
MEDIAN LIGHT POLE FOUNDATION	EACH	31	\$4,000.00	\$ 124,000.00
ELECTRICAL CONDUIT AND CONDUCTORS	L.FT.	15,264	\$7.50	\$ 114,000.00
BARRIER PULLBOX	EACH	31	\$500.00	\$ 16,000.00
LOAD CENTER CABINET AND FOUNDATION	EACH	3	\$9,500.00	\$ 29,000.00
LUMINAIRE (HIGH MAST) (HPS 400 WATT)	EACH	62	\$500.00	\$ 31,000.00
CONCRETE MEDIAN BARRIER -- 42", DUAL HEIGHT	L.FT.	19,243	\$80.00	\$ 1,539,000.00
NOISE BARRIER	SQ.FT.	55,800	\$25.00	\$ 1,395,000.00
ESTRELLA PARKWAY TIOP - STRUCTURE NOS 1715 & 1716	SQ.FT.	11,666	\$110.00	\$ 1,283,000.00
BULLARD WASH BRIDGE OP - STRUCTURE NOS 1849 & 1850	SQ.FT.	13,995	\$110.00	\$ 1,539,000.00
BULLARD AVENUE TIOP - STRUCTURE NOS 1717 & 1718	SQ.FT.	10,766	\$110.00	\$ 1,184,000.00
SPRR OP - STRUCTURE NOS 1719 & 1720	SQ.FT.	10,019	\$110.00	\$ 1,102,000.00
LITCHFIELD ROAD TIOP - STRUCTURE NOS 1721 & 1722	SQ.FT.	12,429	\$110.00	\$ 1,367,000.00
DYSART ROAD TIOP - STRUCTURE NOS 1723 & 1724	SQ.FT.	11,301	\$110.00	\$ 1,243,000.00

SUBTOTAL -- ABOVE ITEMS:				\$ 20,984,000.00
Maintenance and Protection of Traffic (15%)	0.15			\$ 3,148,000.00
Dust and Water Palliative (2%)	0.02			\$ 420,000.00
Quality Control (2%)	0.02			\$ 420,000.00
Construction Surveying (4%)	0.04			\$ 839,000.00
Erosion Control (1%)	0.01			\$ 210,000.00
SUBTOTAL:				\$ 26,021,000.00
Unidentified Items (20%)	0.20			\$ 5,204,000.00
SUBTOTAL -- CONSTRUCTION ITEMS:				\$ 31,225,000.00
Mobilization (8%)	0.08			\$ 2,498,000.00
TOTAL CONSTRUCTION ITEMS:				\$ 33,723,000.00
Construction Engineering (9%)	0.09			\$ 3,035,000.00
Construction Contingencies (5%)	0.05			\$ 1,686,000.00
TOTAL CONSTRUCTION COST:				\$ 38,444,000.00
Engineering Design (w/ Surveying & Geotechnical) (6%)	0.06			\$ 2,307,000.00
Right-of-Way	\$80,000 /acre			\$ -
TOTAL PROJECT COST:				\$ 40,751,000.00

Table 5.5 – Estimate of Probable Project Costs – 1700' East of Sarival Avenue to Dysart Road (AC to PCCP Replacement Only)

Table 5.6 – Estimate of Probable Project Costs - Dysart Road to SR 101L

Estimate of Probable Project Costs -- 1,700 LF East of Sarival Ave to Dysart Rd (AC to PCCP)				
Item	Unit	Quantity	Unit Price	Amount
REMOVAL OF STRUCTURES AND OBSTRUCTIONS	L.SUM	0	\$0.00	\$ -
REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	98,600	\$3.50	\$ 345,000.00
ROADWAY EXCAVATION	CU.YD.	0	\$4.75	\$ -
BORROW	CU.YD.	0	\$5.50	\$ -
GRADING ROADWAY FOR PAVEMENT	SQ.YD.	98,600	\$6.50	\$ 641,000.00
PORTLAND CEMENT CONCRETE PAVEMENT (13" OVER 4" AB)	SQ.YD.	98,600	\$50.00	\$ 4,930,000.00
1-INCH AR-ACFC (ASPHALTIC CONCRETE FRICTION COURSE)	SQ.YD.	98,600	\$4.00	\$ 394,000.00
STORM DRAIN PIPE, 24"	L.FT.	0	\$75.00	\$ -
CONCRETE CATCH BASIN	EACH	0	\$2,500.00	\$ -
MISCELLANEOUS WORK (CAP EXST CATCH BASIN)	EACH	0	\$325.00	\$ -
MEDIAN SIGN STRUCTURE (TWO-SIDED)	EACH	0	\$25,000.00	\$ -
FOUNDATION FOR MEDIAN SIGN STRUCTURE (TWO-SIDED)	EACH	0	\$5,600.00	\$ -
FOUNDATION FOR BRIDGE SIGN STRUCTURE	EACH	0	\$5,000.00	\$ -
REGULATORY, WARNING OR MARKER SIGN PANELS	SQ.FT.	0	\$15.00	\$ -
GUIDE SIGN PANEL	SQ.FT.	0	\$25.00	\$ -
PAVEMENT MARKING (WHITE SPRAYED THERMOPLASTIC)(0.060")	L.FT.	175,000	\$0.25	\$ 44,000.00
PAVEMENT MARKING (YELLOW SPRAYED THERMOPLASTIC)(0.060")	L.FT.	0	\$0.25	\$ -
PAVEMENT SYMBOL (EXTRUDED THERMOPLASTIC) (ALKYD) (0.090")	EACH	0	\$150.00	\$ -
PAVEMENT MARKING, PREFORMED, TYPE II WHITE STRIPE	L.FT.	9,000	\$3.50	\$ 32,000.00
PAVEMENT MARKER, RAISED, TYPE C	EACH	2,000	\$3.75	\$ 8,000.00
MEDIAN LIGHT POLE (TYPE U) (69")	EACH	0	\$4,000.00	\$ -
MEDIAN LIGHT POLE FOUNDATION	EACH	0	\$4,000.00	\$ -
ELECTRICAL CONDUIT AND CONDUCTORS	L.FT.	0	\$7.50	\$ -
BARRIER PULLBOX	EACH	0	\$500.00	\$ -
LOAD CENTER CABINET AND FOUNDATION	EACH	0	\$9,500.00	\$ -
LUMINAIRE (HIGH MAST) (HPS 400 WATT)	EACH	0	\$500.00	\$ -
CONCRETE MEDIAN BARRIER -- 42", DUAL HEIGHT	L.FT.	0	\$80.00	\$ -
NOISE BARRIER	SQ.FT.	0	\$25.00	\$ -
ESTRELLA PARKWAY TI OP - STRUCTURE NOS 1715 & 1716	SQ.FT.	0	\$110.00	\$ -
BULLARD WASH BRIDGE OP - STRUCTURE NOS 1849 & 1850	SQ.FT.	0	\$110.00	\$ -
BULLARD AVENUE TI OP - STRUCTURE NOS 1717 & 1718	SQ.FT.	0	\$110.00	\$ -
SPRR OP - STRUCTURE NOS 1719 & 1720	SQ.FT.	0	\$110.00	\$ -
LITCHFIELD ROAD TI OP - STRUCTURE NOS 1721 & 1722	SQ.FT.	0	\$110.00	\$ -
DYSART ROAD TIOP - STRUCTURE NOS 1723 & 1724	SQ.FT.	0	\$110.00	\$ -

Estimate of Probable Project Costs -- Dysart Road to SR 101L				
Item	Unit	Quantity	Unit Price	Amount
REMOVAL OF STRUCTURES AND OBSTRUCTIONS	L.SUM	1	\$20,000.00	\$ 20,000.00
REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	18,000	\$3.50	\$ 63,000.00
ROADWAY EXCAVATION	CU.YD.	4,000	\$4.75	\$ 19,000.00
BORROW	CU.YD.	55,000	\$5.50	\$ 303,000.00
PORTLAND CEMENT CONCRETE PAVEMENT (13" OVER 4" AB)	SQ.YD.	161,553	\$50.00	\$ 8,078,000.00
1-INCH AR-ACFC (ASPHALTIC CONCRETE FRICTION COURSE)	SQ.YD.	161,553	\$4.00	\$ 646,000.00
STORM DRAIN PIPE, 24"	L.FT.	900	\$75.00	\$ 68,000.00
CONCRETE CATCH BASIN	EACH	7	\$2,500.00	\$ 18,000.00
MISCELLANEOUS WORK (CAP EXST CATCH BASIN)	EACH	8	\$325.00	\$ 3,000.00
MEDIAN SIGN STRUCTURE (TWO-SIDED)	EACH	4	\$25,000.00	\$ 100,000.00
FOUNDATION FOR MEDIAN SIGN STRUCTURE (TWO-SIDED)	EACH	4	\$5,600.00	\$ 22,000.00
BRIDGE SIGN STRUCTURE (TUBULAR)	EACH	2	\$70,000.00	\$ 140,000.00
FOUNDATION FOR BRIDGE SIGN STRUCTURE	EACH	4	\$5,000.00	\$ 20,000.00
REGULATORY, WARNING OR MARKER SIGN PANELS	SQ.FT.	935	\$15.00	\$ 14,000.00
GUIDE SIGN PANEL	SQ.FT.	1,700	\$25.00	\$ 43,000.00
PAVEMENT MARKING (WHITE SPRAYED THERMOPLASTIC)(0.060")	L.FT.	212,880	\$0.25	\$ 53,000.00
PAVEMENT MARKING (YELLOW SPRAYED THERMOPLASTIC)(0.060")	L.FT.	44,550	\$0.25	\$ 11,000.00
PAVEMENT SYMBOL (EXTRUDED THERMOPLASTIC) (ALKYD) (0.090")	EACH	60	\$150.00	\$ 9,000.00
PAVEMENT MARKING, PREFORMED, TYPE II WHITE STRIPE	L.FT.	11,230	\$3.50	\$ 39,000.00
PAVEMENT MARKER, RAISED, TYPE C	EACH	2,480	\$3.75	\$ 9,000.00
MEDIAN LIGHT POLE (TYPE U) (69")	EACH	36	\$4,000.00	\$ 144,000.00
MEDIAN LIGHT POLE FOUNDATION	EACH	36	\$4,000.00	\$ 144,000.00
ELECTRICAL CONDUIT AND CONDUCTORS	L.FT.	17,667	\$7.50	\$ 133,000.00
BARRIER PULLBOX	EACH	36	\$500.00	\$ 18,000.00
LOAD CENTER CABINET AND FOUNDATION	EACH	3	\$9,500.00	\$ 29,000.00
LUMINAIRE (HIGH MAST) (HPS 400 WATT)	EACH	71	\$500.00	\$ 36,000.00
CONCRETE MEDIAN HALF BARRIER -- 42" WITH GUTTER	L.FT.	1,514	\$59.00	\$ 89,000.00
CONCRETE MEDIAN BARRIER -- 42", DUAL HEIGHT	L.FT.	21,457	\$80.00	\$ 1,717,000.00
NOISE BARRIER	SQ.FT.	110,400	\$25.00	\$ 2,760,000.00
AGUA FRIA RIVER BRIDGE - STRUCTURE NOS 1852 & 1853	SQ.FT.	91,254	\$110.00	\$ 10,038,000.00
115TH AVE TIOP - STRUCTURE NOS 1856 & 1857	SQ.FT.	7,743	\$110.00	\$ 852,000.00
107TH OP - STRUCTURE NOS 1858 & 1859	SQ.FT.	6,513	\$110.00	\$ 716,000.00
99TH AVE TIOP - STRUCTURE NOS 1860 & 1861	SQ.FT.	7,739	\$110.00	\$ 851,000.00

SUBTOTAL -- ABOVE ITEMS:		\$ 6,394,000.00
Maintenance and Protection of Traffic (15%)	0.15	\$ 959,000.00
Dust and Water Palliative (2%)	0.02	\$ 128,000.00
Quality Control (2%)	0.02	\$ 128,000.00
Construction Surveying (4%)	0.04	\$ 256,000.00
Erosion Control (1%)	0.01	\$ 64,000.00
SUBTOTAL:		\$ 7,929,000.00
Unidentified Items (20%)	0.20	\$ 1,586,000.00
SUBTOTAL -- CONSTRUCTION ITEMS:		\$ 9,515,000.00
Mobilization (8%)	0.08	\$ 761,000.00
TOTAL CONSTRUCTION ITEMS:		\$ 10,276,000.00
Construction Engineering (9%)	0.09	\$ 925,000.00
Construction Contingencies (5%)	0.05	\$ 514,000.00
TOTAL CONSTRUCTION COST:		\$ 11,715,000.00
Engineering Design (w/ Surveying & Geotechnical) (6%)	0.06	\$ 703,000.00
Right-of-Way	\$80,000 /acre	\$ -
TOTAL PROJECT COST:		\$ 12,418,000.00

SUBTOTAL -- ABOVE ITEMS:		\$ 27,205,000.00
Maintenance and Protection of Traffic (15%)	0.15	\$ 4,081,000.00
Dust and Water Palliative (2%)	0.02	\$ 544,000.00
Quality Control (2%)	0.02	\$ 544,000.00
Construction Surveying (4%)	0.04	\$ 1,088,000.00
Erosion Control (1%)	0.01	\$ 272,000.00
SUBTOTAL:		\$ 33,734,000.00
Unidentified Items (20%)	0.20	\$ 6,747,000.00
SUBTOTAL -- CONSTRUCTION ITEMS:		\$ 40,481,000.00
Mobilization (8%)	0.08	\$ 3,238,000.00
TOTAL CONSTRUCTION ITEMS:		\$ 43,719,000.00
Construction Engineering (9%)	0.09	\$ 3,935,000.00
Construction Contingencies (5%)	0.05	\$ 2,186,000.00
TOTAL CONSTRUCTION COST:		\$ 49,840,000.00
Engineering Design (w/ Surveying & Geotechnical) (6%)	0.06	\$ 2,990,000.00
Right-of-Way	\$80,000 /acre	\$ -
TOTAL PROJECT COST:		\$ 52,830,000.00

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6.0 AASHTO CONTROLLING DESIGN CRITERIA

The existing roadway elements of this project have been reviewed and analyzed in order to assure that they comply with the American Association of State Highway and Transportation Officials (AASHTO) requirements. Existing and proposed features for the recommended alternative that do not meet AASHTO design criteria (2001 Green Book) are indicated in the discussion below.

ADOT design criteria have also been reviewed for non-conforming elements which will remain as a part of the proposed improvements. Features that do not meet current *ADOT Roadway Design Guidelines* are also indicated below.

A complete discussion of the existing I-10 features and evaluation results are presented within the *Final AASHTO Controlling Design Criteria Report* (October 2005), and included as Appendix A of this report.

6.1 AASHTO Non-Conforming Geometric Design Elements

Non-conforming AASHTO design elements that will be upgraded as part of this project include:

I-10 Mainline (SR 303L to SR 101L – EB)

- The existing inside shoulder width is less than the recommended width of 10' from MP 129.89 to MP 133.89 – 2' less than recommended (8' width)

I-10 Mainline (SR 303L to SR 101L – WB)

- The existing inside shoulder width is less than the recommended width of 10' from MP 129.89 to MP 133.89 – 2' less than recommended (8' width)

6.2 Request for AASHTO Design Exceptions

Design exceptions are not being requested for the non-conforming design elements listed in paragraph 6.1 of this report. The non-conforming elements listed in paragraph 6.1 will be reconstructed as part of this project and will comply with AASHTO design criteria upon completion of the proposed improvements.

However, a design exception is being requested for substandard inside shoulder widths in the vicinity of the I-10/SR 101L interchange due to physical constraints presented by the existing directional ramp bridge piers leading to and from SR 101L. Shoulder widths in the vicinity of the bridge piers will be less than the AASHTO recommended 10' minimum width as detailed below:

I-10 EB:

- Varies from 12' to 4' Sta 7053+94 to 7057+94 (400') (Proposed 50:1 barrier transition)
- 4' shoulder from 7057+94 to 7066+10 (816', 712' of which is existing barrier)
- Varies from 4' to 12' Sta 7066+10 to 7068+10 (200') (Existing 25:1 barrier transition)

I-10 WB:

- Varies from 12' to 4' Sta 7059+47 to 7060+67 (120') (Proposed 15:1 barrier transition)
- 4' Shoulder from Sta 7060+67 to 7066+10 (543' new barrier)
- Varies 4' to 12' Sta 7066+10 to 7068+10 (200') (Existing 25:1 barrier transition)

6.3 ADOT Non-Conforming Geometric Design Elements

There are no existing ADOT non-conforming geometric design elements within the limits of this project.

6.4 Request for ADOT Design Exceptions

While there are no existing ADOT non-conforming geometric design elements, the proposed closure of the median will result in a substandard inside shoulder width at the I-10/SR 101L interchange area. Consequently, a design exception is being requested for substandard inside shoulder widths in the vicinity of the I-10/SR 101L interchange due to physical constraints presented by the existing directional ramp bridge piers leading to and from SR 101L. Shoulder widths in the vicinity of the bridge piers will be less than the ADOT recommended 12' (and the minimum 10') widths as detailed above.

A formal request for design exceptions will be submitted with the Final Design Concept Report.

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7.0 SOCIAL, ECONOMIC AND ENVIRONMENTAL CONCERNS

7.1 Introduction

Based on the anticipated scope of work, ADOT and FHWA have determined that a CE is appropriate level of NEPA documentation. However, this project does not meet the provisions of the *Arizona Programmatic Categorical Exclusion Approval*, dated August 4, 2000, as established by FHWA and ADOT. Therefore, a non-programmatic CE will be submitted by ADOT EEG to FHWA for review and final approval.

The non-programmatic CE will evaluate the environmental effects associated with adding additional travel lanes in the median of I-10 generally between SR 85 and SR 101L, with the exception of the area between Citrus Road and Sarival Avenue. A separate environmental document will evaluate the area between Citrus Road and Sarival Avenue, as it relates to shifting the existing I-10 mainline to the north in order to accommodate the new I-10/SR 303L system interchange.

7.2 Land Use

The existing I-10 right-of-way is owned by ADOT and reserved for transportation use. Adjacent land is privately or municipally owned. Adjacent land uses include residential (single family residential and multi-family), commercial, recreational, agricultural, and industrial.

7.3 Biological Resources

Threatened and Endangered Species

The US Fish and Wildlife Service list of threatened, endangered, proposed, and candidate species for Maricopa County was reviewed by a qualified biologist. It was determined through a biological review that no listed species or suitable habitat will be affected as a result of this project because suitable habitat for listed species is not present within the project area. Therefore, a Biological Evaluation was not required.

Arizona Special Status Species

The Arizona Game and Fish Department (AGFD) provided a list of Wildlife of Special Concern in Arizona for consideration during the environmental analysis process for this project. The Sonoran desert tortoise was identified as potentially occurring within a two-mile radius of the project area. However, during a field visit, it was determined that no suitable habitat for the tortoise was present within the project limits. Should the contractor encounter any tortoises during construction of this project, the contractor shall adhere to the attached AGFD's *Guidelines for Handling Sonoran Desert Tortoises*. ADOT has determined that no additional special actions are necessary during construction for the protection of these species, and the AGFD has not requested any mitigation measures for the work.

Arizona Protected Native Plants

The project limits were surveyed for the presence of the Arizona Department of Agriculture's protected native plants. Protected native plants within the project limits will be impacted by this project; therefore, the ADOT Roadside Development Section will notify the Arizona Department of Agriculture at least 60 days prior to the start of construction so that the Arizona Department of Agriculture can determine the disposition of these plants.

Invasive Species

Based upon "Executive Order 13112" on invasive species, dated February 3, 1999, all projects will, "...subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: i) prevent the introduction of invasive species; ii) detect and respond rapidly to, and control, populations of such species in a cost-effective and environmentally sound manner; iii) monitor invasive species populations accurately and reliably...[and] iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded..." The project area will be surveyed by ADOT Natural Resources. Invasive species survey results are expected January 13, 2006.

7.4 Clean Water Act

The Agua Fria River and various ephemeral washes are located in the project area. The extent of involvement with waters of the US will be determined during final design. The ADOT project manager will contact the ADOT EEG environmental planner during Stage II design to determine the need for a jurisdictional delineation. The ADOT project manager and Phoenix Construction District will coordinate with the EEG environmental planner during Stage III design to prepare and submit the appropriate *Clean Water Act* Section 404 permit to the US Army Corps of Engineers and Section 401 Water Quality Certification to the Arizona Department of Environmental Quality. The terms and conditions of the Section 404 permit and Section 401 Water Quality Certification will be included in the project specifications.

7.5 100-Year Floodplains

A review of the Federal Emergency Management Agency Flood Insurance Rate Map for the project area indicates that this project is located within portions of a 100-year floodplain; therefore, coordination letters were sent to the floodplain administrators for Maricopa County, Town of Buckeye, and cities of Avondale, Goodyear, Phoenix, and Tolleson. An e-mail was received on January 5, 2006 from the Maricopa County Floodplain Coordinator stating that no floodplain impacts will result from this project and is exempt under Section 505 of the Floodplain Regulations for Maricopa County. No other responses were received to date.

Impacts to floodplains typically occur when the topography within a floodplain is substantially modified either by placement or removal of materials within the floodplain. Because this is a roadway widening project on existing alignment, this project will not substantially modify the topography in the project area. Therefore, no impacts to floodplains are anticipated.

The Town of Buckeye Engineer and floodplain managers for the cities of Avondale, Goodyear, and Tolleson will be provided an opportunity to review and comment on the design plans.

7.6 Visual Quality

The visual character of the area consists of an east-west trending linear transportation corridor traversing rural and urban settings. The existing foreground and middle ground views along I-10 between SR 85 and Jackrabbit Trail primarily consist of relatively undisturbed desert scrub habitat. Scattered commercial buildings and residences, as well as active and fallow farm fields, are visible. The existing foreground and middle ground views along I-10 between Jackrabbit Trail and SR 101L consists of a higher concentration of commercial and residential developments and several recreational areas. I-10 crosses over the Agua Fria River, which is channelized and ephemeral. Distant views to the northwest reveal the White Tank Mountains.

Visual impacts as a result of project construction will be limited to foreground views; middle ground and back ground views in the project area will not be modified. Project construction will permanently impact foreground views because the freeway will be widened to accommodate additional lanes. However, the visual impacts will have minimal effect on the character of this area because the addition of new lanes is consistent with the existing linear transportation corridor setting.

7.7 Air Quality

This project is located in an area that exceeds the national ambient air quality standards for particulate matter³ and ozone⁴. It is also located in an attainment area with a maintenance plan for carbon monoxide⁵. Since this project will increase the capacity of the existing highway, an air quality analysis for carbon monoxide was performed using the MOBILE6.2 emission factor model⁶ and CAL3QHC (version 2.0) line source dispersion model⁷. The concentration of air quality pollutants is typically higher adjacent to areas where increased traffic volumes, congestion, or queued or idling vehicles occur; therefore, six interchanges, including Miller Road, Watson Road, Verrado Way, Litchfield Road, Dysart Road, and Avondale Boulevard, were selected for analysis. A total of 192 receptors were modeled for air quality impacts. Tables 7.1, 7.2, and 7.3 present the abridged analysis results for the existing, future no build, and future build conditions, respectively.

Table 7.1 – Predicted Carbon Monoxide Concentrations for Existing Condition

Traffic Interchanges	Minimum 1-hour Concentration	Maximum 1-hour Concentration	Minimum 8-hour Concentration	Maximum 8-hour Concentration
Miller Road	2.2 ppm*	3.4 ppm	1.5 ppm	2.4 ppm
Watson Road	2.3 ppm	3.3 ppm	1.6 ppm	2.3 ppm
Verrado Way	NA**	NA	NA	NA
Litchfield Road	2.6 ppm	4.0 ppm	1.8 ppm	2.9 ppm
Dysart Road	2.8 ppm	4.7 ppm	2.0 ppm	3.3 ppm
Avondale Boulevard	2.8 ppm	4.2 ppm	2.0 ppm	2.9 ppm

* The expression "ppm" is an abbreviation for parts per million.
 ** The Verrado Way traffic interchange was being constructed and opened at the time of the analysis, and therefore, was not modeled for the existing condition.

³ Particulate matter (PM₁₀ and PM_{2.5}) consists of suspended dust, fibers, combustion ash, and other fine particles. The major source is industrial emissions, but it also results from diesel vehicle emissions, unpaved roadways, agricultural activity, and mechanical resuspension on paved roads from vehicle activity. While the Environmental Protection Agency has indicated particulate matter is a pollutant of concern for transportation-related projects, no project-level analysis guidance has been adopted by the Environmental Protection Agency, Federal Highway Administration, or Arizona Department of Transportation. Therefore, an analysis of particulate matter was not conducted for this project.

⁴ Ozone is a regional pollutant formed when nitrogen oxides and organic gases react with various atmospheric conditions. Because the formation of ozone depends on numerous climatic and atmospheric variables, it is monitored and managed regionally and is not addressed at the project level.

⁵ Carbon monoxide is a colorless, odorless gas resulting from the incomplete combustion of carbon-based fuels, including petroleum products. In most areas, vehicle emissions are the primary source of carbon monoxide.

⁶ The MOBILE6.2 emission factor is approved by the Environmental Protection Agency to calculate composite emission factors for carbon monoxide, hydrocarbons, and nitrogen oxides.

⁷ The CAL3QHC line source dispersion model was developed by the Environmental Protection Agency to calculate the total emissions from moving and idling vehicles and to predict the dispersion and estimated concentrations of inert pollutants near highways and arterial streets.

Table 7.2 – Predicted Carbon Monoxide Concentrations for Future No Build Condition

Traffic Interchanges	Minimum 1-hour Concentration	Maximum 1-hour Concentration	Minimum 8-hour Concentration	Maximum 8-hour Concentration
Miller Road	2.4 ppm	3.9 ppm	1.7 ppm	2.7 ppm
Watson Road	2.4 ppm	3.9 ppm	1.7 ppm	2.7 ppm
Verrado Way	2.3 ppm	3.7 ppm	1.6 ppm	2.6 ppm
Litchfield Road	2.8 ppm	4.0 ppm	2.0 ppm	2.8 ppm
Dysart Road	2.8 ppm	4.3 ppm	2.0 ppm	3.0 ppm
Avondale Boulevard	2.9 ppm	4.6 ppm	2.0 ppm	3.2 ppm

Table 7.3 – Predicted Carbon Monoxide Concentrations for Future Build Condition

Traffic Interchanges	Minimum 1-hour Concentration	Maximum 1-hour Concentration	Minimum 8-hour Concentration	Maximum 8-hour Concentration
Miller Road	2.4 ppm	3.9 ppm	1.7 ppm	2.7 ppm
Watson Road	2.3 ppm	3.8 ppm	1.6 ppm	2.7 ppm
Verrado Way	2.4 ppm	3.6 ppm	1.7 ppm	2.5 ppm
Litchfield Road	2.8 ppm	4.0 ppm	2.0 ppm	2.8 ppm
Dysart Road	3.1 ppm	4.5 ppm	2.0 ppm	3.2 ppm
Avondale Boulevard	2.9 ppm	4.6 ppm	2.0 ppm	3.2 ppm

The Environmental Protection Agency has established the national ambient air quality standards for the 1-hour and 8-hour concentrations of carbon monoxide as 35 ppm and 9 ppm, respectively. As demonstrated by the analysis, this project is not likely to contribute to the severity or number of violations of the national ambient air quality standards. Because these projects are currently anticipated to occur in fiscal year 2011 or later, they are not included in the *Transportation Improvement Program* for fiscal years 2006 to 2010 as approved by the Maricopa Association of Governments (MAG) on July 25, 2005, and therefore, conformity cannot be determined. To ensure air quality conformity, the ADOT project manager must coordinate with the ADOT Transportation Planning Division to facilitate inclusion of median widening projects in the next MAG transportation improvement plan.

Some deterioration of air quality may be expected due to the operation of construction equipment and the slower traffic speeds associated with a construction zone. However, this will be a localized condition that will cease when this project is completed. Fugitive dust generated from construction activities must be controlled in accordance with the *Arizona Department of Transportation Standard Specifications for Road and Bridge Construction*, Section 104.08 (2000 Edition), special provisions, and local rules or ordinances.

7.8 Noise

A noise analysis was completed because this project is adding capacity to the existing highway. Traffic noise was predicted for the existing, no build, and build conditions using the Federal Highway Administration's Traffic Noise Model (version 2.5) and evaluated using the ADOT *Noise Abatement Policy* (NAP) dated March 21, 2000. Predicted future noise levels for the no build condition utilized the design year 2030 with a level of service C⁸. Predicted future noise levels for the build condition also utilized the

⁸ The term "level of service" is defined as a qualitative assessment of a road's operating conditions. It also is a standard measurement used by transportation officials which reflects the relative ease of traffic flow on a scale of "A" to "F", with free-flow being rated level of service "A" and congested conditions rated as level of service "F".

design year 2030 but with peak hour traffic⁹. A total of 678 receivers were evaluated for traffic noise impacts. Six hundred eleven receivers are located in the SR 85 to SR 303L project area and 67 receivers are located in the SR 303L to SR 101L project area. Tables 7.4 and 7.5 present the abridged analysis results for each project area.

Table 7.4 – Predicted Traffic Noise Impacts between SR 85 and SR 303L

	Minimum dBA ¹⁰	Maximum dBA	Receivers Exceeding 64 dBA Mitigation Criteria
Existing Condition	55 dBA	76 dBA	222 of 611
No Build Condition	59 dBA	81 dBA	460 of 611
Build Condition	59 dBA	81 dBA	482 of 611

Table 7.5 – Predicted Traffic Noise Impacts between SR 303L and SR 101L

	Minimum dBA	Maximum dBA	Receivers Exceeding 64 dBA Mitigation Criteria
Existing Condition	50 dBA	66 dBA	5 of 67
No Build Condition	51 dBA	66 dBA	7 of 67
Build Condition	54 dBA	70 dBA	18 of 67

In summary, the analysis revealed that current and future noise levels exceed the threshold levels indicated in the ADOT NAP. Six potential noise barrier locations were identified within the SR 85 to SR 303L project area. Five potential noise barrier locations were identified within the SR 303L to SR 101L project area. Tables 7.6 and 7.7 present a summary of the noise abatement considerations as per the provisions of the ADOT NAP.

Table 7.6 – Noise Abatement Considerations between SR 85 and SR 303L

Potential Barrier ID	Potential Barrier Location	5 dBa Noise Reduction	Cost per Benefited Receiver	Meets ADOT NAP
1	Apache Road (alignment) to Watson Road; south side of I-10	X	X	X
2	Watson Road to Dean Road (alignment); south side of I-10	X	X	X
3	Jackrabbit Trail to Perryville Road; south side of I-10		X	
4	Perryville Road to Citrus Road; south side of I-10		X	
5	Jackrabbit Trail to Perryville Road; north side of I-10		X	
6	Perryville Road to Citrus Road; north side of I-10	X	X	X

⁹ The phrase “peak hour traffic” refers to higher than average traffic volumes occurring on a highway generally during morning and evening commutes.

¹⁰ The expression “dBA” is an abbreviation of the term “A-weighted decibels”. This term is defined as a logarithmic unit that indicates the ratio between two powers. A ratio of 10 in power corresponds to a difference of 10 decibels.

Table 7.7 – Noise Abatement Considerations between SR 303L and SR 101L

Potential Barrier ID	Potential Barrier Location	5 dBa Noise Reduction	Cost per Benefited Receiver	Meets ADOT NAP
1	Sarival Avenue to Estrella Parkway; south side of I-10	X	X	X
2*	Litchfield Road to Dysart Road; south side of I-10	X		
3a*	Dysart Road to Avondale Boulevard; north side of I-10	X		
3b	El Mirage Road (alignment) to Avondale Boulevard; north side of I-10	X	X	X
4	El Mirage Road (alignment) to Avondale Boulevard; south side of I-10	X		

* The current properties, for where potential barriers 2 and 3a may be located, function as a church and city park. The ADOT NAP does not provide a cost-effectiveness evaluation for non-residential land uses.

Potential Barrier 1, between Sarival Avenue and Estrella Parkway, may need to be constructed at a future date. Construction of the noise barrier at a more appropriate time in the future will accommodate other planned future projects along I-10 and allow for its most relevant placement to optimize noise abatement. The ADOT project manager will contact the ADOT EEG environmental planner (602.712.7767) during final design to review and verify noise analysis results and noise abatement considerations. The ADOT project manager and EEG environmental planner will coordinate during final design to review current and planned I-10 projects to ensure that noise barriers are constructed at the earliest practicable date and with the most relevant construction project to minimize noise impacts to adjacent residents and traffic delays to the traveling public.

7.9 Hazardous Materials

A hazardous materials site assessment was conducted for the project area. One site within the SR 85 to SR 303L project area and 14 sites within the SR 303L to SR 101L project area were identified as potentially posing moderate to high risks of subsurface contamination. Due to project construction occurring within the existing median of I-10, no involvement is anticipated with these sites. No other hazardous materials concerns were identified. No further hazardous materials assessment is required. If suspected hazardous materials are encountered during construction, work will cease at that location and the ADOT Engineer will be contacted to arrange for proper assessment, treatment, or disposal of those materials.

During Stage IV of the final design, the ADOT project manager will contact the ADOT EEG hazardous materials coordinator (602.712.7768) to determine the need for additional site assessment and lead or asbestos testing.

7.10 Cultural Resources

Survey Data

The project area, between SR 85 and SR 303L, was previously surveyed and the results are reported in A Cultural Resources Survey Along the Interstate 10 Corridor From State Route 85 to the SR 101L Freeway (Mileposts 112.20 to 134.00), Maricopa County, Arizona (Touchin and Brodbeck 2003).

Archaeological/Historical Sites

There are no known archaeological sites in the project area. Several historic sites, including the Litchfield Spur (AZ T:11:159 (ASM)), the Roosevelt Irrigation District (RID) canal (AZ T:10:83 (ASM)), and seven features associated with the RID were identified.

Agency/State Historic Preservation Office Determination

The Litchfield Spur was previously determined to be eligible for the *Arizona Register of Historic Places* (ARHP) and *National Register of Historic Places* (NRHP) under Criteria A and B. Criteria A is associated with events that have made a significant contribution to the broad patterns of our history and Criteria B associated with the lives of persons significant in our past.

The RID canal itself was previously recommended as eligible to the ARHP and NRHP; however, the segment within the I-10 right-of-way is considered a non-contributing component because it represents a modern realignment. Of the seven RID features, RID-6 (AZ T:11:159 (ASM)), occurs within the project area. RID-6 was previously recommended as eligible under Criterion A. New information showed that RID-6 is not a well-preserved irrigation feature and has been reconstructed twice since its original construction.

State Historic Preservation Office concurrence with a finding of "no adverse effect" is expected by the beginning of March.

Mitigation

Avoidance of the Litchfield Spur will be demonstrated through the final design process. The Phoenix Construction District and contractor will exercise care during construction activities within the vicinity of the Litchfield Spur. All phases of construction will avoid impacts to the Litchfield Spur ballast, tracks, and ties.

If previously unidentified cultural resources are encountered during activity related to the construction of the project, the contractor shall stop work immediately at that location and shall take all reasonable steps to secure the preservation of those resources. The ADOT Engineer will contact the ADOT Environmental & Enhancement Group, Historic Preservation Team, at 602.712.8636, immediately and make arrangements for proper treatment of those resources.

7.11 Section 4(f) Resources

Section 4(f), of the *Department of Transportation Act of 1966*, states that the Federal Highway Administration "...may approve a transportation program or project...requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if...there is no prudent and feasible alternative to using that land; and...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" (Title 49, United States Code, Section 303[c]).

A "use" of a Section 4(f) resource, as defined in Title 23, Code of Federal Regulations, Part 771.135(p), 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 land. A constructive use of a Section 4(f) resource occurs when the transportation

project does not incorporate land from a Section 4(f) resource, but 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.

There is one historic Section 4(f) resource in the project area. The Litchfield Spur is an abandoned railroad spur crossing under I-10 at MP 128.47. Avoidance of the Litchfield Spur will be demonstrated through the final design process. The Phoenix Construction District and contractor will exercise care during construction activities within the vicinity of Litchfield Spur. All phases of construction will avoid impacts to the Litchfield Spur ballast, tracks, and ties. Therefore, there will be no use of this Section 4(f) resource.

Other Section 4(f) resources include Avondale Friendship Park, Canada Village Park, Parque de Paz, and Desert Thunder School. The project construction will not require right-of-way or temporary construction easements from these properties; therefore, there will be no use of these Section 4(f) resources.

The project will not result in any of the above constructive uses because none of the resources have noise sensitive activities or viewshed characteristics that contribute to their importance as Section 4(f) resources. Additionally, access will be maintained during and after construction activities.

7.12 Public/Agency Involvement

Coordination with public and private entities was undertaken at the commencement of the environmental study. Letters were prepared and mailed to request comments and input. Additionally, an informational flyer regarding the public information meetings and providing an opportunity to submit comments and input was also prepared and mailed.

Two public information meetings were held to solicit comments and input from the public and various agencies. The meetings were held on September 14, 2005 at the Sundance Elementary School Gymnasium (23800 West Hadley Street, Buckeye, Arizona) and on September 15, 2005 at the Canyon Breeze Elementary School Cafeteria (11675 West Encanto Boulevard, Avondale, Arizona). Members of the public located within one mile radius of I-10 were notified of the meetings by placement of approximately 15,500 door hangers. Additionally, a project information flyer and door hanger was sent via U.S. mail to adjacent property owners located within a 0.25 mile radius of I-10. Quarter-page display advertisements were also printed in local newspapers, including *The Arizona Republic*, *Southwest Valley Sun*, *West Valley View*, *Buckeye Valley News*, and *La Voz*. Finally, a media release was issued and meeting information was announced by local AM radio station, KTAR, and Channel 5, KPHO.

Both meetings started at 6:00 PM as an open house for attendees to review informational displays regarding the project. A brief presentation started at 6:15 PM, followed with a question-and-answer session. An additional opportunity to review informational displays and interact with project team representatives occurred after the question-and-answer session and the meeting concluded at 8:00 PM.

A total of 70 comments were made regarding the project, including 51 written comments, two e-mail comments, and 17 verbal questions/comments recorded during the meetings. A wide array of topics was generated by the comments, such as, alternatives, operations, access, safety, traffic, schedule, land use, noise, biology, drainage, water resources, visual, socioeconomic, purpose and need, rationale for technical and environmental studies, and general recommendations regarding future public involvement activities. A separate *Comment Summary Report*, including responses, was prepared and submitted to ADOT on December 9, 2005.

8.0 IMPLEMENTATION PLAN

ADOT's Five-Year Program for FY 2006 to 2010 (5-Year Program) and ADOT's 20-Year Life Cycle Program include funding for final design and construction of the recommended alternative identified in Chapter 3 of this report. I-10 (Papago) improvements from SR 85 to SR 101L are presented in Table 8.1 below.

Table 8.1 – I-10 (Papago) Improvements in 5-Year Program and RTPFP

Route	Segment	Type of Work	Funding Amount (Thousands)	Fiscal Year	Source
I-10	SR 303L to Dysart	Design Add 2 GP lanes & 1 HOV Lane	\$4,620	2009	5-Year Program
I-10	SR 303L to Dysart Road	Construction Add 2 GP lanes & 1 HOV Lane	\$84,000 ¹	2011	20-Year Program
I-10	Dysart Road to SR 101L	Design Add 1 GP lane & 1 HOV Lane	\$2,805	2013	20-Year Program
I-10	Dysart Road to SR 101L	Construction Add 1 GP lane & 1 HOV Lane	\$51,000	2014	20-Year Program
SR 303L	US60 to I-10	Design New Freeway	\$50,000 ²	2006 to 2010	20-Year Program
SR 303L	US60 to I-10	Construction New Freeway	\$495,000 ²	2011 to 2013	20-Year Program
I-10	SR 85 to SR 303L	Design Add one GP lane	\$11,000	2021	20-Year Program
I-10	SR 85 to SR 303L	Construction Add one GP lane	\$95,000	2023	20-Year Program

¹ Includes an additional outside lane from SR303L to Dysart Road that is not included in this study.

² SR 303L improvements include the realignment of I-10 within the I-10/SR 303L system interchange area. It is unclear at this time, the amount of money available for these improvements. It is assumed that I-10 realignment funding is represented in the latter part of the design and construction years shown above, as indicated in the *Initial SR 303L, US 60 to I-10 DCR*.

A construction implementation plan for the recommended alternative based upon the funding timing identified in the RTPFP long-range plan is shown below.

- 1700' east of Sarival Avenue to Dysart Road segment beginning construction in FY 2011
- I-10 Realignment segment beginning construction in FY 2013, as indicated in *Initial SR 303L, US 60 to I-10 DCR*
- Dysart Road to SR 101L segment beginning construction in FY 2014
- SR 85 to 3300' east of Citrus Road segment beginning construction in FY 2023

Possible Advancement of Funding

Southwest Valley leaders have been working with ADOT staff to explore ways to advance construction of the I-10 widening improvements from SR 85 to SR 101L, excluding the I-10 Realignment segment. The current proposal from the Southwest Valley leaders includes advancing construction as shown below.

- SR 85 to 3300' east of Citrus Road potentially advanced from FY 2023 to FY 2013

- 1700' east of Sarival Avenue to SR 101L potentially advanced from FY 2014 and FY 2011 to FY 2007

The proposed advancement of 1700' east of Sarival Avenue to SR 101L includes an additional outside lane from SR303L to Dysart Road that is not included in this study. Also, the interim widening from SR 303L (Cotton Lane) to Sarival Avenue discussed below would have to be implemented to maintain continuity of the additional lanes from SR 101L west to SR 303L.

Order of Construction

Construction implementation options for the individual segments are summarized in Table 8.2 below.

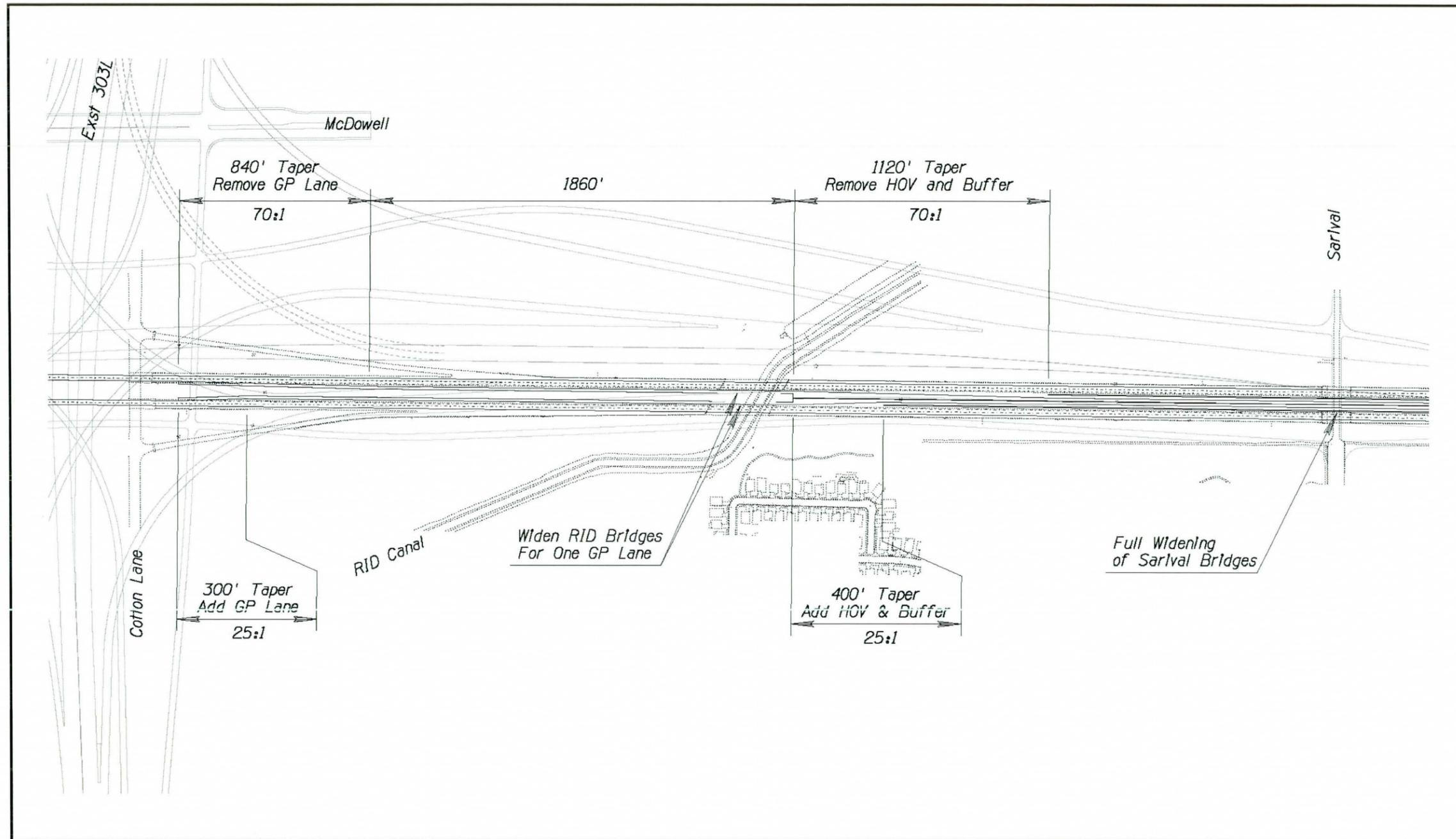
Table 8.2 – Construction Implementation Options

Segment	Current Program	Advancement Plan
1700' east of Sarival Avenue to Dysart Road	2011	2007
Dysart Road to SR 101L	2014	2007
SR 85 to 3300' east of Citrus Road	2023	2013
I-10 Realignment (2 Options)		
I-10 Realignment – Build with SR 303L system interchange	2013	None
Build Interim Widening from SR 303L (Cotton Lane) to 1700' east of Sarival Avenue	None	2007

Depending upon advancement of the funding, there are two areas of concern related to implementation of the current program that may need attention during the initial design phase.

The first concern relates to the 1700' east of Sarival Avenue to Dysart Road and Dysart Road to SR 101L segments. The 1700' east of Sarival Avenue to Dysart Road segment currently has 2 general purpose lanes in each direction. Following construction of the segment beginning in FY 2011, there will be 3 general purpose lanes and 1 HOV lane in each direction. The Dysart Road to SR 101L segment currently has 3 general purpose lanes in each direction and is not planned to be widened until FY 2014. As a result, the newly constructed HOV lane from 1700' east of Sarival Avenue to Dysart Road would have to be temporarily striped out until construction of the HOV lane from Dysart Road to SR 101L.

The second concern relates to the 1700' east of Sarival Avenue to Dysart Road and I-10 Realignment segments. Construction of additional lanes from 1700' east of Sarival Avenue to Dysart Road in FY 2011 (or FY 2007) would leave a gap from SR 303L (Cotton Lane) to 1700' east of Sarival Avenue since the I-10 Realignment segment is not planned to begin construction until FY 2013. Therefore, an option to provide interim widening in the median from SR 303L (Cotton Lane) to 1700' east of Sarival Avenue has been developed. The major design modification necessary to implement this option would be widening the existing RID and Sarival Avenue structures instead of replacing the structures as identified in the I-10 Realignment plan. In an effort to minimize the cost of this option, the HOV lane would be tapered out between the Sarival Avenue and RID structures and the additional general purpose lane would be tapered out between the RID and Cotton Lane structures. This would result in temporary widening of the Sarival Avenue structures by two lanes and the RID structures by one lane. In addition, approximately one and one-half miles of temporary AC pavement would be needed. This option is shown in Figure 8.1 on the next page. The estimated cost for this interim widening option is approximately \$8,622,000 and is included as Appendix C of the report.



 	<p>I-10 Median Widening</p> <p>SR 85 to SR 303L TRACS Number 010 MA 113 H6877 01L SR 303L to SR 101L TRACS Number 010 MA 125 H6879 01L</p>	<p>Figure 8.1 Interim Widening from SR303L (Cotton Lane) to Sarival Avenue</p>
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Figure 8.1 – Interim Widening from SR 303L (Cotton Lane) to 1700' East of Sarival Avenue

APPENDIX A

Final AASHTO Controlling Design Criteria Report

**EHRENBERG – PHOENIX HIGHWAY
I-10**

**I-10 MEDIAN WIDENING; SR 85 TO SR 303L
TRACS NO. 010 MA 113 H6877 01L**

**I-10 MEDIAN WIDENING; SR 303L TO SR 101L
TRACS NO. 010 MA 125 H6879 01L**

FINAL AASHTO CONTROLLING DESIGN CRITERIA REPORT

OCTOBER 2005

PREPARED FOR:

ARIZONA DEPARTMENT OF TRANSPORTATION

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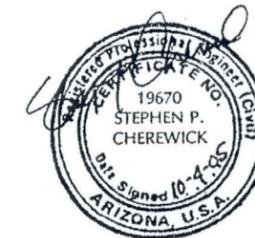


Final AASHTO Controlling Design Criteria Report
Design Concept Report for Additional Traffic Lanes in Median

ADOT
I-10 Median Widening, SR 85 to SR 101L

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SUMMARY OF NONCONFORMING EXISTING DESIGN FEATURES

(Note: The analysis of all design features except vertical curve stopping sight distance is based upon the 1990 AASHTO Green Book. The analysis of vertical curve stopping sight distance is based upon the 2001 AASHTO Green Book where roadway grade is used to calculate the stopping sight distance.)

I-10 – Mainline (SR 85 to SR 303L - EB & WB)

All roadway features meet the current AASHTO Controlling Design Criteria.

I-10 – Mainline (SR 303L to SR 101L - EB)

The existing shoulder width is less than the recommended 10' (inside) as follows:
 1. MP 129.89 to MP 133.89 - 2' less than recommended.

I-10 – Mainline (SR 303L to SR 101L - WB)

The existing shoulder width is less than the recommended 10' (inside) as follows:
 1. MP 129.89 to MP 133.89 - 2' less than recommended

**SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
 I-10 MAIN LINE SUMMARY (DIVIDED)**

TRACS NUMBER:	010 MA 113 H6877 01L	ROUTE:	I-10
PROJECT LOCATION:	I-10; EHRENBERG – PHOENIX HIGHWAY	BEGIN MP:	112.75
HIGHWAY SECTION:	SR 85 TO SR 303L	END MP:	123.69
FUNCTIONAL CLASSIFICATION:	PRINCIPAL ARTERIAL INTERSTATE - URBAN		

LANE AND SHOULDER WIDTHS

	MILEPOST BEGIN (MP)	MILEPOST END (MP)	EXISTING (FEET)	AASHTO RECOMMENDED MINIMUM (FEET)
LANE WIDTH	112.75	123.69	12	12
INSIDE SHOULDER	112.75	123.69	4	4
OUTSIDE SHOULDER	112.75	123.69	10	10

DESIGN SPEED

THE AASHTO RECOMMENDED DESIGN SPEED OF THE ROADWAY IS: 70MPH
 THE POSTED SPEED LIMIT IS 75 MPH.
 AS-BUILT DESIGN SPEED IS: 70-80 MPH
 TERRAIN IS LEVEL.
 AVERAGE PROJECT ELEVATION: 1,100

GRADES

EXISTING MAXIMUM GRADE IS: 2.6061% AASHTO ALLOWABLE MAXIMUM GRADE IS: 3%

CROSS SLOPE

EXISTING CROSS SLOPE IS: 2.0% AASHTO ALLOWABLE RANGE IS: 1.5% - 2.5%

TRAFFIC VOLUME AND FACTORS

	Existing 2004	DESIGN YEAR 2030	TRAFFIC FACTORS		
	ADT (VPD)	ADT (VPD)	K=	D=	T=
SR 85 / Oglesby Rd – Miller Rd	55,400	123,220	8%	55%	8%
Miller Rd – Watson Rd	61,300	134,690	8%	55%	8%
Watson Rd – Verado Way	67,300	155,590	8%	55%	8%
Verado Way – Jackrabbit Rd	67,300	149,630	8%	55%	8%
Jackrabbit – Perryville Rd	70,300	149,290	8%	55%	8%
Jackrabbit – Citrus Rd	70,300	153,480	8%	55%	8%

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**SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
 I-10 MAINLINE SUMMARY (DIVIDED)**

VERTICAL CLEARANCES

STRUCTURE	MILEPOST	PRECONSTRUCTION CLEARANCE	POSTCONSTRUCTION CLEARANCE	AASHTO MINIMUM ALLOWABLE CLEARANCE
Oglesby Rd - Ramp B (up)	112.75	17.29'	>16.5'	16
Oglesby Rd - Ramp C (up)	112.92	17.56'	>16.5'	16
Miller Rd - Overpass EB	114.84	17.82'	17.82'	14
Miller Rd - Overpass WB	114.84	16.78'	16.78'	14
Watson Rd - Overpass WB	116.97	17.05'	17.05'	14
Watson Rd - Overpass EB	116.97	16.70'	16.70'	14
Verrado Way - TI (up)	120.26	17.28'	>16.5'	16
Jackrabbit Rd - Overpass EB	121.67	16.81'	16.81'	14
Jackrabbit Rd - Overpass WB	121.67	16.72'	16.72'	14
Perryville Rd - Overpass EB	122.69	17.21'	17.21'	14
Perryville Rd - Overpass WB	122.69	17.24'	17.24'	14
Citrus Rd - Overpass EB	123.69	16.72'	16.72'	14
Citrus Rd - Overpass WB	123.69	16.64'	16.64'	14

NOTE: I-10 OVER CROSSROAD (AASHTO MIN. VERT CLEARANCE = 14' FOR ARTERIAL ROADWAY UNDER I-10)

STRUCTURES - (SEE ATTACHMENT #3)

STRUCTURE	MP	EXISTING BRIDGE WIDTH (FEET)	RECOMMENDED BRIDGE WIDTH (FEET)	BRIDGE RAIL GEOMETRY ADEQUATE	BRIDGE RAIL STRUCTURE ADEQUATE	EXISTING STRUCTURAL CAPACITY	RECOMMENDED STRUCTURAL CAPACITY
Oglesby Rd - Ramp B (up)	112.75	26	NA	NA	NA	NA	NA
Oglesby Rd - Ramp C (up)	112.92	26	NA	NA	NA	NA	NA
Miller Rd - Overpass EB	114.84	42	56'	Yes	Yes	HS20	HS20
Miller Rd - Overpass WB	114.84	42	56'	Yes	Yes	HS20	HS20
Watson Rd - Overpass WB	116.97	42	56'	Yes	Yes	HS20	HS20
Watson Rd - Overpass EB	116.97	42	56'	Yes	Yes	HS20	HS20
Verrado Way - TI (up)	120.26	96	NA	NA	NA	NA	NA
Jackrabbit Rd - Overpass EB	121.67	42	56'	Yes	Yes	HS20	HS20
Jackrabbit Rd - Overpass WB	121.67	42	56'	Yes	Yes	HS20	HS20
Perryville Rd - Overpass WB	122.69	42	56'	Yes	Yes	HS20	HS20
Perryville Rd - Overpass EB	122.69	42	56'	Yes	Yes	HS20	HS20
Citrus Rd - Overpass EB	123.69	42	56'	Yes	Yes	HS20	HS20
Citrus Rd - Overpass WB	123.69	42	56'	Yes	Yes	HS20	HS20

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**SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
 I-10 MAINLINE SUMMARY (DIVIDED)**

VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI STATION	APPROACH GRADE (%)	DEPARTURE GRADE (%)	LENGTH OF CURVE (FEET)	EXISTING SIGHT DISTANCE (FEET)	RECOMMENDED AASHTO SIGHT DISTANCE (FEET)	EXISTING SPEED (MPH)	RECOMMENDED DESIGN SPEED (MPH)
SEE ATTACHMENT #1							

HORIZONTAL ALIGNMENT, SUPERELEVATION, AND STOPPING SIGHT DISTANCE

HPI STATION	MILEPOST (MP)	SUPERELEVATION			EXISTING SPEED (MPH)	DEGREE OF CURVE	
		MINIMUM (FT/FT)	EXISTING (FT/FT)	MAXIMUM (FT/FT)		EXISTING (DEGREE)	MAXIMUM (DEGREE)
EB Cst Centerline							
5978+62.77	113.35	RC	0.024	0.060	>100	0°-29.86'	2°-45'
6350+89.14	120.40	RC	0.024	0.060	>100	0°-30.14'	2°-45'
6462+35.28	122.51	0.029	0.036	0.060	93	0°-45.32'	2°-45'
6480+12.71	122.84	0.038	0.039	0.060	88	0°-59.44'	2°-45'
WB Cst Centerline							
5978+27.52	113.34	RC	0.024	0.060	>100	0°-30.14'	2°-45'
6351+09.27	120.40	RC	0.024	0.060	>100	0°-29.86'	2°-45'
6462+44.73	122.51	0.029	0.036	0.060	94	0°-44.68'	2°-45'
6480+03.10	122.84	0.038	0.039	0.060	87	1°-00.57'	2°-45'

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**SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
 I-10 MAIN LINE SUMMARY (DIVIDED)**

TRACS NUMBER:	010 MA 125 H6879 01L	ROUTE:	I-10
PROJECT LOCATION:	I-10; EHRENBERG - PHOENIX HIGHWAY	BEGIN MP:	123.69
HIGHWAY SECTION:	SR 303L TO SR 101L	END MP:	133.96
FUNCTIONAL CLASSIFICATION:	PRINCIPAL ARTERIAL INTERSTATE - URBAN		

LANE AND SHOULDER WIDTHS				
	MILEPOST BEGIN (MP)	MILEPOST END (MP)	EXISTING (FEET)	AASHTO RECOMMENDED MINIMUM (FEET)
LANE WIDTH	123.69	133.89	12	12
INSIDE SHOULDER	123.69	129.89	4	4
	129.89	133.89	8*	10
OUTSIDE SHOULDER	123.69	133.89	10	10

DESIGN SPEED	THE AASHTO RECOMMENDED DESIGN SPEED OF THE ROADWAY IS: 70MPH	AS-BUILT DESIGN SPEED IS: 70 MPH
	THE POSTED SPEED LIMIT IS 75 MPH.	TERRAIN IS LEVEL AVERAGE PROJECT ELEVATION: 1,030

GRADES	EXISTING MAXIMUM GRADE IS: 2.0696%	AASHTO ALLOWABLE MAXIMUM GRADE IS: 3%
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CROSS SLOPE	EXISTING CROSS SLOPE IS: 2.0%	AASHTO ALLOWABLE RANGE IS: 1.5% - 2.5%
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REMARKS
 * - Design Exception not required due to reconstruction as part of a future widening project.

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**SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
 I-10 MAINLINE SUMMARY (DIVIDED)**

TRAFFIC VOLUME AND FACTORS

	Existing 2004	DESIGN YEAR 2030	TRAFFIC FACTORS		
	ADT (VPD)	ADT (VPD)	K=	D=	T=
SR-303/Cotton Lane - Sarival Ave	78,700	175,760	8%	55%	8%
Sarival Ave - Estrella Pkwy	78,700	194,680	8%	55%	8%
Estrella Pkwy - Bullard Ave	86,000	194,720	8%	55%	8%
Bullard Ave - Litchfield Rd	86,000	194,710	8%	55%	8%
Litchfield Rd - Dysart Rd	96,200	202,550	8%	55%	8%
Dysart Rd - El Mirage	117,400	219,690	8%	55%	8%
El Mirage - 115 th Ave	117,400	225,390	8%	55%	8%
115 th Ave - 107 th Ave	131,300	247,020	8%	55%	8%
107 th Ave - 99 th Ave	130,000	243,810	8%	55%	8%
99 th Ave - Loop 101	127,500	243,030	8%	55%	8%

VERTICAL CLEARANCES

STRUCTURE	MILEPOST	PRECONSTRUCTION CLEARANCE	POSTCONSTRUCTION CLEARANCE	AASHTO MINIMUM ALLOWABLE CLEARANCE
Cotton Ln - Overpass EB	124.69	16.70'	16.70'	14
Cotton Ln - Overpass WB	124.69	16.80'	16.80'	14
Sarival Ave - Overpass EB	125.69	14.85'	14.85'	14
Sarival Ave - Overpass WB	125.69	14.62'	14.62'	14
Estrella Pkwy - Overpass EB	126.67	15.72'	15.72'	14
Estrella Pkwy - Overpass WB	126.67	15.77'	15.77'	14
Bullard Ave - Overpass EB	127.67	16.17'	16.17'	14
Bullard Ave - Overpass WB	127.67	16.45'	16.45'	14
Litchfield TI - Overpass EB	128.68	15.94'	15.94'	14
Litchfield TI - Overpass WB	128.68	16.20'	16.20'	14
Dysart Rd - Overpass EB	129.67	16.26'	16.26'	14
Dysart Rd - Overpass WB	129.67	16.24'	16.24'	14
115 th Ave TI - Overpass EB	131.68	16.55'	16.55'	14
115 th Ave TI - Overpass WB	131.68	16.55'	16.55'	14
107 th Ave - Overpass EB	132.66	17.07'	17.07'	14
107 th Ave - Overpass WB	132.66	16.81'	16.81'	14
99 th Ave - Overpass EB	133.66	16.82'	16.82'	14
99 th Ave - Overpass WB	133.66	16.62'	16.62'	14
SR 101L - Ramp E-N (up)	133.85	40.92'	>16.5'	16
SR 101L - Ramp S-E (up)	133.95	20.71'	>16.5'	16

NOTE: I-10 OVER CROSSROAD (AASHTO MIN. VERT CLEARANCE = 14' FOR ARTERIAL ROADWAY UNDER I-10)

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**SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
 I-10 MAINLINE SUMMARY (DIVIDED)**

STRUCTURES -- (SEE ATTACHMENT #3)

STRUCTURE	MP	EXISTING BRIDGE WIDTH (FEET)	RECOMMENDED BRIDGE WIDTH (FEET)	BRIDGE RAIL GEOMETRY ADEQUATE	BRIDGE RAIL STRUCTURE ADEQUATE	EXISTING STRUCTURAL CAPACITY	RECOMMENDED STRUCTURAL CAPACITY
Cotton Ln - Overpass EB	124.69	42'	42'	Yes	Yes	HS20	HS20
Cotton Ln - Overpass WB	124.69	42'	42'	Yes	Yes	HS20	HS20
R.I.D. Canal - Bridge EB	125.19	42'	42'	Yes	Yes	HS20	HS20
R.I.D. Canal - Bridge WB	125.19	42'	42'	Yes	Yes	HS20	HS20
Sarival Ave - Overpass EB	125.69	42'	42'	Yes	Yes	HS20	HS20
Sarival Ave - Overpass WB	125.69	42'	42'	Yes	Yes	HS20	HS20
Estrella Pkwy - Overpass EB	126.67	42'	42'	Yes	Yes	HS20	HS20
Estrella Pkwy - Overpass WB	126.67	42'	42'	Yes	Yes	HS20	HS20
Airport Wash - Bridge EB	127.15	42'	42'	Yes	Yes	HS20	HS20
Airport Wash - Bridge WB	127.15	42'	42'	Yes	Yes	HS20	HS20
Bullard Ave - Overpass EB	127.67	42.2'	42'	Yes	Yes	HS20	HS20
Bullard Ave - Overpass WB	127.67	42.2'	42'	Yes	Yes	HS20	HS20
SPRR - Overpass EB	128.45	73'	42'	Yes	Yes	HS20	HS20
SPRR - Overpass WB	128.45	67.5'	42'	Yes	Yes	HS20	HS20
Litchfield TI - Overpass EB	128.68	42.3'	42'	Yes	Yes	HS20	HS20
Litchfield TI - Overpass WB	128.68	42.3'	42'	Yes	Yes	HS20	HS20
Dysart Rd - Overpass EB	129.67	42.3'	42'	Yes	Yes	HS20	HS20
Dysart Rd - Overpass WB	129.67	42.3'	42'	Yes	Yes	HS20	HS20
Agua Fria River - Bridge EB	130.00	58'	58'	Yes	Yes	HS20	HS20
Agua Fria River - Bridge WB	130.00	58'	58'	Yes	Yes	HS20	HS20
115 th Ave TI - Overpass EB	131.68	58'	58'	Yes	Yes	HS20	HS20
115 th Ave TI - Overpass WB	131.68	58'	58'	Yes	Yes	HS20	HS20
107 th Ave - Overpass EB	132.66	70'	70'	Yes	Yes	HS20	HS20
107 th Ave - Overpass WB	132.66	58'	58'	Yes	Yes	HS20	HS20
99 th Ave - Overpass EB	133.66	58'	58'	Yes	Yes	HS20	HS20
99 th Ave - Overpass WB	133.66	58'	58'	Yes	Yes	HS20	HS20
SR 101L - Ramp E-N	133.85	28'	NA	NA	NA	NA	NA
SR 101L - Ramp S-E	133.95	36'	NA	NA	NA	NA	NA

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**SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
 I-10 MAINLINE SUMMARY (DIVIDED)**

HORIZONTAL ALIGNMENT, SUPERELEVATION, AND STOPPING SIGHT DISTANCE

HPI STATION	MILEPOST (MP)	SUPERELEVATION			EXISTING SPEED (MPH)	DEGREE OF CURVE	
		MINIMUM (FT/FT)	EXISTING (FT/FT)	MAXIMUM (FT/FT)		EXISTING (DEGREE)	MAXIMUM (DEGREE)
EB Cst Centerline							
6725+34.27	127.49	0.034	0.039	0.060	87	1°-00.57'	2°-45'
6759+74.64	128.14	0.033	0.039	0.060	88	0°-59.44'	2°-45'
6918+22.47	131.14	0.026	0.029	0.060	89	0°-45.00'	2°-45'
6979+78.36	132.31	0.026	0.029	0.060	89	0°-45.36'	2°-45'
7057+22.70	133.77	NC	NC	0.060	>100	NC	2°-45'
WB Cst Centerline							
6725+15.73	127.49	0.033	0.039	0.060	88	0°-59.44'	2°-45'
6759+93.16	128.14	0.034	0.039	0.060	87	1°-00.57'	2°-45'
6917+88.10	131.14	0.026	0.029	0.060	89	0°-45.00'	2°-45'
6979+66.61	132.31	0.026	0.029	0.060	89	0°-44.64'	2°-45'
7057+25.26	133.77	NC	NC	0.060	>100	NC	2°-45'

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VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

VPI STATION	APPROACH GRADE (%)	DEPARTURE GRADE (%)	LENGTH OF CURVE (FEET)	EXISTING SIGHT DISTANCE (FEET)	RECOMMENDED AASHTO SIGHT DISTANCE (FEET)	EXISTING SPEED (MPH)	RECOMMENDED DESIGN SPEED (MPH)
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SEE ATTACHMENT #2

ATTACHMENT 1 - VERTICAL CURVE INVENTORY

TRACS Number: 010 MA 113 H6877 01L
 Project Location: I-10; Ehrenberg - Phoenix Highway
 Highway Section: SR 85 to SR 303L EB
 Functional Classification: Principal Arterial Interstate - Urban

VPI STATION	MILEPOST		TRAFFIC DIRECTION (1w, 1a or 2)	GRADE IN (%)	GRADE OUT (%)	CURVE LENGTH (ft)	CURVE TYPE	STOPPING SIGHT DISTANCE		SPEED	
	BEGIN	END						AVAILABLE (ft)	AASHTO MINIMUM (ft)	AVAILABLE (mph)	DESIGN (mph)
5944+00.00	112.60	112.79	1w	-2.6000	0.6250	1000	Sag	1229	765	93	70
5960+00.00	112.90	113.09	1w	0.6250	-0.5333	1000	Crest	1432	734	+100	70
5973+00.00	113.13	113.36	1w	-0.5333	0.7266	1200	Sag	+9999	734	+100	70
6008+00.00	113.83	113.98	1w	0.7266	0.1781	800	Crest	2367	724	+100	70
6034+00.00	114.31	114.50	1w	0.1781	1.1900	1000	Sag	+9999	724	+100	70
6058+00.00	114.71	115.00	1w	1.1900	-0.6269	1500	Crest	1335	735	100	70
6071+00.00	115.01	115.20	1w	-0.6269	0.5123	1000	Sag	+9999	735	+100	70
6095+00.00	115.48	115.63	1w	0.5123	-0.0959	800	Crest	2174	728	+100	70
6124+00.00	116.01	116.20	1w	-0.0959	0.7061	1000	Sag	+9999	728	+100	70
6157+00.00	116.64	116.82	1w	0.7061	1.2947	1000	Sag	+9999	717	+100	70
6174+00.00	116.96	117.15	1w	1.2947	0.1422	1000	Crest	1436	725	+100	70
6210+00.00	117.64	117.83	1w	0.1422	-0.1952	1000	Crest	3698	729	+100	70
6264+00.00	118.66	118.85	1w	-0.1952	-0.9412	1000	Crest	1946	740	+100	70
6298+00.00	119.31	119.50	1w	-0.9412	-0.4130	1000	Sag	+9999	740	+100	70
6321+00.00	119.74	119.93	1w	-0.4130	-0.0172	1000	Sag	+9999	732	+100	70
6350+00.00	120.39	120.39	1w	-0.0172	0.0462	0	GB	GB	GB	GB	70
6371+86.10	120.70	120.89	1w	0.0462	-0.5285	1000	Crest	2378	734	+100	70
6405+00.00	121.33	121.52	1w	-0.5285	1.1007	1000	Sag	+9999	734	+100	70
6420+00.00	121.55	121.87	1w	1.1007	-1.5405	1700	Crest	1179	749	92	70
6442+00.00	122.03	122.22	1w	-1.5405	-0.4195	1000	Sag	+9999	749	+100	70
6458+50.00	122.35	122.53	1w	-0.4195	1.1361	1000	Sag	+9999	733	+100	70
6474+00.00	122.53	122.93	1w	1.1361	-2.0929	2100	Crest	1185	757	91	70
6489+59.42	122.93	123.12	1w	-2.0929	-0.3125	1000	Sag	35862	757	+100	70
6511+00.00	123.34	123.53	1w	-0.3125	1.1307	1000	Sag	+9999	731	+100	70
6526+83.08	123.53	123.90	1w	1.1307	-1.8300	2000	Crest	1207	753	93	70

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Notes: Traffic Direction:
 1w = One Way Traffic in Station direction
 1a = One Way Traffic against Station direction
 2 = Two Way Traffic

Grades are with respect to Station direction.
 * Indicates design exception required.
 GB indicates grade break. Stopping Sight Distance and Speed not calculated.
 Calculations are based on AASHTO 2001 and ADOT 2004 Roadway Design Guidelines formulas with adjustments for effective grade.

ATTACHMENT 1 - VERTICAL CURVE INVENTORY (CON'T)

TRACS Number: 010 MA 113 H6877 01L
 Project Location: I-10; Ehrenberg - Phoenix Highway
 Highway Section: SR 85 to SR 303L WB
 Functional Classification: Principal Arterial Interstate - Urban

VPI STATION	MILEPOST		TRAFFIC DIRECTION (1w, 1a or 2)	GRADE IN (%)	GRADE OUT (%)	CURVE LENGTH (ft)	CURVE TYPE	STOPPING SIGHT DISTANCE		SPEED	
	BEGIN	END						AVAILABLE (ft)	AASHTO MINIMUM (ft)	AVAILABLE (mph)	DESIGN (mph)
5944+00.00	112.60	112.79	1a	-2.6061	0.7924	1000	Sag	1152	738	91	70
5958+50.00	112.88	113.07	1a	0.7924	-0.5291	1000	Crest	1316	738	99	70
5973+00.00	113.13	113.36	1a	-0.5291	0.7623	1000	Sag	+9999	737	+100	70
6008+00.00	113.83	113.98	1a	0.7623	0.2015	800	Crest	2324	737	+100	70
6034+00.00	114.31	114.50	1a	0.2015	1.1667	1000	Sag	+9999	743	+100	70
6058+50.00	114.72	115.01	1a	1.1667	-0.6920	1400	Crest	1275	743	96	70
6071+00.00	115.01	115.20	1a	-0.6920	0.5123	1000	Sag	+9999	734	+100	70
6095+00.00	115.48	115.63	1a	0.5123	-0.0966	800	Crest	2173	734	+100	70
6124+00.00	116.01	116.20	1a	-0.0966	0.6933	1000	Sag	+9999	736	+100	70
6155+50.00	116.61	116.80	1a	0.6933	1.4000	1000	Sag	+9999	747	+100	70
6173+00.00	116.94	117.13	1a	1.4000	0.1651	1000	Crest	1374	747	+100	70
6204+50.00	117.53	117.72	1a	0.1651	-0.1955	1000	Crest	3492	729	+100	70
6264+00.00	118.66	118.85	1a	-0.1955	-0.9485	1000	Crest	1933	724	+100	70
6298+00.00	119.31	119.50	1a	-0.9485	-0.4257	1000	Sag	+9999	721	+100	70
6321+00.00	119.74	119.93	1a	-0.4257	0.0400	1000	Sag	+9999	727	+100	70
6371+86.10	120.70	120.89	1a	0.0400	-0.5556	1000	Crest	2312	727	+100	70
6405+00.00	121.33	121.52	1a	-0.5556	1.1340	1000	Sag	+9999	743	+100	70
6420+00.00	121.55	121.87	1a	1.1340	-1.6990	1700	Crest	1138	743	90	70
6440+00.00	122.00	122.18	1a	-1.6990	-0.4374	1000	Sag	+9999	721	+100	70
6459+00.00	122.36	122.54	1a	-0.4374	1.2593	1000	Sag	+9999	744	+100	70
6474+00.00	122.53	122.93	1a	1.2593	-2.1787	2000	Crest	1120	744	89	70
6488+90.56	122.94	123.13	1a	-2.1787	-0.3582	1000	Sag	15748	722	+100	70
6511+00.00	123.34	123.53	1a	-0.3582	1.1973	1000	Sag	+9999	744	+100	70
6526+83.08	123.53	123.90	1a	1.1973	-1.8300	2000	Crest	1181	744	92	70

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Notes: Traffic Direction:
 1w = One Way Traffic in Station direction
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 2 = Two Way Traffic

Grades are with respect to Station direction.
 * Indicates design exception required.
 GB indicates grade break. Stopping Sight Distance and Speed not calculated.
 Calculations are based on AASHTO 2001 and ADOT 2004 Roadway Design Guidelines formulas with adjustments for effective grade.

ATTACHMENT 2 - VERTICAL CURVE INVENTORY

TRACS Number: 010 MA 125 H6879 01L
 Project Location: I-10; Ehrenberg - Phoenix Highway
 Highway Section: SR 303L to SR 101L EB
 Functional Classification: Principal Arterial Interstate - Urban

VPI STATION	MILEPOST		TRAFFIC DIRECTION (1w, 1a or 2)	GRADE IN (%)	GRADE OUT (%)	CURVE LENGTH (ft)	CURVE TYPE	STOPPING SIGHT DISTANCE		SPEED	
	BEGIN	END						AVAILABLE (ft)	AASHTO MINIMUM (ft)	AVAILABLE (mph)	DESIGN (mph)
6541+00.00	123.91	124.10	1w	-1.8300	-0.2305	1000	Sag	+9999	753	+100	70
6562+00.00	124.31	124.50	1w	-0.2305	1.7293	1000	Sag	5624	730	+100	70
6577+00.00	124.50	124.87	1w	1.7293	-1.7027	2000	Crest	1121	751	89	70
6592+00.00	124.87	125.06	1w	1.7027	1.1207	1000	Crest	2354	712	+100	70
6606+00.00	125.06	125.40	1w	1.1207	-1.3286	1800	Crest	1259	745	95	70
6620+00.00	125.40	125.59	1w	-1.3286	0.8000	1000	Sag	3339	745	+100	70
6630+00.00	125.59	125.78	1w	0.8000	-1.0030	1000	Crest	1098	741	89	70
6640+00.00	125.78	125.97	1w	-1.0030	-0.1679	1000	Sag	+9999	741	+100	70
6668+00.00	126.31	126.50	1w	-0.1679	1.4312	1000	Sag	+9999	729	+100	70
6685+00.00	126.50	126.96	1w	1.4312	-2.0396	2400	Crest	1222	756	93	70
6709+00.00	126.96	127.41	1w	-2.0396	1.6049	2400	Sag	2414	756	+100	70
6735+50.00	127.47	127.90	1w	1.6049	-1.8999	2250	Crest	1177	754	91	70
6753+00.00	127.92	128.11	1w	-1.8999	0.8892	1000	Sag	1535	754	+100	70
6783+00.00	128.49	128.68	1w	0.8892	-1.9850	1000	Crest	866	755	76	70
6799+00.00	128.81	128.96	1w	-1.9850	0.1258	800	Sag	2894	755	+100	70
6828+50.00	129.37	129.52	1w	0.1258	1.8100	800	Sag	+9999	725	+100	70
6841+50.00	129.58	129.81	1w	1.8100	-1.7408	1200	Crest	854	752	76	70
6853+50.00	129.85	129.99	1w	-1.7408	-0.2124	750	Sag	+9999	752	+100	70
6885+00.00	130.42	130.61	1w	-0.2124	0.2012	1000	Sag	+9999	730	+100	70
6909+51.45	130.98	130.98	1w	0.2012	0.1949	0	GB	GB	GB	GB	70
6926+75.05	131.31	131.31	1w	0.1949	0.2012	0	GB	GB	GB	GB	70
6933+00.00	131.33	131.52	1w	0.2012	1.8143	1000	Sag	+9999	724	+100	70
6947+00.00	131.56	131.82	1w	1.8143	-1.5833	1400	Crest	943	749	80	70
6959+00.00	131.82	132.01	1w	-1.5833	0.2504	1000	Sag	13343	749	+100	70
6970+00.00	132.13	132.13	1w	0.2504	0.1217	0	GB	GB	GB	GB	70
6982+00.00	132.26	132.45	1w	0.1217	1.8000	1000	Sag	+9999	725	+100	70
6999+00.00	132.54	132.81	1w	1.8000	-1.5000	1400	Crest	957	748	81	70
7014+00.00	132.87	133.06	1w	-1.5000	0.2600	1000	Sag	108000	748	+100	70
7039+00.00	133.34	133.53	1w	0.2600	1.7308	1000	Sag	+9999	723	+100	70
7052+00.00	133.55	133.81	1w	1.7308	-1.9308	1400	Crest	908	754	78	70
7065+00.00	133.83	134.02	1w	-1.9308	0.2000	1000	Sag	3323	754	+100	70

Notes: Traffic Direction:
 1w = One Way Traffic in Station direction
 1a = One Way Traffic against Station direction
 2 = Two Way Traffic

Grades are with respect to Station direction.
 * Indicates design exception required.
 GB indicates grade break. Stopping Sight Distance and Speed not calculated.
 Calculations are based on AASHTO 2001 and ADOT 2004 Roadway Design Guidelines formulas with adjustments for effective grade.

ATTACHMENT 2 - VERTICAL CURVE INVENTORY

TRACS Number: 010 MA 125 H6879 01L
 Project Location: I-10; Ehrenberg - Phoenix Highway
 Highway Section: SR 303L to SR 101L WB
 Functional Classification: Principal Arterial Interstate - Urban

VPI STATION	MILEPOST		TRAFFIC DIRECTION (1w, 1a or 2)	GRADE IN (%)	GRADE OUT (%)	CURVE LENGTH (ft)	CURVE TYPE	STOPPING SIGHT DISTANCE		SPEED	
	BEGIN	END						AVAILABLE (ft)	AASHTO MINIMUM (ft)	AVAILABLE (mph)	DESIGN (mph)
6541+00.00	123.91	124.10	1a	-1.8967	-0.2305	1000	Sag	+9999	724	+100	70
6562+00.00	124.31	124.50	1a	-0.2305	1.7627	1000	Sag	4920	752	+100	70
6577+00.00	124.50	124.87	1a	1.7627	-1.7227	2000	Crest	1113	752	88	70
6592+00.00	124.87	125.06	1a	-1.7227	1.1064	1000	Sag	1496	742	+100	70
6606+00.00	125.06	125.40	1a	1.1064	-1.3286	1800	Crest	1263	742	96	70
6620+00.00	125.40	125.59	1a	-1.3286	0.8100	1000	Sag	3266	738	+100	70
6630+00.00	125.59	125.78	1a	0.8100	-0.9630	1000	Crest	1109	738	89	70
6640+00.00	125.78	125.97	1a	-0.9630	-0.1857	1000	Sag	+9999	724	+100	70
6668+00.00	126.31	126.50	1a	-0.1857	1.4547	1000	Sag	+9999	747	+100	70
6685+00.00	126.50	126.96	1a	1.4547	-2.0696	2400	Crest	1212	747	93	70
6709+00.00	126.96	127.41	1a	-2.0696	1.5823	2400	Sag	2409	749	+100	70
6735+50.00	127.47	127.90	1a	1.5823	-1.7988	2100	Crest	1158	749	91	70
6753+00.00	127.92	128.11	1a	-1.7988	0.9089	1000	Sag	1622	739	+100	70
6783+00.00	128.49	128.68	1a	0.9089	-2.0131	1000	Crest	859	739	77	70
6799+00.00	128.81	128.96	1a	-2.0131	0.1342	800	Sag	2665	729	+100	70
6828+50.00	129.37	129.52	1a	0.1342	1.8154	800	Sag	+9999	753	+100	70
6841+50.00	129.58	129.81	1a	1.8154	-1.7458	1200	Crest	853	753	75	70
6853+50.00	129.85	129.99	1a	-1.7458	-0.2121	800	Sag	+9999	724	+100	70
6887+00.00	130.46	130.65	1a	-0.2121	0.2149	1000	Sag	+9999	730	+100	70
6909+85.00	130.99	130.99	1a	0.2149	0.2316	0	GB	GB	GB	GB	70
6926+52.49	131.30	131.30	1a	0.2316	0.2149	0	GB	GB	GB	GB	70
6933+00.00	131.33	131.52	1a	0.2149	1.8143	1000	Sag	+9999	753	+100	70
6947+00.00	131.56	131.82	1a	1.8143	-1.5833	1400	Crest	943	753	80	70
6959+00.00	131.82	132.01	1a	-1.5833	0.2504	1000	Sag	13343	730	+100	70
6970+00.00	132.13	132.13	1a	0.2504	0.3314	0	GB	GB	GB	GB	70
6982+00.00	132.28	132.47	1a	0.3314	1.8000	1000	Sag	+9999	752	+100	70
6999+00.00	132.54	132.81	1a	1.8000	-1.5000	1400	Crest	957	752	81	70
7014+00.00	132.87	133.06	1a	-1.5000	0.2600	1000	Sag	108000	730	+100	70
7039+00.00	133.34	133.53	1a	0.2600	1.7308	1000	Sag	+9999	751	+100	70
7052+00.00	133.55	133.81	1a	1.7308	-1.9300	1400	Crest	908	751	78	70
7065+00.00	133.83	134.02	1a	-1.9300	0.2000	1000	Sag	3329	730	+100	70

Notes: Traffic Direction:
 1w = One Way Traffic in Station direction
 1a = One Way Traffic against Station direction
 2 = Two Way Traffic

Grades are with respect to Station direction.
 * Indicates design exception required.
 GB indicates grade break. Stopping Sight Distance and Speed not calculated.
 Calculations are based on AASHTO 2001 and ADOT 2004 Roadway Design Guidelines formulas with adjustments for effective grade.

ATTACHMENT 3 - ADOT BRIDGE EVALUATION

TRACS NUMBER: 010 MA 113 H6877 01L
 PROJECT LOCATION: I-10; EHRENBERG - PHOENIX HIGHWAY
 HIGHWAY SECTION: SR 85 TO SR 303L
 FUNCTIONAL CLASSIFICATION: PRINCIPAL ARTERIAL INTERSTATE - URBAN

ROADWAY ENGINEERING GROUP
 ROADWAY PREDESIGN SECTION

Page 1 of 5

DATE:

TO: SUNIL ATHALIA, 636E (sathalia@azdot.gov)
 BRIDGE GROUP
 BRIDGE MANAGEMENT SECTION
 FROM: Luciano Salas (AZTEC Engineering)

SUBJECT: BRIDGE EVALUATION REQUEST
 FEDERAL REFERENCE NO: _____ TRACS NO: H6877 01L
 HIGHWAY: I-10
 LOCATION: SR 85 to SR 303L (Oglesby T.I. To Cotton Ln)
 LIMITS: 112.72 TO 124.69 ROUTE NO: _____
 PROJECT DESCRIPTION: Widen I-10 to 6 lanes

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	NO. OF LANS	BRIDGE BARRIER	AC OVERLAY			BRIDGE STRUCTURE CAPACITY		
				THICKNESS	REMOVE	REPLACE			
112.78	1728	6'	H-2-1	Yes	Yes	None	n/a	n/a	HS20
	Oglesby Rd Ramp EB UP								
			Minimum Vertical Clearances - I-10 EB Traffic = 17.29' I-10 WB Traffic = 15.04' Seal deck cracks in the deck with epoxy sealant Replace H-2-1 barriers with F-5 (Type Concrete) barriers						
112.92	1728	6'	H-2-1	Yes	Yes	None	n/a	n/a	HS20
	Oglesby Rd Ramp CB UP								
			Minimum Vertical Clearances - I-10 EB Traffic = 17.06' I-10 WB Traffic = 15.04' Replace H-2-1 Rail's with F-5 (Type Concrete) barriers						
114.84	1728	12'	H-2-1	Yes	Yes	None	n/a	n/a	HS20
	Miller Road TI OP EB								
			Minimum Vertical Clearances - Miller Rd Traffic = 17.82' (both directions) Seal deck cracks w/ epoxy sealant Existing barriers need to be replaced w/ standard concrete barriers						
114.84	1728	12'	H-2-1	Yes	Yes	None	n/a	n/a	HS20
	Miller Road TI OP WB								
			Minimum Vertical Clearances - 16.78' for NB traffic Seal deck cracks w/ epoxy sealant H-2-1 barriers need to be replaced w/ standard concrete barriers						

Reviewed by: Mohammed Baki, P.E. Date Returned: 8/12/2005

ATTACHMENT 3 - ADOT BRIDGE EVALUATION (CON'T)

TRACS NUMBER: 010 MA 113 H6877 01L
 PROJECT LOCATION: I-10; EHRENBERG - PHOENIX HIGHWAY
 HIGHWAY SECTION: SR 85 TO SR 303L
 FUNCTIONAL CLASSIFICATION: PRINCIPAL ARTERIAL INTERSTATE - URBAN

TO: SUNIL ATHALIA, 636E (sathalia@azdot.gov)
 BRIDGE GROUP
 BRIDGE MANAGEMENT SECTION
 FROM: Luciano Salas (AZTEC Engineering)

SUBJECT: BRIDGE EVALUATION REQUEST

FEDERAL REFERENCE NO: _____ TRACS NO: H6877 01L
 HIGHWAY: I-10
 LOCATION: SR 85 to SR 303L (Oglesby T.I. To Cotton Ln)
 LIMITS: 112.72 TO 124.69 ROUTE NO: _____
 PROJECT DESCRIPTION: Widen I-10 to 6 lanes

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	NO. OF LANS	BRIDGE BARRIER	AC OVERLAY			BRIDGE STRUCTURE CAPACITY		
				THICKNESS	REMOVE	REPLACE			
118.97	1882	2'	H-2-1	Yes	Yes	None	n/a	n/a	HS20
	Watson Road OP WB								
			Minimum Vertical Clearances - 17.05' (for both directions) Seal deck cracks w/ epoxy sealant H-2-1 barriers need to be replaced w/ standard concrete barriers						
116.97	1881	2'	H-2-1	Yes	Yes	None	n/a	n/a	HS20
	Watson Road OP EB								
			Minimum Vertical Clearances - 16.70' (for both directions) Seal deck cracks w/ epoxy sealant H-2-1 barriers need to be replaced w/ std. concrete barriers						
120.26	2888	9.5'	Single rail w/ parapet	Yes	Yes	None	n/a	n/a	HS20
	Verde Valley TI UP								
			Minimum Vertical Clearances - 17.28' for I-10 WB traffic - 18.90' for I-10 EB "						
121.87	1883	12'	H-2-1	Yes	Yes	None	n/a	n/a	HS20
	Jckrbit Th TI OP EB								
			Minimum Vertical Clearances - 16.81' for both directions Seal deck cracks w/ epoxy sealant H-2-1 barriers need to be replaced w/ std. concrete barriers						

Reviewed by: Mohammed Baki, P.E. Date Returned: 8/12/2005

ATTACHMENT 3 – ADOT BRIDGE EVALUATION (CON'T)

TRACS NUMBER: 010 MA 125 H6879 01L
 PROJECT LOCATION: I-10; EHRENBURG – PHOENIX HIGHWAY
 HIGHWAY SECTION: SR 303L TO SR 101L
 FUNCTIONAL CLASSIFICATION: PRINCIPAL ARTERIAL INTERSTATE - URBAN

ROADWAY ENGINEERING GROUP
 ROADWAY PREDESIGN SECTION

Page 1 of 7

DATE: 9/12/2005

TO: SUNIL ATHALYE, 635E
 BRIDGE GROUP
 BRIDGE MANAGEMENT SECTION

FROM: Paul Tremel (HDR, Inc.)

SUBJECT: BRIDGE EVALUATION REQUEST

FEDERAL REFERENCE NO: TRACS NO: 010 MA 125 H6879 01L
 HIGHWAY: I-10
 LOCATION: SR303L to SR101L (Cotton Ln to 98th Ave)
 MP LIMITS: 124.69 TO: 133.68 ROUTE NO:
 PROJECT DESCRIPTION: Close median on I-10

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	CURB TO CURB WIDTH	BRIDGE BARRIER			AC OVERLAY			BRIDGE STRUCTURE CAPACITY	
			TYPE	GEOM. OK	STRUC. OK	THICKNESS	REMOVE	REPLACE		
124.69	1709 Cotton Ln TI OP EB	42'	H-2-1	Yes	Yes	None	n/a	n/a	HS20	
				Comments: Minimum Vert. Clearance = 16.70' for both directions of traffic. Replace barriers with concrete f-shape for NCHRP 350 Compliance - Satisfactory						
124.69	1710 Cotton Ln TI OP WB	42'	H-2-1	Yes	Yes	None	n/a	n/a	HS20	
				Comments: Minimum Vert. Clearance = 16.50' for both directions. Replace barriers with concrete f-shape for NCHRP 350 Compliance - Satisfactory						
125.19	1711 Rio Canal Br. EB	42'	H-2-1	Yes	Yes	None	n/a	n/a	HS20	
				Comments: Replace barriers with concrete f-shape for NCHRP 350 Compliance - Satisfactory						
125.19	1712 Rio Canal Br. WB	42'	H-2-1	Yes	Yes	None	n/a	n/a	HS20	
				Comments: Joints between approach slabs and roadway are deteriorated. It is recommended to resseal them w/ appropriate sealants. Replace barriers with f-shape concrete barriers. Satisfactory						

Reviewed by: Mohammed Baki, P.E. Date Returned: 9/15/05

ATTACHMENT 3 – ADOT BRIDGE EVALUATION (CON'T)

TRACS NUMBER: 010 MA 125 H6879 01L
 PROJECT LOCATION: I-10; EHRENBURG – PHOENIX HIGHWAY
 HIGHWAY SECTION: SR 303L TO SR 101L
 FUNCTIONAL CLASSIFICATION: PRINCIPAL ARTERIAL INTERSTATE - URBAN

ROADWAY ENGINEERING GROUP
 ROADWAY PREDESIGN SECTION

Page 2 of 7

DATE: 9/12/2005

TO: SUNIL ATHALYE, 635E
 BRIDGE GROUP
 BRIDGE MANAGEMENT SECTION

FROM: Paul Tremel (HDR, Inc.)

SUBJECT: BRIDGE EVALUATION REQUEST

FEDERAL REFERENCE NO: TRACS NO: 010 MA 125 H6879 01L
 HIGHWAY: I-10
 LOCATION: SR303L to SR101L (Cotton Ln to 98th Ave)
 MP LIMITS: 124.70 TO: 133.68 ROUTE NO:
 PROJECT DESCRIPTION: Close median on I-10

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	CURB TO CURB WIDTH	BRIDGE BARRIER			AC OVERLAY			BRIDGE STRUCTURE CAPACITY	
			TYPE	GEOM. OK	STRUC. OK	THICKNESS	REMOVE	REPLACE		
125.69	1713 Sarival Ave OP EB	42'	H-2-1	Yes	Yes	None	n/a	n/a	HS20	
				Comments: Minimum Vertical Clearance = 14.85' for SB traffic. Replace bridge with f-shape barrier = 14.95' for NB traffic. Satisfactory for NCHRP 350 Compliance - Satisfactory						
125.69	1714 Sarival Ave OP WB	42'	H-2-1	Yes	Yes	None	n/a	n/a	HS20	
				Comments: Min. Vertical Clearance = 14.62' for SB traffic. Replace bridge with f-shape barrier = 14.71' for NB traffic. Satisfactory for NCHRP 350 Compliance - Satisfactory						
125.67	1715 Estrella Pkwy TI OP EB	42'	H-2-1	Yes	Yes	None	n/a	n/a	HS20	
				Comments: Minimum Vertical Clearance = 15.72' for NB traffic. Replace bridge with f-shape barrier = 15.77' for SB traffic. Satisfactory for NCHRP 350 Compliance - Satisfactory						
125.67	1716 Estrella Pkwy TI WB	42'	H-2-1	Yes	Yes	None	n/a	n/a	HS20	
				Comments: Minimum Vertical Clearance = 15.77' for both directions. Replace bridge with f-shape barrier = 15.77' for SB traffic. Satisfactory for NCHRP 350 Compliance - Satisfactory						

Reviewed by: Mohammed Baki, P.E. Date Returned: 9/15/2005

ATTACHMENT 3 - ADOT BRIDGE EVALUATION (CON'T)

TRACS NUMBER: 010 MA 125 H6879 01L
 PROJECT LOCATION: I-10; EHRENBERG - PHOENIX HIGHWAY
 HIGHWAY SECTION: SR 303L TO SR 101L
 FUNCTIONAL CLASSIFICATION: PRINCIPAL ARTERIAL INTERSTATE - URBAN

ROADWAY ENGINEERING GROUP
 ROADWAY PREDESIGN SECTION
 DATE: 9/12/2005
 Page 3 of 7

TO: SUNIL ATHALYE, 635E
 BRIDGE GROUP
 BRIDGE MANAGEMENT SECTION
 FROM: Paul Tremel (HDR, Inc.)

SUBJECT: BRIDGE EVALUATION REQUEST
 FEDERAL REFERENCE NO: _____ TRACS NO: 010 MA 125 H6879 01L
 HIGHWAY: I-10
 LOCATION: SR303L to SR101L (Cotton Ln to 99th Ave)
 MP LIMITS: 124.70 TO: 133.68 ROUTE NO: _____
 PROJECT DESCRIPTION: Close median on I-10

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	CURB TO CURB WIDTH	BRIDGE BARRIER			AC OVERLAY			BRIDGE STRUCTURE CAPACITY
			TYPE	GEOM. OK	STRUC OK	THICKNESS	REMOVE	REPLACE	
127.15	1848 Airport Wash Br. EB	42'	H-2-1	Yes	Yes	None	N/A	N/A	HS20
<i>Comments: Deck has cracked, which we recommend to beal with epoxy. Need seal floor. Replace bridge with F-shape barrier.</i>									
127.15	1850 Airport Wash Br. WB	42'	H-2-1	Yes	Yes	None	N/A	N/A	HS20
<i>Comments: Seal the cracked deck w/ epoxy. Need seal protection floor. Replace bridge with F-shape barrier.</i>									
127.67	1747 Bullard Ave OP EB	42.2'	H-2-1	Yes	Yes	None	N/A	N/A	HS20
<i>Comments: Minimum Vert. Clearance = 16.17' for both directions. Repair bridge with F-shape barrier for street 25' compliance.</i>									
127.67	1718 Bullard Ave OP WB	42'	H-2-1	Yes	Yes	None	N/A	N/A	HS20
<i>Comments: Minimum Vert. Clearance = 16.45' for both directions of traffic. Repair bridge with F-shape barrier for street 25' compliance.</i>									

Reviewed by: Mohammed Baki, P.E. Date Forwared: 9/15/05

ATTACHMENT 3 - ADOT BRIDGE EVALUATION (CON'T)

TRACS NUMBER: 010 MA 125 H6879 01L
 PROJECT LOCATION: I-10; EHRENBERG - PHOENIX HIGHWAY
 HIGHWAY SECTION: SR 303L TO SR 101L
 FUNCTIONAL CLASSIFICATION: PRINCIPAL ARTERIAL INTERSTATE - URBAN

ROADWAY ENGINEERING GROUP
 ROADWAY PREDESIGN SECTION
 DATE: 9/12/2005
 Page 4 of 7

TO: SUNIL ATHALYE, 635E
 BRIDGE GROUP
 BRIDGE MANAGEMENT SECTION
 FROM: Paul Tremel (HDR, Inc.)

SUBJECT: BRIDGE EVALUATION REQUEST
 FEDERAL REFERENCE NO: _____ TRACS NO: 010 MA 125 H6879 01L
 HIGHWAY: I-10
 LOCATION: SR303L to SR101L (Cotton Ln to 99th Ave)
 MP LIMITS: 124.70 TO: 133.68 ROUTE NO: _____
 PROJECT DESCRIPTION: Close median on I-10

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	CURB TO CURB WIDTH	BRIDGE BARRIER			AC OVERLAY			BRIDGE STRUCTURE CAPACITY
			TYPE	GEOM. OK	STRUC OK	THICKNESS	REMOVE	REPLACE	
128.45	1719 SPRR Overpass EB	73'	H-2-1	Yes	Yes	None	N/A	N/A	HS20
<i>Comments: West side transition is rough. Repair is recommended. Replace bridge with concrete F-shape barrier.</i>									
128.45	1720 SPRR Overpass WB	67.5'	H-2-1	Yes	Yes	None	N/A	N/A	HS20
<i>Comments: Repair bridge with concrete F-shape barrier for street 25' compliance.</i>									
128.68	1721 Litchfield TI OP EB	42.3'	H-2-1	Yes	Yes	None	N/A	N/A	HS20
<i>Comments: Minimum Vert. Clearance = 15.94'. A clearance sign of 15.94' is recommended for posting over N/S lanes. Repair bridge with F-shape barrier.</i>									
128.68	1722 Litchfield TI OP WB	42.3'	H-2-1	Yes	Yes	None	N/A	N/A	HS20
<i>Comments: Minimum Vert. Clearance as reported, is 16.20'. Joint need to be re-sealed. Repair bridge with F-shape barrier.</i>									

Reviewed by: Mohammed Baki, P.E. Date Forwared: 9/15/05

ATTACHMENT 3 – ADOT BRIDGE EVALUATION (CON'T)

TRACS NUMBER: 010 MA 125 H6879 01L
 PROJECT LOCATION: I-10; EHRENBERG – PHOENIX HIGHWAY
 HIGHWAY SECTION: SR 303L TO SR 101L
 FUNCTIONAL CLASSIFICATION: PRINCIPAL ARTERIAL INTERSTATE - URBAN

ROADWAY ENGINEERING GROUP
 ROADWAY PREDESIGN SECTION

Page 5 of 7

DATE: 9/12/2005

TO: SUNIL ATHALYE, 635E
 BRIDGE GROUP
 BRIDGE MANAGEMENT SECTION
 FROM: Paul Tremel (HDR, Inc.)

SUBJECT: BRIDGE EVALUATION REQUEST

FEDERAL REFERENCE NO: _____ TRACS NO: 010 MA 125 H6879 01L
 HIGHWAY: I-10
 LOCATION: SR303L to SR101L (Cotton Ln to 66th Ave)
 MP LIMITS: 124.70 TO: 133.69 ROUTE NO: _____
 PROJECT DESCRIPTION: Close median on I-10

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	CURB TO CURB WIDTH	BRIDGE BARRIER			AC OVERLAY			BRIDGE STRUCTURE CAPACITY
			TYPE	GEOM. OK	STRUC. OK	THICKNESS	REMOVE	REPLACE	
129.67	1723 Dysart Rd. TI OP EB	42.3'	H-2-1	Yes	Yes	None	n/a	n/a	HS20
			<i>Comments: Minimum Vert. Clearance = 16.06' for SB traffic. Replace bridge with IAP = 16.37' for NB traffic. Use with F-shaped barriers for IAP-300 System S.D.</i>						
129.67	1724 Dysart Rd. TI OP WB	42.3'	H-2-1	Yes	Yes	None	n/a	n/a	HS20
			<i>Comments: Minimum Vert. Clearance = 16.24' for SB traffic. Replace bridge with IAP = 16.34' for NB traffic. F-shaped barrier bridge.</i>						
130.00	1852 Agua Fria Riv. Br. EB	58'	Conc. Barrier	Yes	Yes	None	n/a	n/a	HS20
130.00	1853 Agua Fria Riv. Br. WB	58'	Conc. Barrier	Yes	Yes	None	n/a	n/a	HS20

Reviewed by: Mohammed Baki, P.E. Date Returned: 9/15/05

ATTACHMENT 3 – ADOT BRIDGE EVALUATION (CON'T)

TRACS NUMBER: 010 MA 125 H6879 01L
 PROJECT LOCATION: I-10; EHRENBERG – PHOENIX HIGHWAY
 HIGHWAY SECTION: SR 303L TO SR 101L
 FUNCTIONAL CLASSIFICATION: PRINCIPAL ARTERIAL INTERSTATE - URBAN

ROADWAY ENGINEERING GROUP
 ROADWAY PREDESIGN SECTION

Page 6 of 7

DATE: 9/12/2005

TO: SUNIL ATHALYE, 635E
 BRIDGE GROUP
 BRIDGE MANAGEMENT SECTION
 FROM: Paul Tremel (HDR, Inc.)

SUBJECT: BRIDGE EVALUATION REQUEST

FEDERAL REFERENCE NO: _____ TRACS NO: 010 MA 125 H6879 01L
 HIGHWAY: I-10
 LOCATION: SR303L to SR101L (Cotton Ln to 66th Ave)
 MP LIMITS: 124.70 TO: 133.69 ROUTE NO: _____
 PROJECT DESCRIPTION: Close median on I-10

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	CURB TO CURB WIDTH	BRIDGE BARRIER			AC OVERLAY			BRIDGE STRUCTURE CAPACITY
			TYPE	GEOM. OK	STRUC. OK	THICKNESS	REMOVE	REPLACE	
131.68	1858 115th Ave. TI OP EB	58'	Conc. Barrier	Yes	Yes	None	n/a	n/a	HS20
			<i>Comments: Minimum Vert. Clearance = 16.55' for SB traffic. = 16.60' for NB traffic.</i>						
131.68	1857 115th Ave. TI OP WB	58'	Conc. Barrier	Yes	Yes	None	n/a	n/a	HS20
			<i>Comments: Minimum Vert. Clearance = 16.55' for SB traffic. = 16.61' for NB traffic.</i>						
132.65	1858 107th Ave. OP EB	70'	Conc. Barrier	Yes	Yes	None	n/a	n/a	HS20
			<i>Comments: Minimum Vert. Clearance = 17.07' for both directions.</i>						
132.65	1859 107th Ave. OP WB	58'	Conc. Barrier	Yes	Yes	None	n/a	n/a	HS20
			<i>Comments: Minimum Vert. Clearance = 16.81' for both directions.</i>						

Reviewed by: Mohammed Baki, P.E. Date Returned: 9/15/05

ATTACHMENT 3 – ADOT BRIDGE EVALUATION (CON'T)

TRACS NUMBER: 010 MA 125 H6879 01L
 PROJECT LOCATION: I-10; EHRENBURG – PHOENIX HIGHWAY
 HIGHWAY SECTION: SR 303L TO SR 101L
 FUNCTIONAL CLASSIFICATION: PRINCIPAL ARTERIAL INTERSTATE - URBAN

ROADWAY ENGINEERING GROUP
 ROADWAY PREDESIGN SECTION

Page 7 of 7

DATE: 9/12/2005

TO: SUNIL ATHALYE, 635E
 BRIDGE GROUP
 BRIDGE MANAGEMENT SECTION
 FROM: Paul Toppel (HDR, Inc.)

SUBJECT: BRIDGE EVALUATION REQUEST

FEDERAL REFERENCE NO: _____ TRACS NO: 010 MA 125 H6879 01L
 HIGHWAY: I-10
 LOCATION: SR303L to SR101L (Cotton Ln to 99th Ave)
 NP LIMITS: 124.70 TO: 133.66 ROUTE NO: _____
 PROJECT DESCRIPTION: Close median on I-10

Please evaluate the following structures per AASHTO guidelines:

MILEPOST	STR. NO.	CURB TO CURB WIDTH	BRIDGE BARRIER		AC OVERLAY			BRIDGE STRUCTURE CAPACITY	
			TYPE	GEOM OK	STRUC OK	THICKNESS	REMOVE		REPLACE
133.66	1880 99th Ave TI OP EB	58'	Conc Barrier	Yes	Yes	None	n/a	n/a	HS20
									Minimum Vert. Clearance = 16.82' for SB traffic. = 16.92' for NB traffic.
133.68	1881 99th Ave TI OP WB	58'	Conc Barrier	Yes	Yes	None	n/a	n/a	HS20
									Minimum Vert. Clearance = 16.62' for both directions.

Reviewed By: Mohammed Baki, P.E. Date Returned: 9/15/2005

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APPENDIX B

Final Roadway Design Criteria Memorandum

Roadway Design Criteria

in support of the
Environmental Document and Design Concept Report

I-10
Median Widening
SR 85 to SR 303L
SR 303L to SR 101L
Maricopa County, Arizona

Arizona Department of Transportation
Federal Highway Administration



Final / January 2006
ADOT TRACS No.'s 010 MA 125 H6879 01L
010 MA 113 H6877 01L
FHWA Federal Aid Project No.'s Unknown

Abstract: This document addresses the design criteria used for the development of additional travel lanes in the median for the I-10 West from SR85 to 101L.

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Roadway Design Criteria

INTRODUCTION

The following information addresses the roadway design criteria to be used during all phases of the Environmental Documentation and Design Concept Report processes for the median widening of I-10 from SR85 to SR101L. The following lane additions are proposed:

SR85 to SR303L: Add one general purpose median travel lane and an eight foot median shoulder in each direction.

SR303L to SR101L: Pave the median completely and add median concrete barrier. This will allow the addition in each direction of one general purpose lane, an HOV lane and buffer and a median shoulder. The resulting median shoulder will be 13'. However, from west of 115th Ave to the SR101L System Interchange the median width is smaller; therefore, there will be no HOV buffer and the median shoulder width will be twelve feet.

NOTE: There is a separate DCR already completed for the proposed I-10/SR303L System Interchange. The preferred alternative in that DCR recommends realignment of I-10 slightly to the north with reconstruction extending from west of Citrus Road to east of Sarival Road.

FREEWAY DESIGN CRITERIA

Since additional travel lanes are being added to an existing facility, they will match the geometrics and superelevation that exist; however, to the extent practical these new facilities and appurtenances will be designed in accordance with Arizona Department of Transportation (ADOT) through use of their *Roadway Design Guidelines* (1996) (ARDG) and ADOT Standard Drawings (all with current revisions and updates), as well as *A Policy on Geometric Design of Highways and Streets* (Green Book) and *Roadside Design Guide* (RSDG), both published by the American Association of State Highway and Transportation Officials (AASHTO).

See the Final AASHTO Report dated October 4, 2005 prepared for this project for a list of existing improvements not meeting AASHTO requirements. Any further deviations from the policies or criteria mentioned above will be subject to approval by ADOT and FHWA and will be identified in the Initial DCR.

The following design criteria are proposed.

MAINLINE

Following are the typical sections through the project area:

Roadway Design Criteria

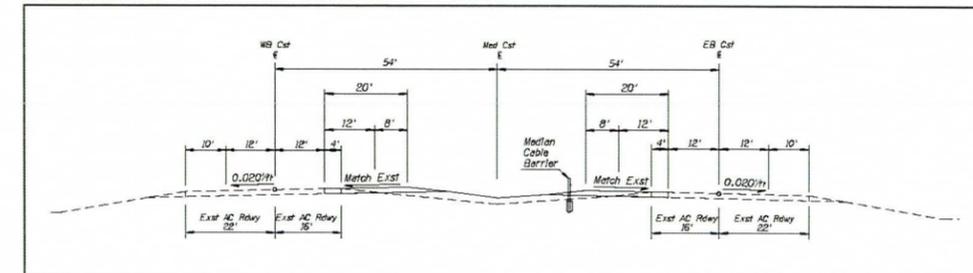


Figure 1 – SR85 to SR303L
 (add 1GP and 8 ft median shoulder in each direction)

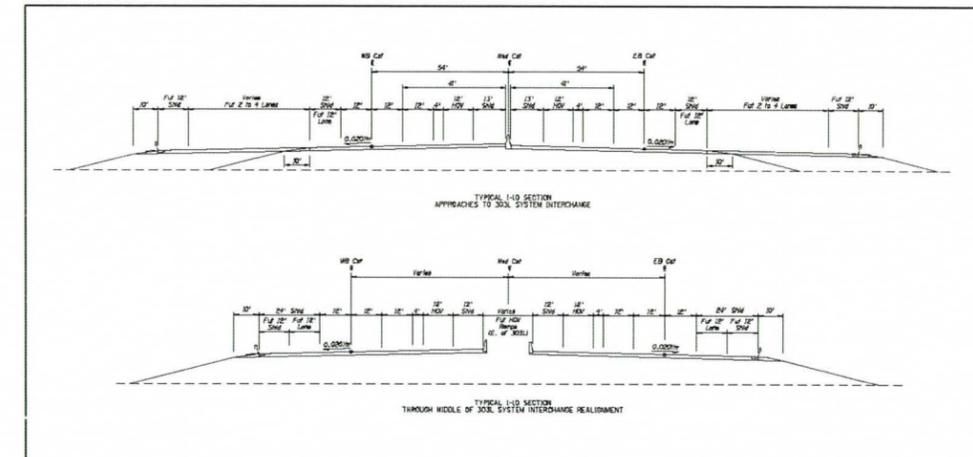


Figure 2 – Realignment at SR303L System Interchange

Roadway Design Criteria

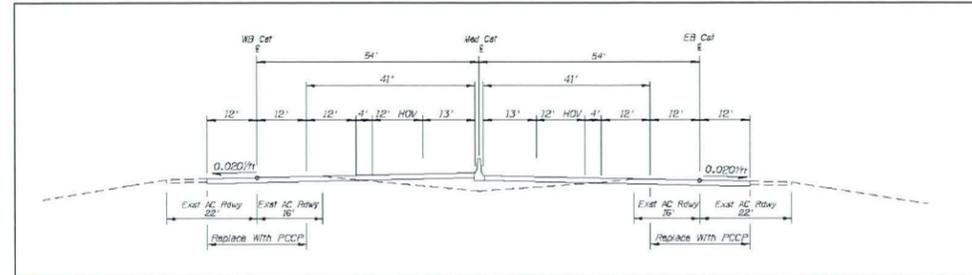


Figure 3 – SR303L to Dysart Road
 (add 1GP, 1 HOV, 4 ft buffer and 13 ft median shoulder in each direction by paving entire median; also replace existing AC mainline general purpose lanes with PCCP)

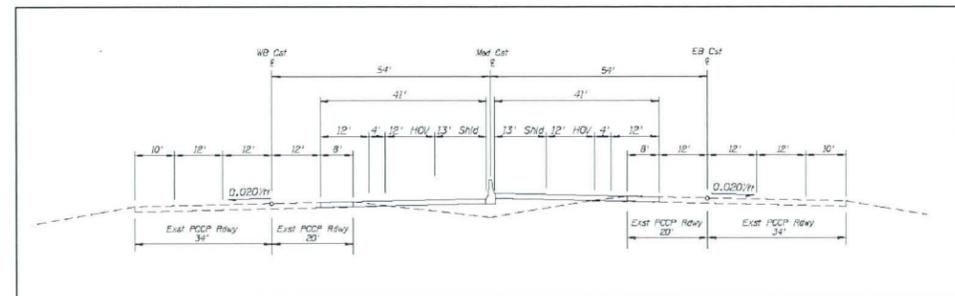


Figure 4 – Dysart Road to West of 115th Ave
 (add 1GP, 1 HOV, 4 ft buffer and 13 ft median shoulder in each direction by paving entire median)

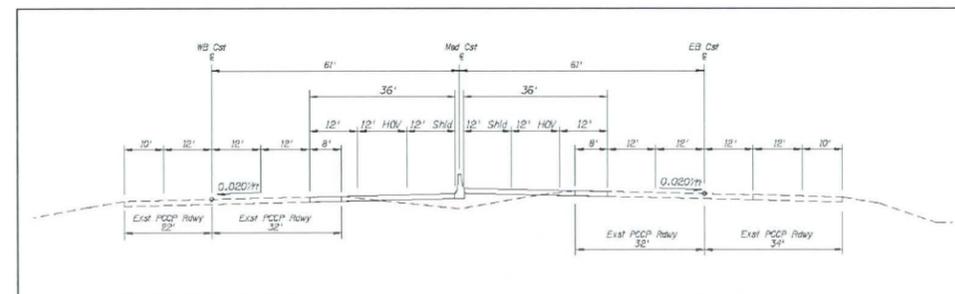


Figure 5 – West of 115th Ave to 99th Ave
 (add 1GP, 1 HOV with no buffer and 12 ft median shoulder in each direction by paving entire median)

Roadway Design Criteria

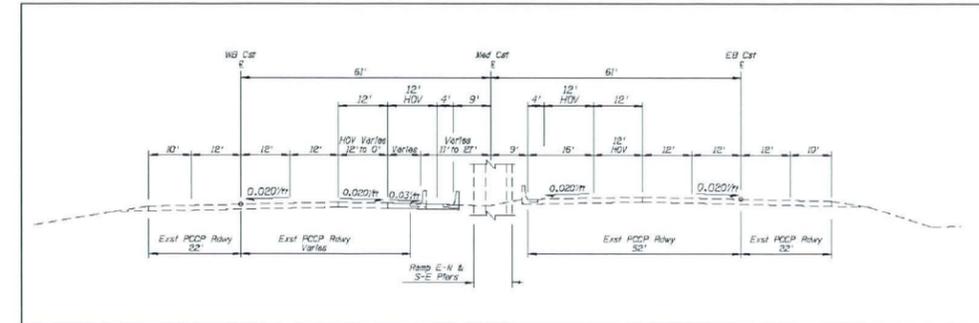


Figure 6 – under SR101L System Interchange
 (add 1GP, 1 HOV with no buffer and median shoulder varying from 12' to 4' in each direction by paving median around piers)

Table 1 – Median Widening Characteristics

Item Description	Characteristic
Typical Section	See above
Design Year	2030
Design Vehicle	WB-67
Design Speed	65 mph (Minimum)
Superelevation Table	0.06 ft/ft Max
Minimum Vertical Curve	Per Existing
Maximum Gradient	Per Existing
Horizontal Curve	Per Existing
Lane Width	12 ft
Median Shoulder Width	Varies 12 ft to 13 ft
Recovery Area	Per ARDG
Cross Slope	0.02 ft/ft
Pavement Design Life	20 years
Barrier Type	SR85 to SR303L: Median Cable Barrier SR303L to 101: Concrete Barrier Per ADOT Construction Stds
Curb and Gutter Type	Per ARDG if needed
Right-of-Way	N/A
Tapers (See Figures in ARDG)	50:1, To Drop Mainline Lanes Added By On-Ramps (Fig 504.8A) Design Speed:1, To Drop Mainline Lane 25:1, To Add Lane Lanes
Lighting	SR303L to SR101L: Add Median Mounted Lighting

Roadway Design Criteria

HIGH OCCUPANCY VEHICLE (HOV) LANES

As shown on the freeway typical sections, HOV lanes are being provided from SR303L to SR101L. The remaining median width from SR85 to SR303L allows for addition of HOV lanes in the future.

SYSTEM INTERCHANGES

As stated previously, there is a fully directional system interchange proposed for the I-10/SR303L freeways. In order to be in conformance with the planned ultimate construction of the system interchange, the widening project will construct I-10 in its realigned position, as well as all the associated proposed I-10 bridges over the future SB Frontage Road, the future SR303L, the future NB Frontage Road and Sarival Road. The alignments contained within the Initial 303L DCR will be used for this project through the reconstruction area, with the following slight modifications:

- 303L DCR alignments will be recreated in State Plane Coordinates to match the mapping and survey being done for all projects within the Phoenix Metro Area. Profiles will be adjusted accordingly as well.
- Within the area that the offsets from median centerline are held constant, the EB and WB centerlines/PGL offsets will be moved from the 38 feet shown in the 303L DCR to the 54 feet that exists in the field. This will allow the realignment to match existing roadways and lanes at each end as well as better balance the lanes around the PGL/Axis of Rotation. This adjustment also results in a 13-foot median shoulder instead of the 11-foot shoulder shown in the 303L DCR, as well as the ability to continue the four-foot HOV buffer instead of the two-foot buffer shown in the DCR.
- The 303L DCR indicates a reach of reconstruction on existing tangent alignment for a distance of approximately 4800' west of the beginning of the realignment and for 700' east of the end of the realignment. HDR has concluded that these reaches of reconstruction are not necessary. This means that replacement of the Citrus Road Overpass, as shown in the 303L DCR, is not necessary, and is now shown as being widened for this project. It will be widened on the outside in the future to accommodate the System TI lanes when constructed.
- The 303L DCR showed proposed bridges over the RID Canal within the realignment area. HDR has met with RID and confirmed that crossing I-10 with a RCBC is preferable for conveying RID flows across the corridor, so no bridges are being shown for the RID canal and maintenance road. Also, we have determined that offsite drainage flows are conveyed under the current I-10 RID bridges, so an additional RCBC is proposed adjacent to the RID RCBC to convey those flows across the corridor.
- The system interchange shown in the 303L DCR displaces the Cotton Lane arterial and its traffic interchange and proposes half TI's at Citrus Road to the west, Sarival Road to the east, McDowell Rd on the north and Van Buren Street on the south. These half TI's would be connected via one-way frontage roads in all four directions. However, the I-10 median widening project is likely to be constructed prior to the SR303L System Interchange project. This means that the Cotton Lane TI will necessarily be removed and the continuity of Cotton Lane's connection to the interim Loop 303 will be disrupted prior to the construction of the remaining system TI improvements mentioned. Options for possible interim continuity of and/or access to and from Cotton Lane will be developed for review and decision by ADOT.

Roadway Design Criteria

TRAFFIC INTERCHANGES

Except through the SR303L interchange area, existing traffic interchanges will not be impacted. At the widenings of overpasses, clearance to the crossroad will be preserved.

From the reconstruction area at the I-10/SR303L system TI to the west side of the Dysart Rd overpass, the existing AC mainline lanes are being replaced with PCCP. Through this area, the existing outside shoulder will be left in place and matched. Ramp gores and tapers will not be modified.

PROJECT AREA EARTHWORK

The borrow required for construction of realigned I-10 through the SR303L system interchange area will be obtained by excavating some of the regional detention basins proposed in the DCR. The remainder of the project will require borrow from outside sources.

VERTICAL CLEARANCES

The ARDG states the following minimum vertical clearances.

- Structures over arterials: 15 feet
- Structures over state highways: 16 feet
- Pedestrian overpasses: 17 feet
- Tunnels: 16 feet on state highways, 15.5 feet on other arterials
- Structures over rail: 23 feet from top of rail
- All structures: If the structure spans over a roadway paved with asphalt, add 6 inches to the minimum vertical clearance to allow for future resurfacing

SURFACING

From SR85 to SR303L, the additional lanes and shoulders will be asphaltic concrete (AC) to match the existing roadways. From SR303L to SR101L, all new freeway pavement will be PCCP, including replacement of the existing mainline AC from SR303L to Dysart. Although not currently planned to be part of this project, the pavement surfaces of crossroads, CD roads, and frontage roads, if constructed, will be determined by which jurisdiction will be maintaining it (local government or ADOT). Areas that will be maintained by ADOT will be paved with PCCP, and AC will be used for other.

The application of AR-ACFC overlay on the freeway or ramp roadways will be evaluated by ADOT.

RIGHT-OF-WAY REQUIREMENTS

There is no right-of-way required for the project except that previously identified in the DCR for the I-10/SR303L System TI.

APPENDIX C

Estimated Costs for Interim Widening from SR 303L (Cotton Lane) to 1700' East of Sarival Avenue

Estimate of Probable Project Costs
 Interim Median Widening (AC) between Cotton Lane to 1700' east of Sarival Ave.

Item	Unit	Quantity	Unit Price	Amount
Removal of Structures and Obstructions	L. Sum	1	\$200,000.00	\$200,000
Removal of Concrete Curb and Gutter	L. Ft.			\$0
Removal of Asphaltic Concrete Pavement	Sq. Yd.			\$0
Remove Sand Barrel Crash Cushion	Each			\$0
Remove 3-Strand Median Cable Barrier	L. Ft.			\$0
Roadway Excavation	Cu. Yd.			\$0
Drainage Excavation	Cu. Yd.			\$0
Structural Excavation	Cu. Yd.			\$0
Grading Roadway For Pavement	Sq. Yd.			\$0
Aggregate Base Course (Class II)	Cu. Yd.			\$0
Portland Cement Concrete Pavement	Sq. Yd.			\$0
Asphaltic Concrete Pavement	Sq. Yd.	49,000	\$30.00	\$1,470,000
ARFC Overlay (1 inch)	Sq. Yd.			\$0
Concrete Median Half Barrier -- 42" Height	L. Ft.	4,830	\$50.00	\$242,000
Concrete Median Half Barrier (with gutter) -- 42" Height	L. Ft.		\$59.00	\$0
Concrete Median Barrier -- Dual Height	L. Ft.	4,000	\$80.00	\$320,000
Adjust Catch Basin	Each	2	\$1,000.00	\$2,000
Abandon Catch Basin	Each	2	\$5,000.00	\$10,000
Temporary Painted Marking (Stripe)	L. Ft.			\$0
Obillterate Pavement Marking (Stripe)	L. Ft.			\$0
Pavement Marking (White Thermoplastic)(0.060")	L. Ft.	49,000	\$0.25	\$12,000
Pavement Marking (Yellow Thermoplastic)(0.060")	L. Ft.	20,500	\$0.25	\$5,000
Pavement Symbol (Extruded Thermoplastic)(0.090")	Each	10	\$150.00	\$1,500
Pavement Marking, Preformed, Type II White Stripe	L. Ft.			\$0
Pavement Marker, Raised, Type C	Each	700	\$3.75	\$2,630
Regulatory, Warning or Marker Sign Panels	Sq. Ft.			\$0
Guide Sign Panels	Sq. Ft.			\$0
Bridge Sign Structure (Tubular)	Each			\$0
Foundation for Bridge Sign Structure	Each			\$0
Median Sign Structure (Two-Sided)	Each			\$0
Foundation for Median Sign Structure (Two-Sided)	Each			\$0
Median Light Pole (Type U)(69')	Each			\$0
Median Light Pole Foundation	Each			\$0
Electrical Conduit and Conductors	L. Ft.			\$0
Barrier Pullbox	Each			\$0
Luminaire (High Mast)(HPS 400 Watt)	Each			\$0
Load Center Cabinet and Foundation	Each			\$0
Bridge Structures	Sq. Ft.	16,460	\$110.00	\$1,811,000
Noise Barrier	Sq. Ft.	18,000	\$25.00	\$450,000
Retaining Walls	Sq. Ft.			\$0
Utility Relocation	L. Sum			\$0

SUBTOTAL -- ABOVE ITEMS:			\$4,526,000
Maintenance and Protection of Traffic (15%)	15%		\$679,000
Dust and Water Palliative (2%)	2%		\$91,000
Quality Control (2%)	2%		\$91,000
Construction Surveying (4%)	4%		\$181,000
Erosion Control (1%)	1%		\$45,000
SUBTOTAL:			\$5,613,000
Unidentified Items (20%)	20%		\$1,123,000
SUBTOTAL -- CONSTRUCTION ITEMS:			\$6,736,000
Mobilization (8%)	8%		\$539,000
TOTAL CONSTRUCTION ITEMS:			\$7,275,000
Construction Engineering (9%)	9%		\$655,000
Construction Contingencies (5%)	5%		\$364,000
TOTAL CONSTRUCTION COST:			\$8,294,000
Design (w/ Survey & Geotech) (6% of total construction items)	6%		\$437,000
Right-of-Way	\$80,000 /acre		\$0
TOTAL PROJECT COST:			\$8,731,000

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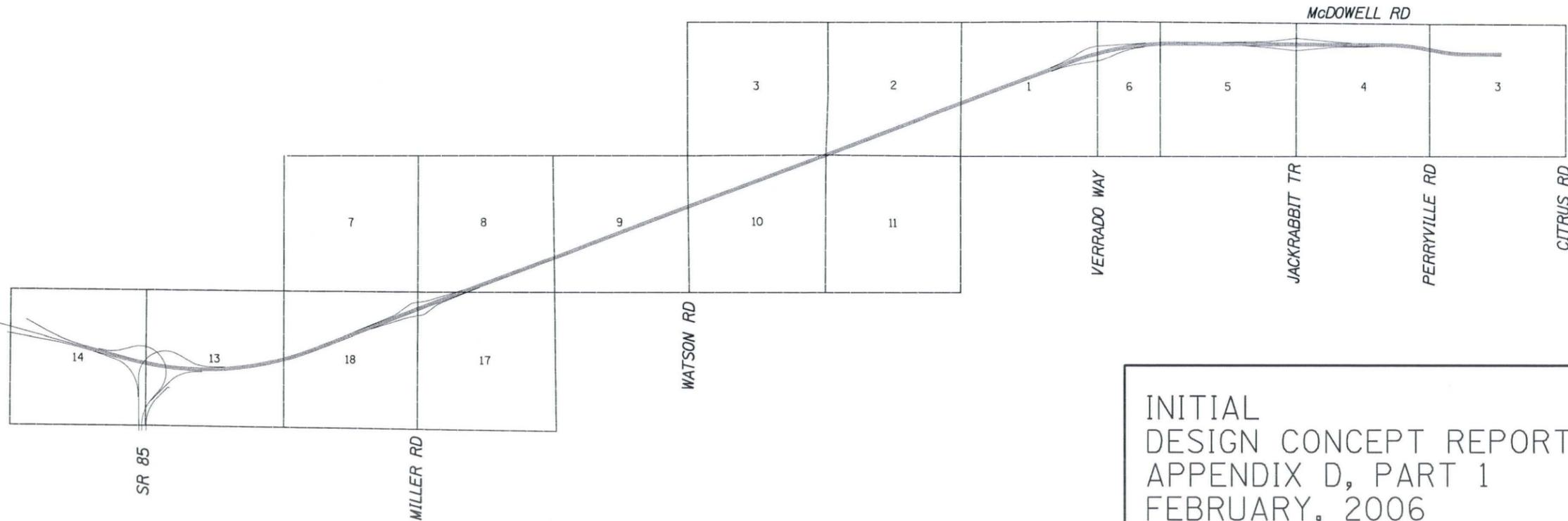
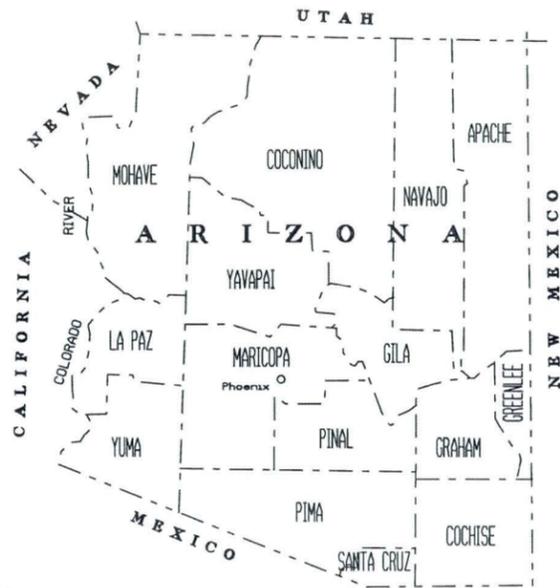
APPENDIX D

Part 1, Project Plans for Recommended Alternative – SR 85 to SR 303L

Part 2, Project Plans for Recommended Alternative – SR 303L to SR 101L

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STATE OF ARIZONA
 DEPARTMENT OF TRANSPORTATION
 INTERMODAL TRANSPORTATION DIVISION
 PLAN AND PROFILE OF PROPOSED
 STATE HIGHWAY
 010 MA 113



INITIAL
 DESIGN CONCEPT REPORT
 APPENDIX D, PART 1
 FEBRUARY, 2006

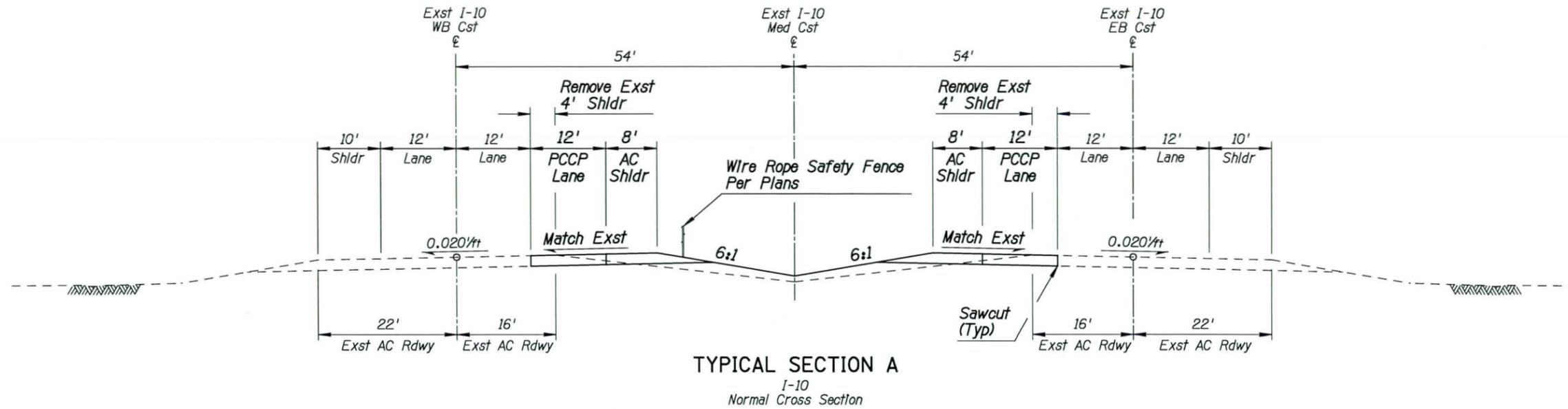
I-10 (PAPAGO) MEDIAN WIDENING
 SR 85 TO SR 303L

ARIZONA DEPARTMENT OF TRANSPORTATION
 INTERMODAL TRANSPORTATION DIVISION
 APPROVED: SAM ELTERS
 STATE ENGINEER

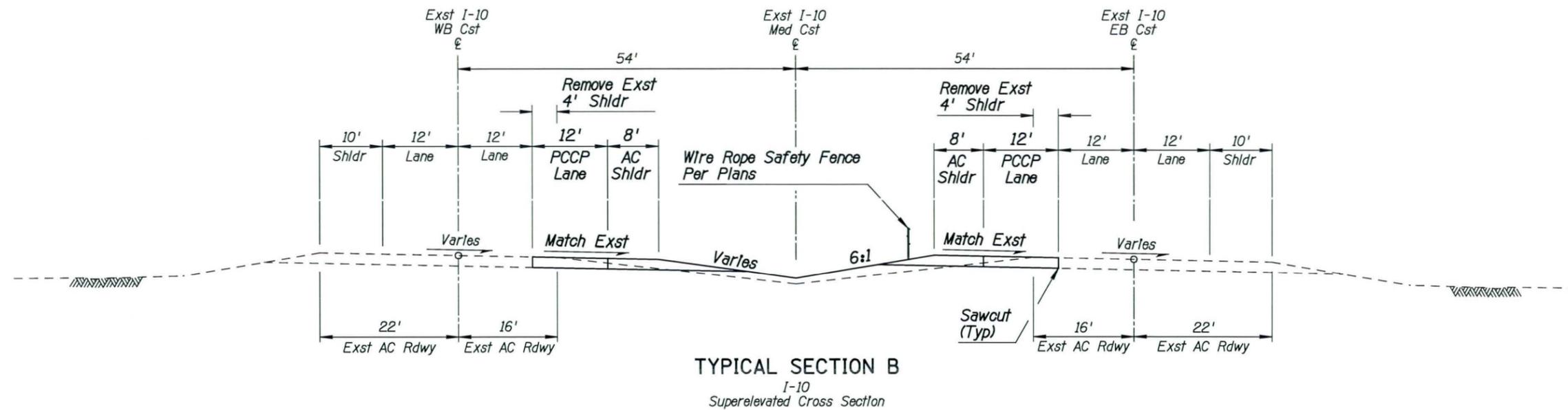
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 ASSISTANT STATE ENGINEER

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

010 MA 113



TYPICAL SECTION A
I-10
Normal Cross Section



TYPICAL SECTION B
I-10
Superelevated Cross Section

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

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
		<small>4561 E. McDowell Road Phoenix, AZ 85008-4505 Tel: 602 454-0402 Fax: 602 454-0403 www.aztec.us</small>		DESIGN SHEET TYPICAL SECTIONS	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L		
TRACS NO. H6877 01L					DWG NO. 2 OF 45

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

010 MA 113

STA 5913+78.89
BEGIN PROJECT

WB ROADWAY SECTION

10' Outside Shldr
12' Lane
12' Lane
12' Lane
Var Inside Shldr

1 CURVE DATA

PI Sta 5915+68.68
Main Curve
 $\Delta=13^{\circ}34'17''$ Lt
 $D=00^{\circ}45'00''$
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 $L=1809.50'$
 $T=909.01'$
 $Ext=53.89'$
 $Super=0.036'/ft$

Wire Rope Safety Fence

Sta 5920+18, 12' Lt
Bgn 50:1 Taper
Wire Rope Safety Fence
End Terminal

70:1
840' Taper Rt
20' to 32'

Remove Exst
4' Shoulders

Sta 5919+92.5, 12' Lt
Wire Rope Safety Fence
End Anchor

S 74°32'48"E

Exst Catch Basin
To Remain

Remove Exst
4' Shoulders

25:1
400' Taper Lt
16' to 32'

MATCH LINE STA 5921+00

Exst I-10 Med Cst ξ

Exst I-10 WB Cst ξ

Exst R/W

Exst I-10 EB Cst ξ

Exst R/W

EB ROADWAY SECTION

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12' Lane
12' Lane
12' Lane
10' Outside Shldr

2 CURVE DATA

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 $Super=0.024'/ft$



PC 5909+87.52
5910

5915

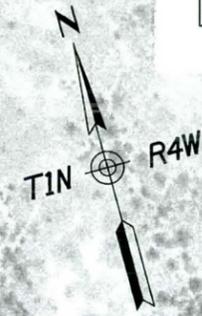
5920
PT 5920+06.97

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CHECKED	CWS	02-06		
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ROUTE	I-10	LOCATION		
TRACS NO. H6877 01L				3 OF 45

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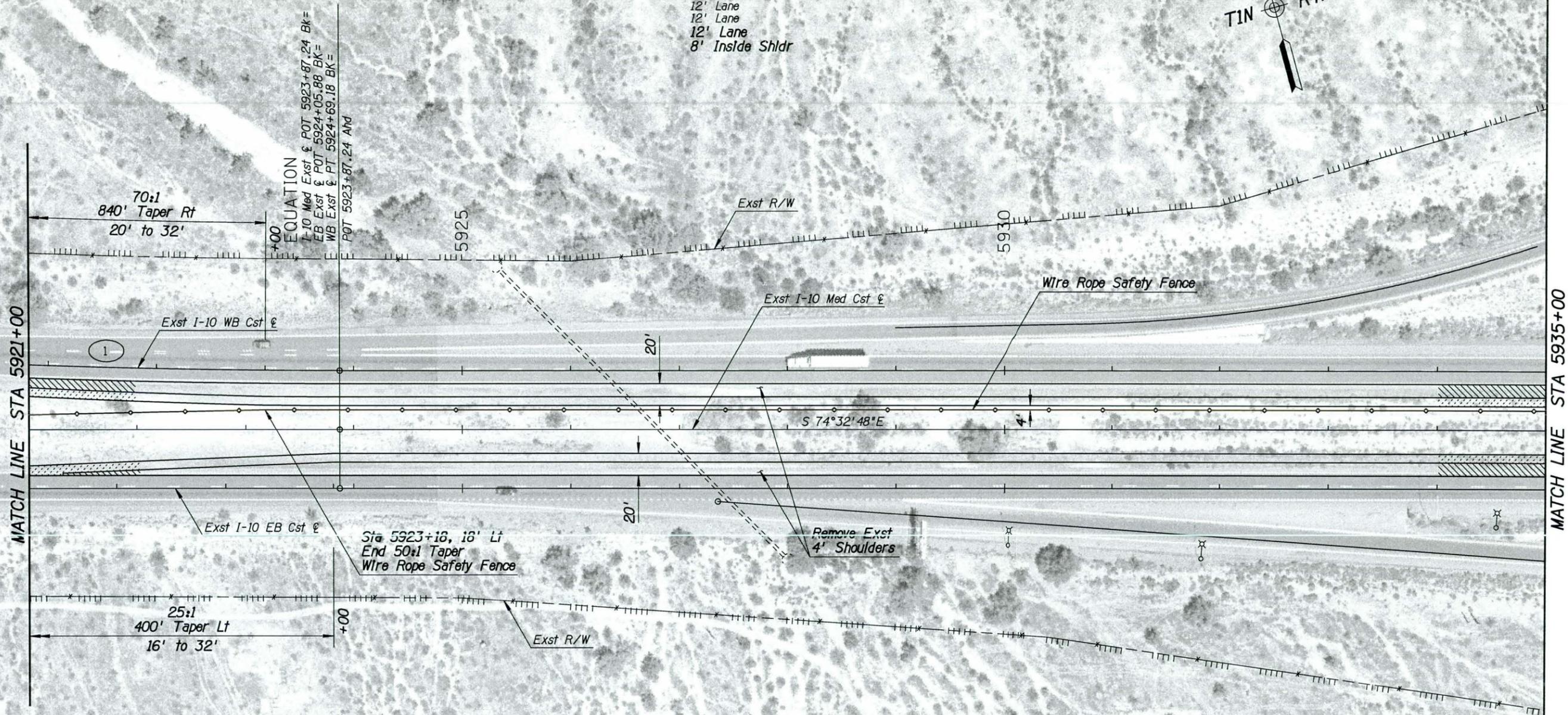
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

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WB ROADWAY SECTION

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- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr



EB ROADWAY SECTION

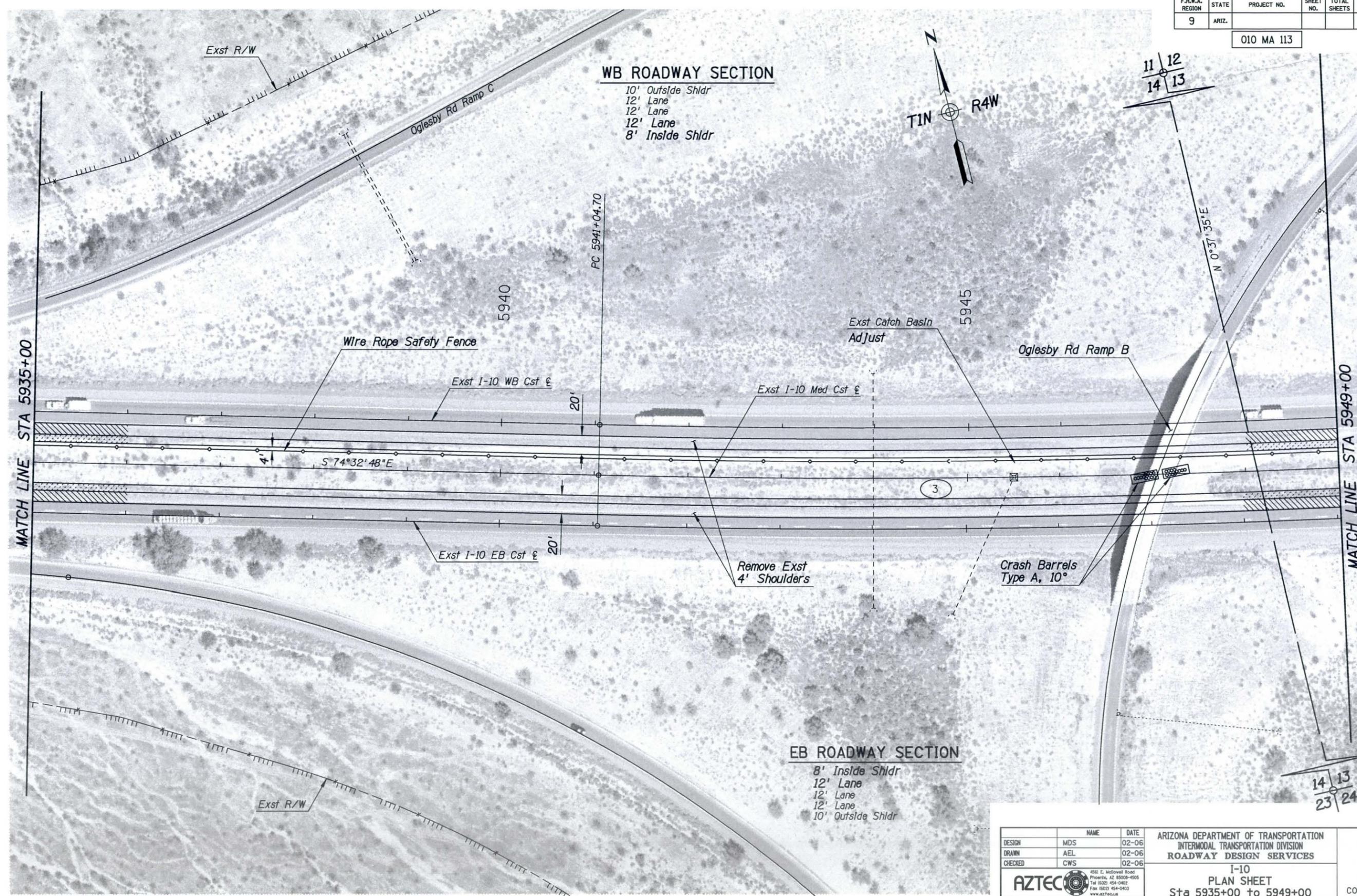
- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

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CHECKED	CWS	DATE	02-06		
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ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 01L				4 OF 45	

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

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WB ROADWAY SECTION
 10' Outside Shldr
 12' Lane
 12' Lane
 12' Lane
 8' Inside Shldr

EB ROADWAY SECTION
 8' Inside Shldr
 12' Lane
 12' Lane
 12' Lane
 10' Outside Shldr

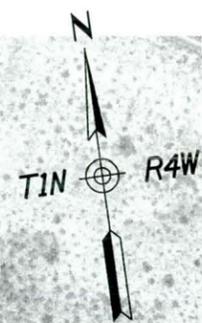
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I-10	SR 85 TO SR 303L		5 OF 45	
TRACS NO. H6877 OIL				

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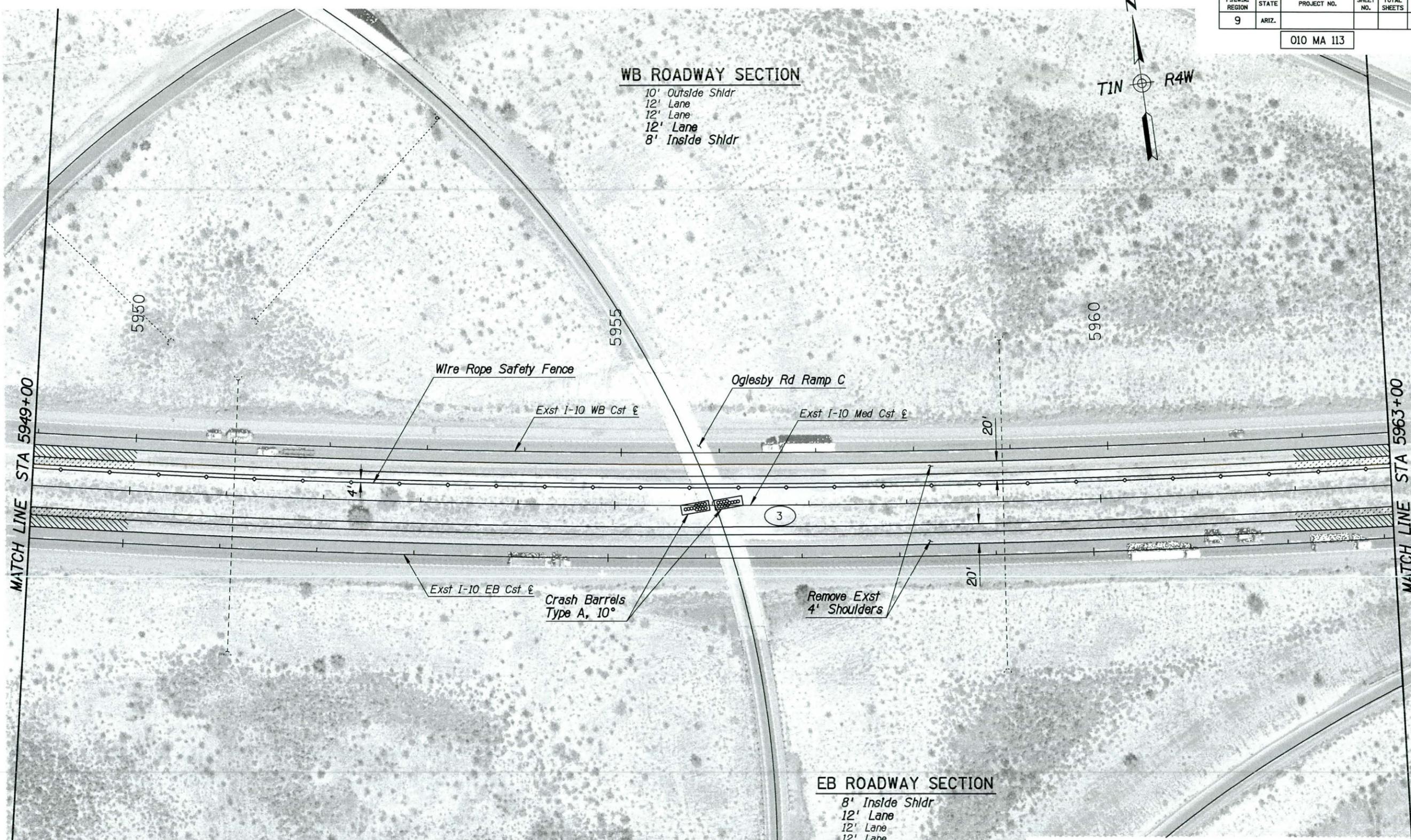
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

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WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr



EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
		4541 E. McDowell Road Phoenix, AZ 85006-4505 Tel: (602) 454-0402 Fax: (602) 454-0403 www.aztec.us		I-10 PLAN SHEET Sta 5949+00 to 5963+00	
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TRACS NO. H6877 01L				6 OF 45	

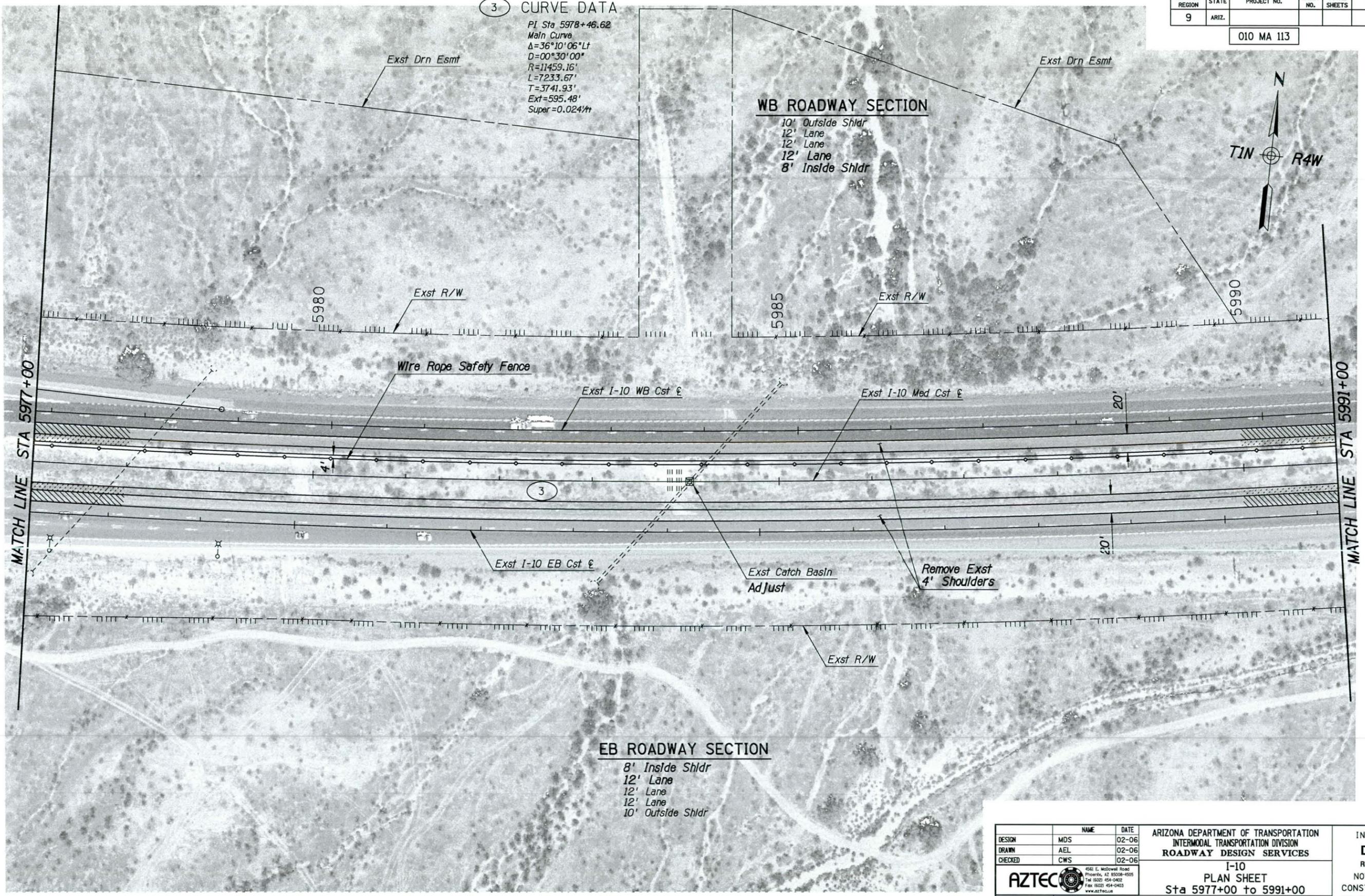
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F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	010 MA 113			

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 $D=00^{\circ}30'00''$
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 $L=7233.67'$
 $T=3741.93'$
 $Ext=595.48'$
 $Super=0.024/ft$

WB ROADWAY SECTION
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 12' Lane
 12' Lane
 12' Lane
 8' Inside Shldr

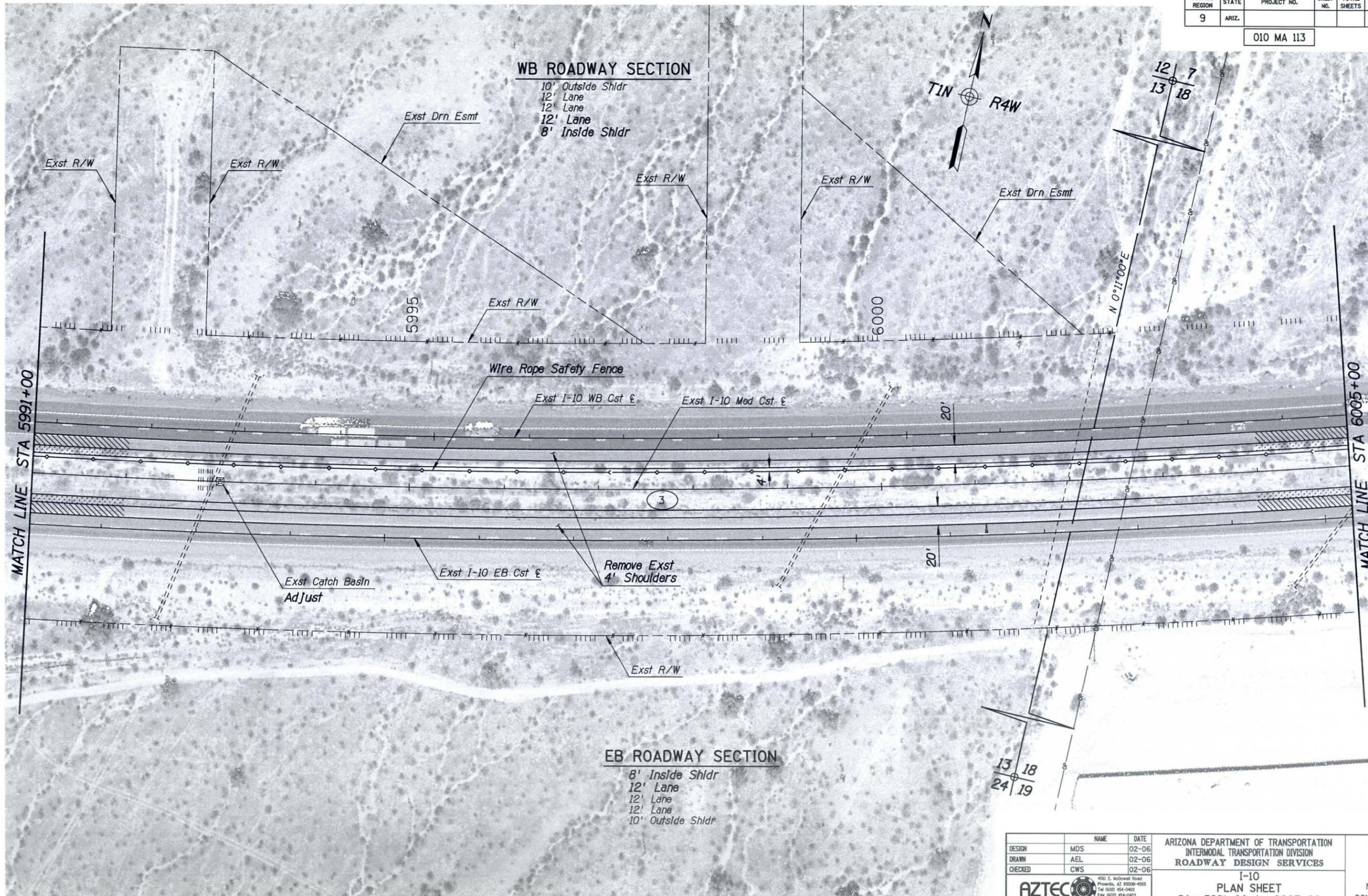
EB ROADWAY SECTION
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 12' Lane
 12' Lane
 12' Lane
 10' Outside Shldr



DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		4561 E. McDowell Road Phoenix, AZ 85008-4505 Tel: (602) 454-0402 Fax: (602) 454-0403 www.aztecinc.com		I-10 PLAN SHEET Sta 5977+00 to 5991+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 01L				8 OF 45	

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

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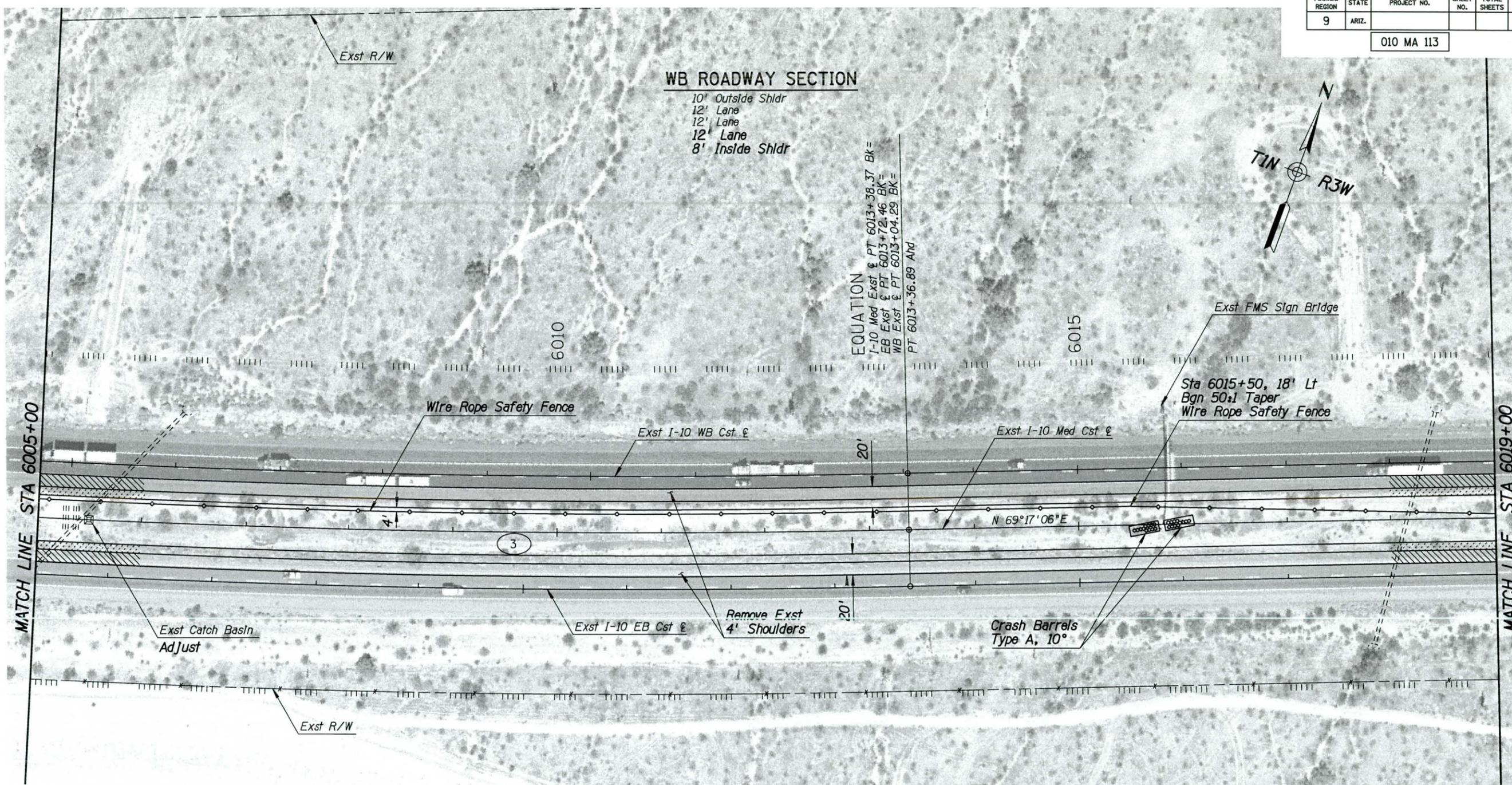


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DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		4501 E. McDowell Road Phoenix, AZ 85008-4002 Tel (602) 454-0402 Fax (602) 454-0403 www.aztecusa.com		I-10 PLAN SHEET Sta 5991+00 TO 6005+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 01L				9 OF 45	

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

010 MA 113



WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr

EQUATION
 I-10 Med Exst & PT 6013+38.37 BK =
 EB Exst & PT 6013+72.46 BK =
 WB Exst & PT 6013+04.29 BK =
 PT 6013+36.89 And

EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

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

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		4511 E. McDowell Road Phoenix, AZ 85008-6505 Tel: (602) 454-0462 Fax: (602) 454-0463 www.aztecusa.com		I-10 PLAN SHEET Sta 6005+00 to 6019+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 OIL				10 OF 45	

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

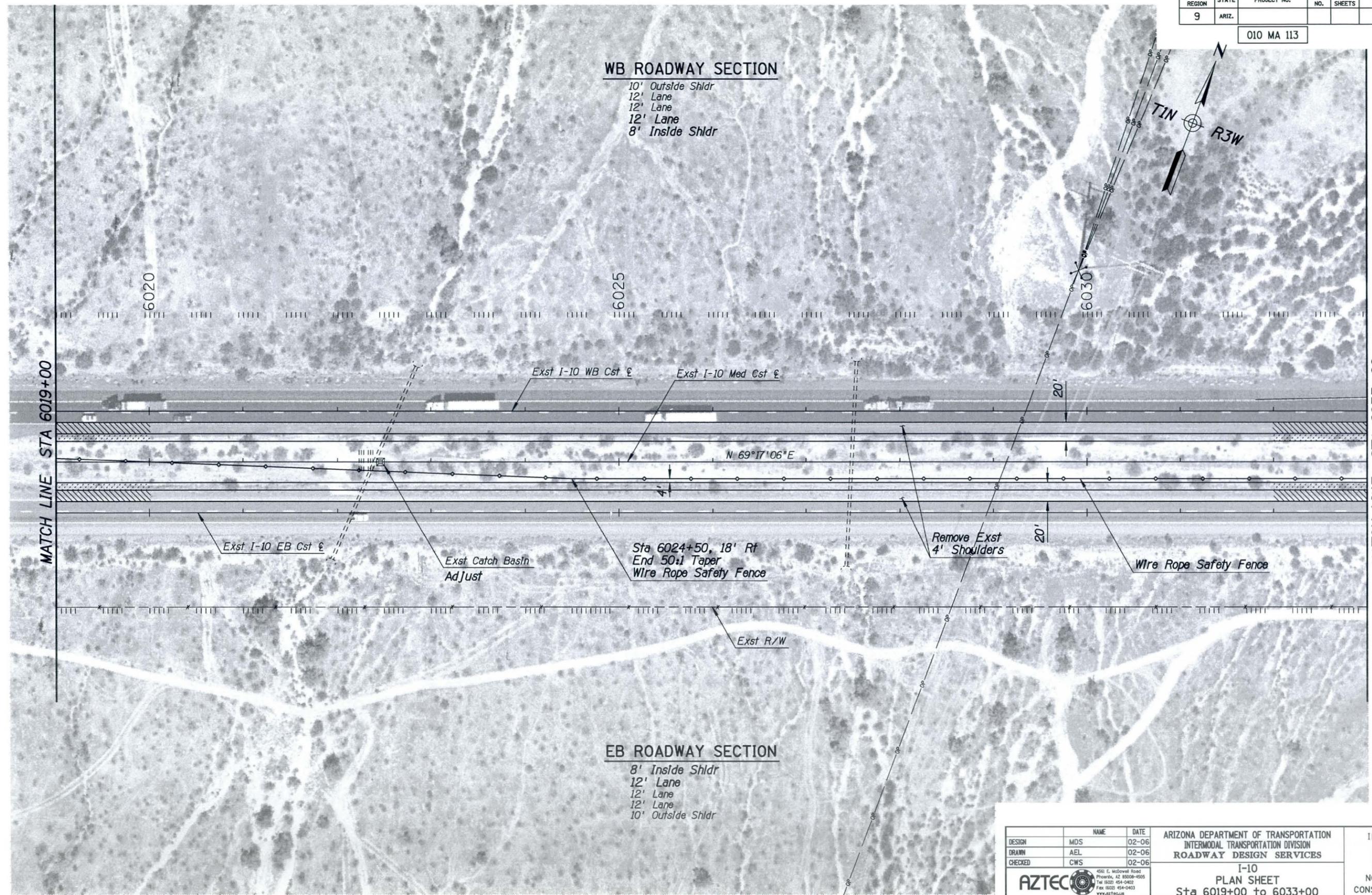
010 MA 113

WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr

EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

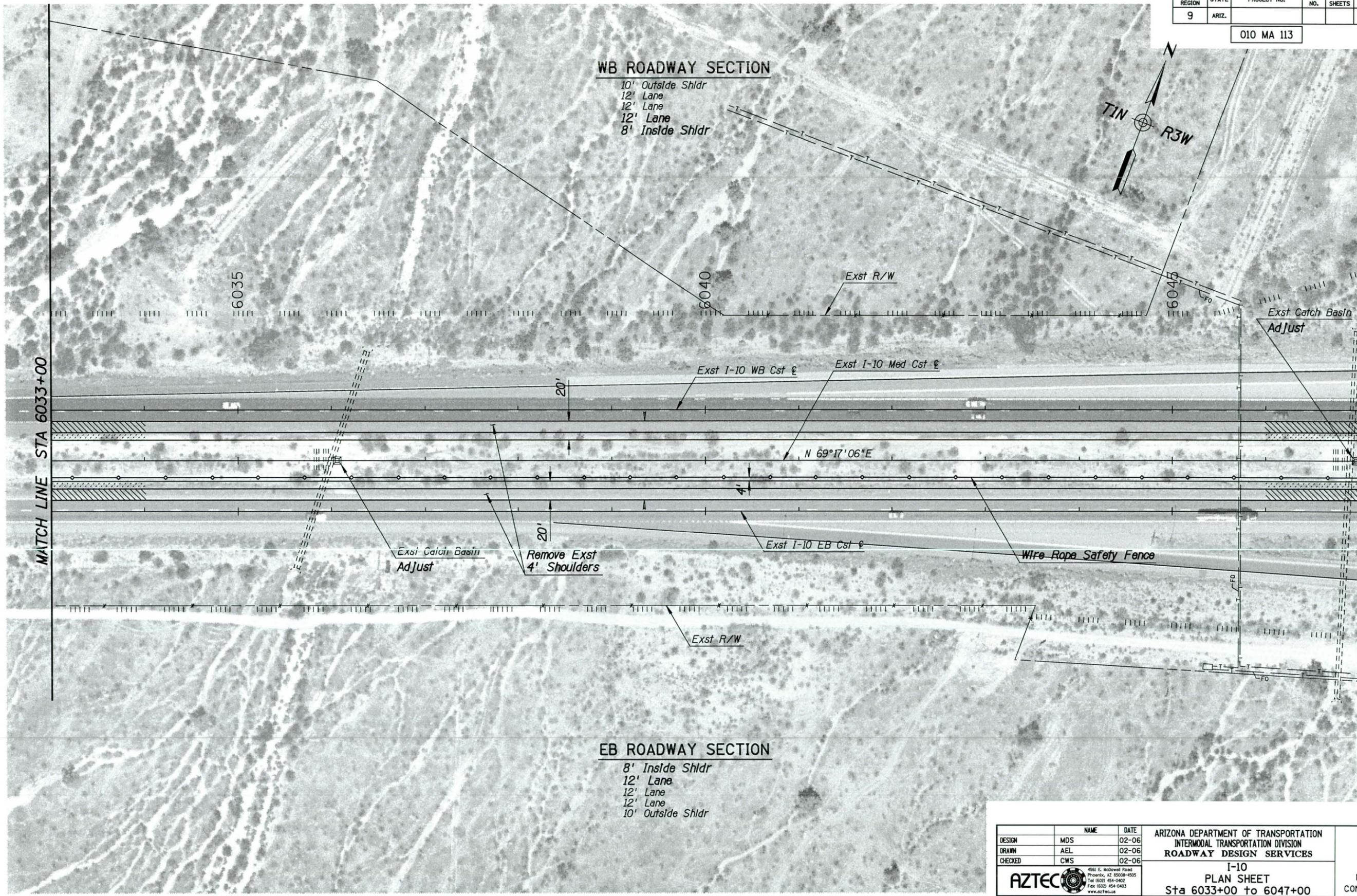


SURVEY NO. FINISHED PLANS DATE LOCATION REVISIONS FINISHED PLANS DATE LOCATION REVISIONS SURVEY NO.

DESIGN	MDS	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES I-10 PLAN SHEET Sta 6019+00 to 6033+00	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	02-06		
CHECKED	CWS	02-06		
AZTEC		450 E. McDowell Road Phoenix, AZ 85008-4505 Tel (602) 454-0402 Fax (602) 454-0403 www.aztecus.com	ROUTE I-10 LOCATION SR 85 TO SR 303L	DWG NO.
TRACS NO. H6877 01L				11 OF 45

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

010 MA 113



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

WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr

EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		4561 E. McDowell Road Phoenix, AZ 85008-6505 Tel: (602) 454-0402 Fax: (602) 454-0403 www.aztec.us		I-10 PLAN SHEET Sta 6033+00 to 6047+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L			DWG NO.	12 OF 45
TRACS NO. H6877 OIL					

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

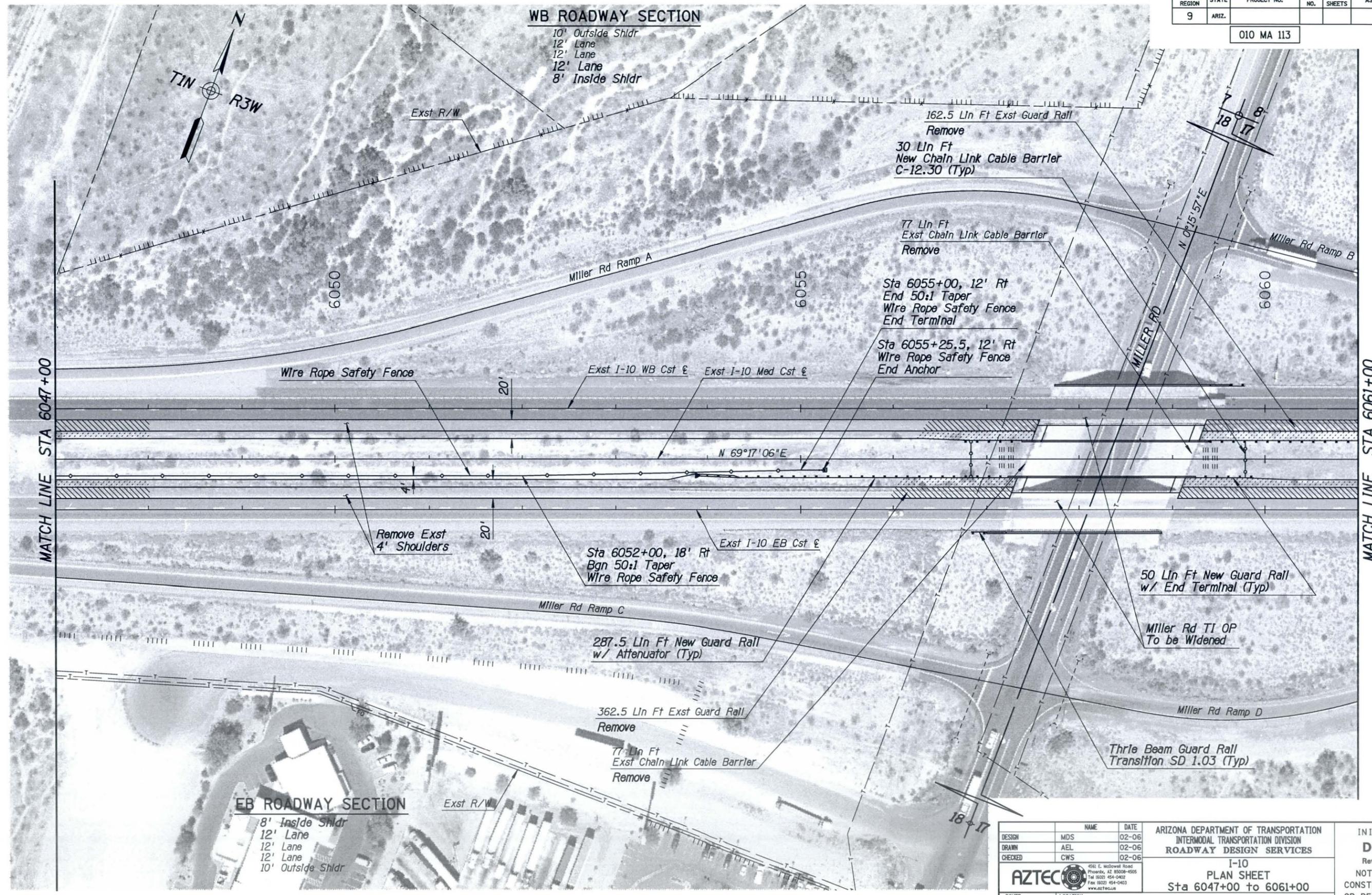
010 MA 113

WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr

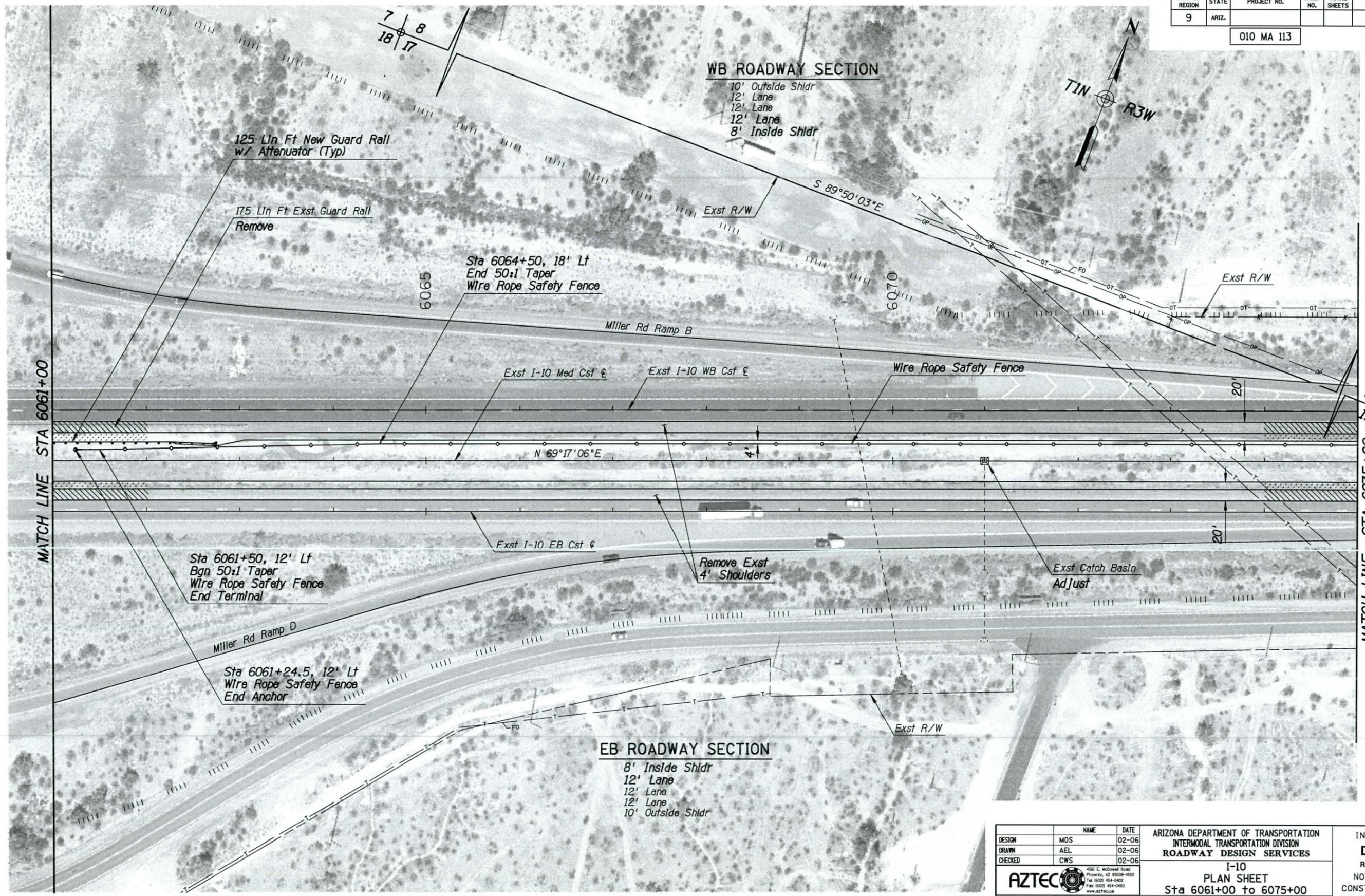
EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr



DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		4561 E. McDowell Road Phoenix, AZ 85008-4505 Tel: (602) 454-0402 Fax: (602) 454-0403 www.aztecus.com		I-10 PLAN SHEET Sta 6047+00 to 6061+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 OIL				13 OF 45	

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				
010 MA 113					



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

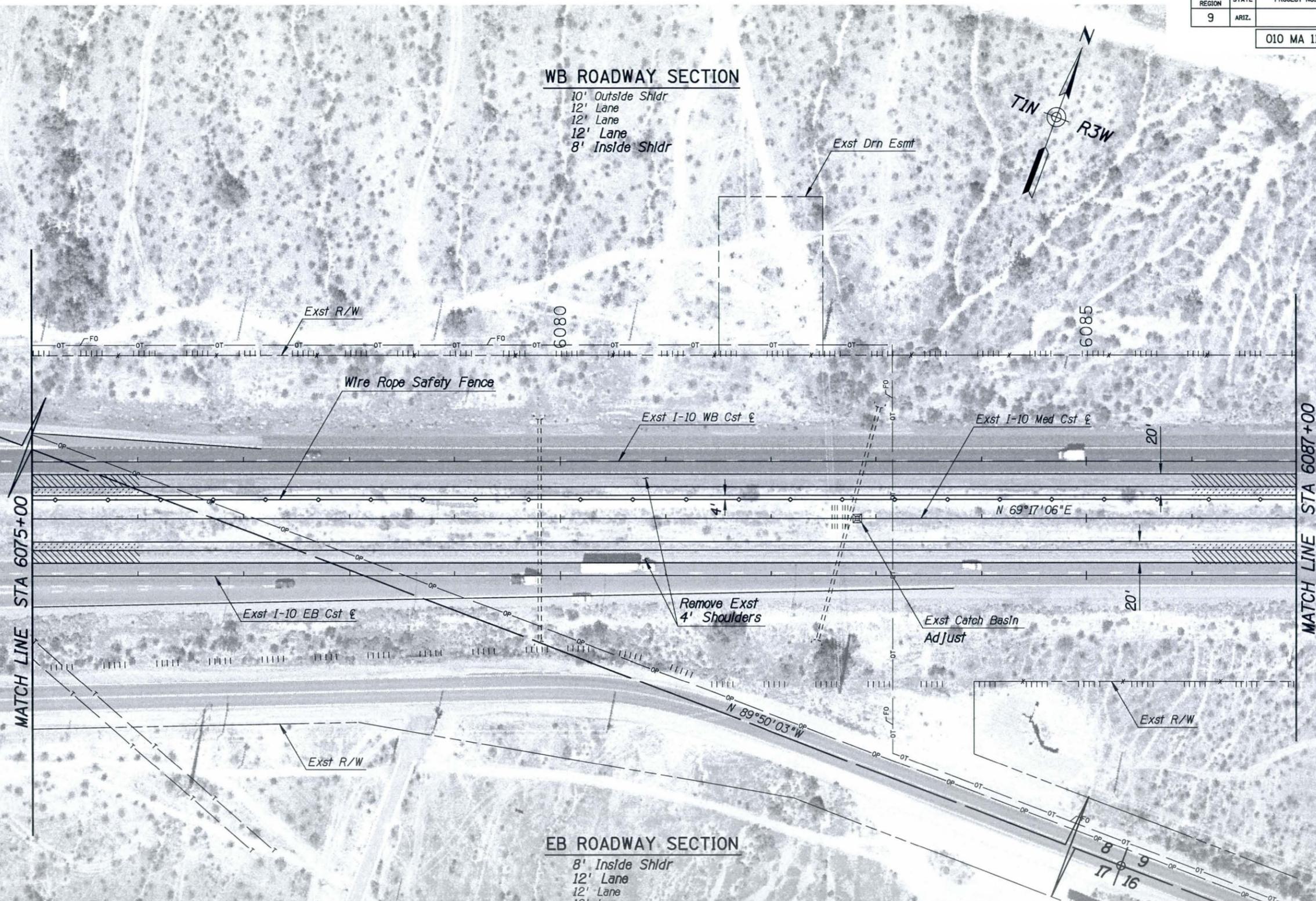
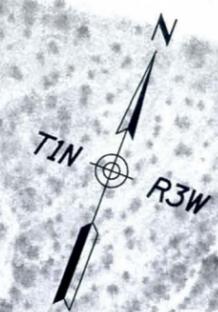
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DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		4561 E. McDowell Road Phoenix, AZ 85008-4505 Tel: (602) 454-0402 Fax: (602) 454-0403 www.aztecus.com		I-10 PLAN SHEET Sta 6061+00 to 6075+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 01L				14 OF 45	

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

010 MA 113

WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr



EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		4561 E. McDowell Road Phoenix, AZ 85008-4505 Tel: (602) 454-0402 Fax: (602) 454-0403 www.aztecus.com		I-10 PLAN SHEET Sta 6075+00 to 6087+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 01L				15 OF 45	

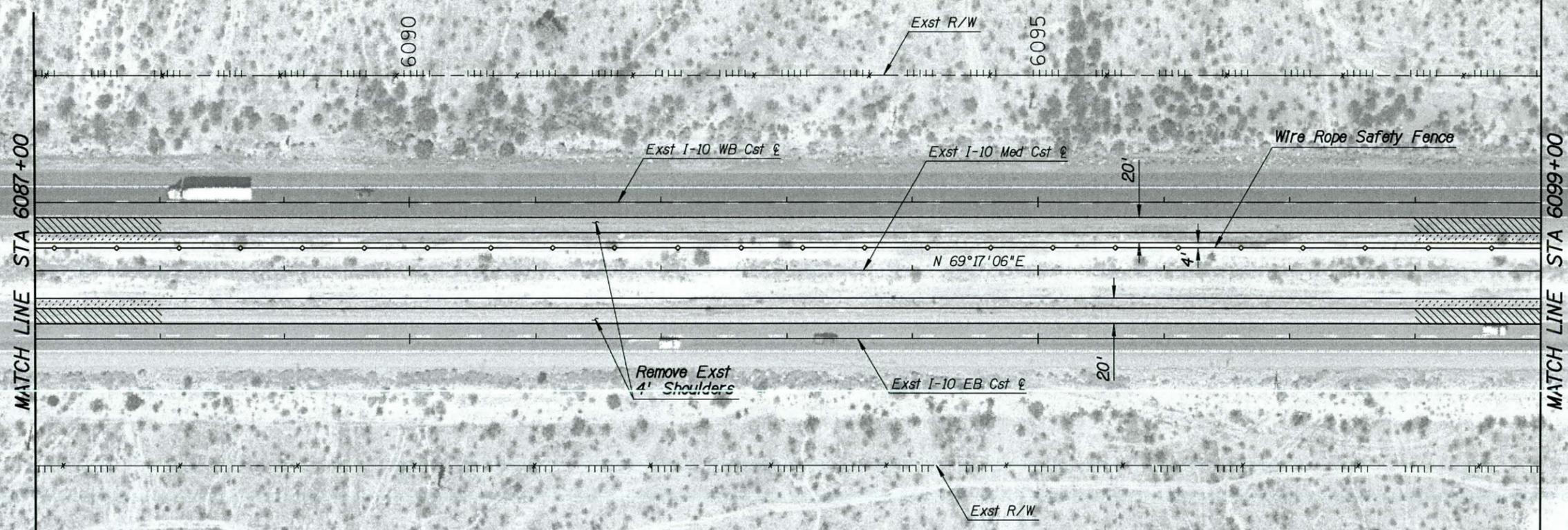
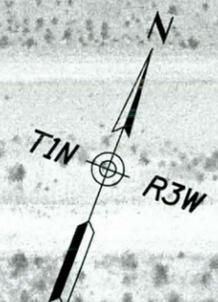
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F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

010 MA 113

WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr



EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

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

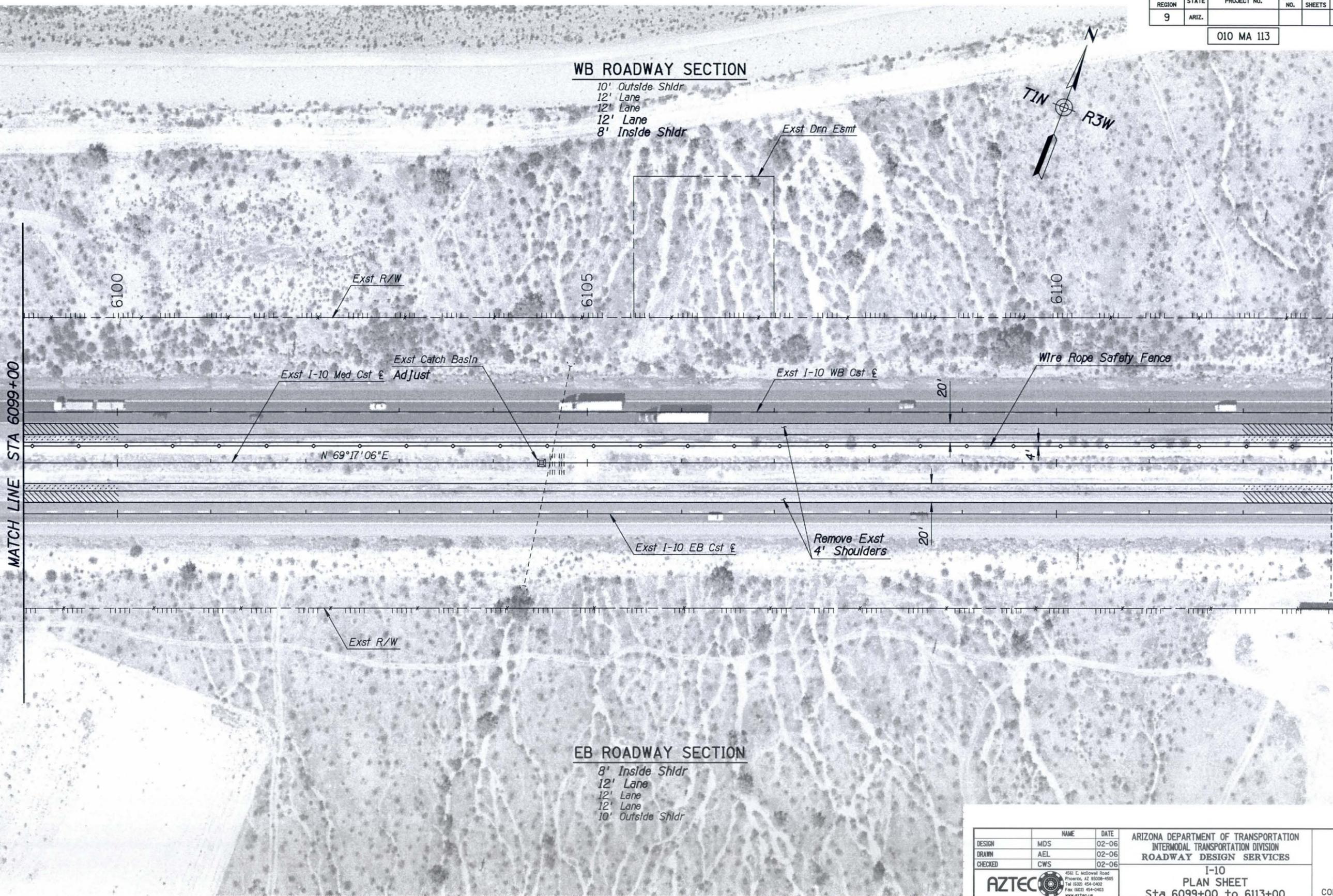
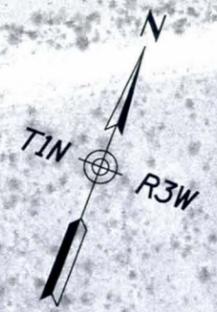
DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
		4561 E. McDowell Road Phoenix, AZ 85008-6505 Tel: (602) 454-0402 Fax: (602) 454-0403 www.aztec.com		I-10 PLAN SHEET Sta 6087+00 to 6099+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 01L				16 OF 45	

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

010 MA 113

WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr



EB ROADWAY SECTION

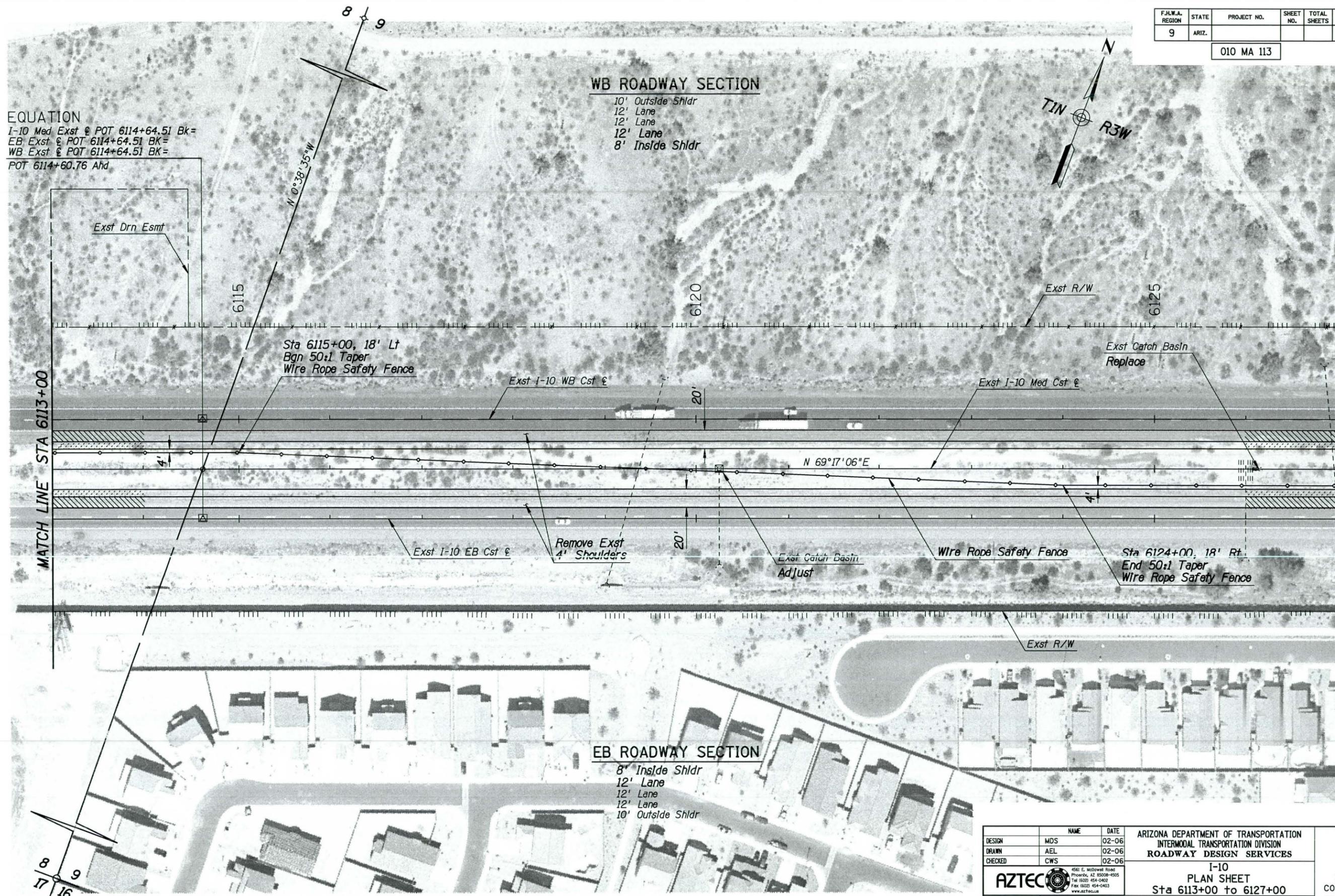
- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		450 E. McDowell Road Phoenix, AZ 85006-4905 Tel (602) 454-0402 Fax (602) 454-0403 www.aztecusa.com		I-10 PLAN SHEET Sta 6099+00 to 6113+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L			DWG NO.
TRACS NO. H6877 01L				II OF 45	

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

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

010 MA 113



EQUATION
 I-10 Med Exst @ POT 6114+64.51 Bk=
 EB Exst @ POT 6114+64.51 BK=
 WB Exst @ POT 6114+64.51 BK=
 POT 6114+60.76 Ahd

WB ROADWAY SECTION
 10' Outside Shldr
 12' Lane
 12' Lane
 12' Lane
 8' Inside Shldr

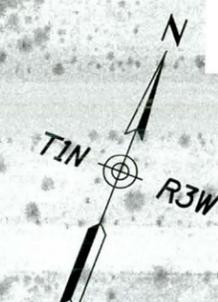
EB ROADWAY SECTION
 8' Inside Shldr
 12' Lane
 12' Lane
 12' Lane
 10' Outside Shldr

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		4561 E. McDowell Road Phoenix, AZ 85006-6905 Tel (602) 454-0402 Fax (602) 454-0403 www.aztecus.com		I-10 PLAN SHEET Sta 6113+00 to 6127+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 OIL				18 OF 45	

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

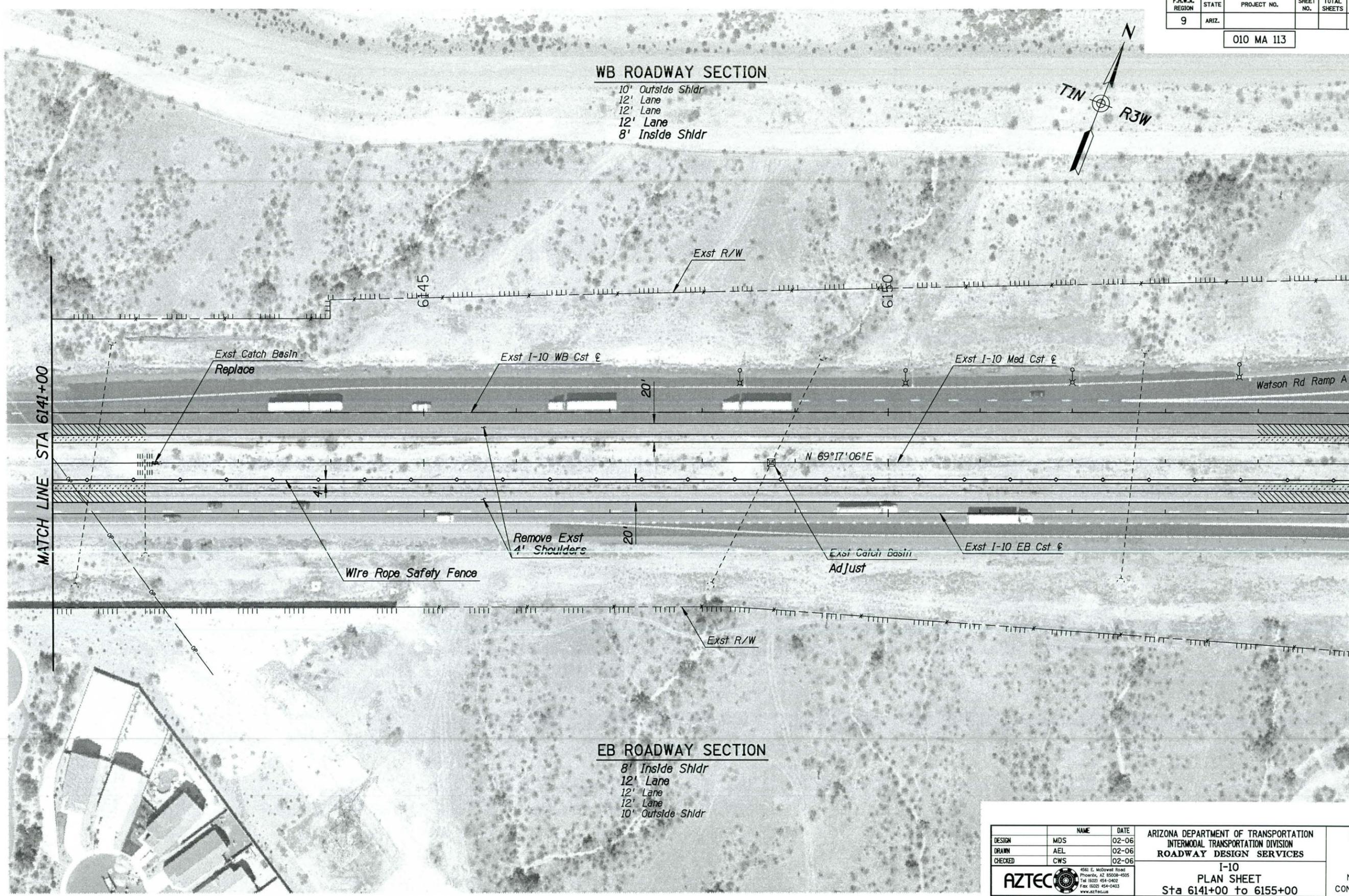
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

010 MA 113



WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr



EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

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

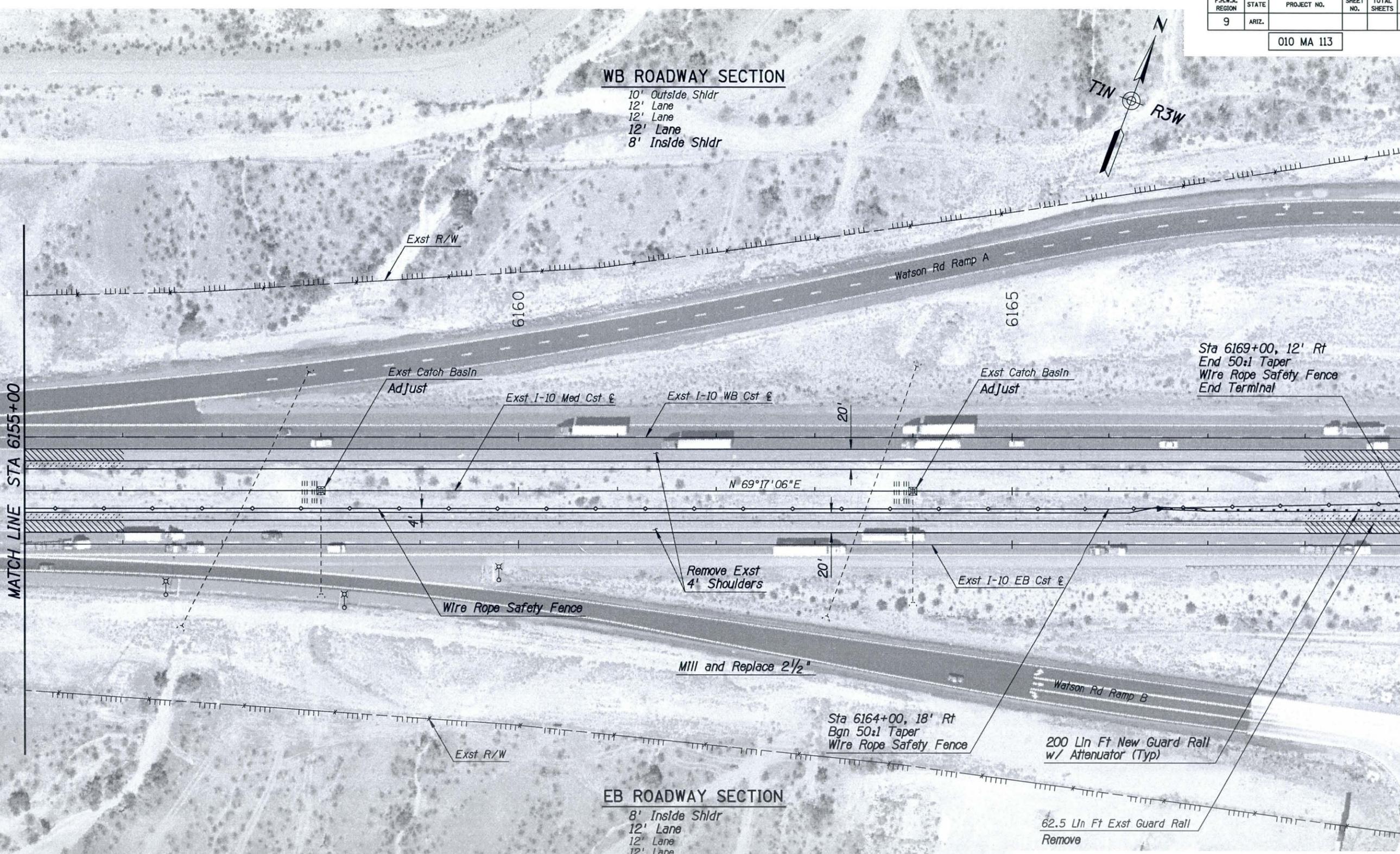
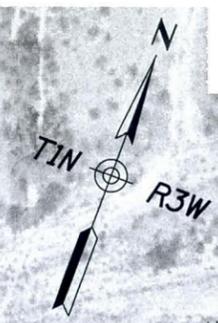
DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		4561 E. McDowell Road Phoenix, AZ 85008-6505 Tel: (602) 454-0402 Fax: (602) 454-0403 www.aztec.us		I-10 PLAN SHEET Sta 6141+00 to 6155+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO. 20 OF 45	
TRACS NO. H6877 OIL					

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

010 MA 113

WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr



EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

MATCH LINE STA 6155+00

MATCH LINE STA 6169+00

DESIGN	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MDS	02-06		
CHECKED	AEL	02-06		
	CWS	02-06		
			I-10 PLAN SHEET Sta 6155+00 to 6169+00	
ROUTE	LOCATION			
I-10	SR 85 TO SR 303L		DWG NO.	
TRACS NO. H6877 OIL			21 OF 45	

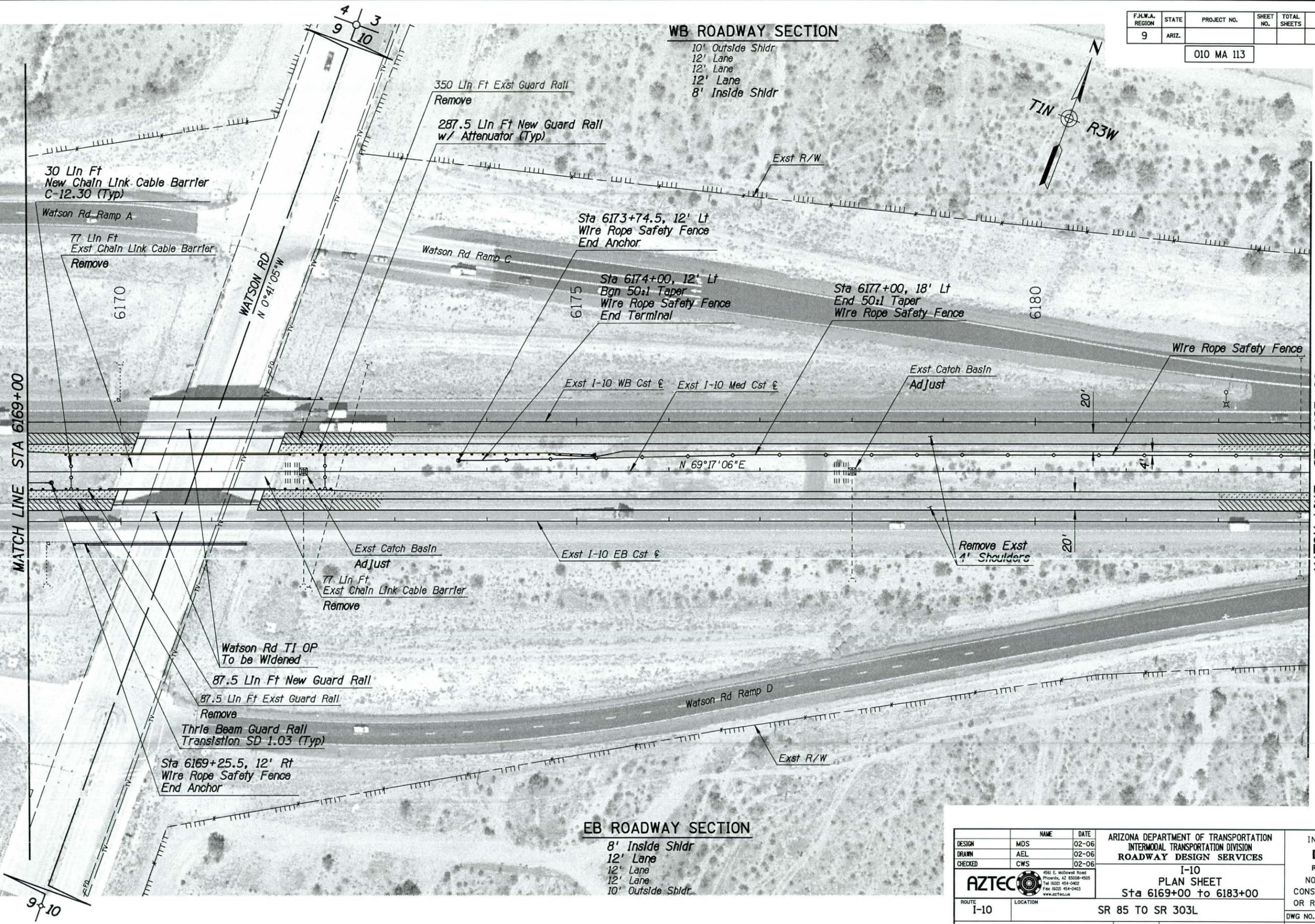
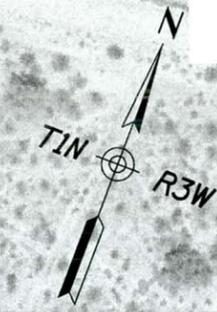
SURVEY NO. FINISHED PLANS- REVISIONS- DATE- LOCATION- FINISHED PLANS- REVISIONS- DATE- LOCATION- FINISHED PLANS- REVISIONS- DATE-

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

010 MA 113

WB ROADWAY SECTION

10' Outside Shldr
12' Lane
12' Lane
12' Lane
8' Inside Shldr



EB ROADWAY SECTION

8' Inside Shldr
12' Lane
12' Lane
12' Lane
10' Outside Shldr

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		4561 E. McDowell Road Phoenix, AZ 85008-1505 Tel: (602) 454-0402 Fax: (602) 454-0403 www.aztecus.com		I-10 PLAN SHEET Sta 6169+00 to 6183+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO. 22 OF 45	
TRACS NO. H6877 01L					

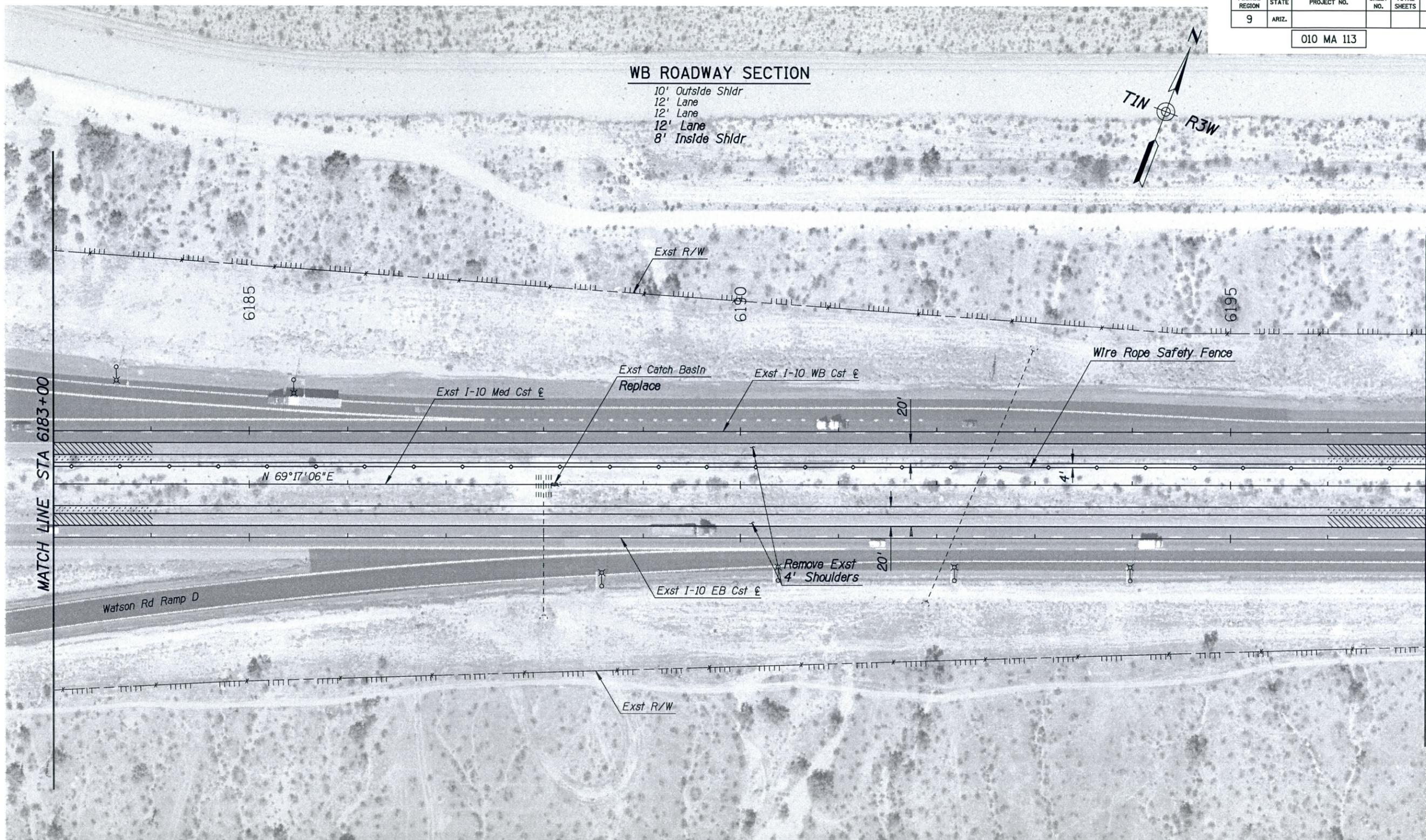
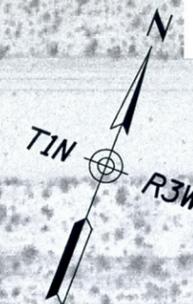
SURVEY NO. LOCATION DATE FINISHED PLANS REVISIONS LOCATION DATE FINISHED PLANS REVISIONS LOCATION DATE SURVEY NO.

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

010 MA 113

WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr



MATCH LINE STA 6183+00

MATCH LINE STA 6197+00

EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		4501 E. McDowell Road Phoenix, AZ 85008-4505 Tel (602) 454-0402 Fax (602) 454-0403 www.azteccorp.com		I-10 PLAN SHEET Sta 6183+00 to 6197+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 01L				23 OF 45	

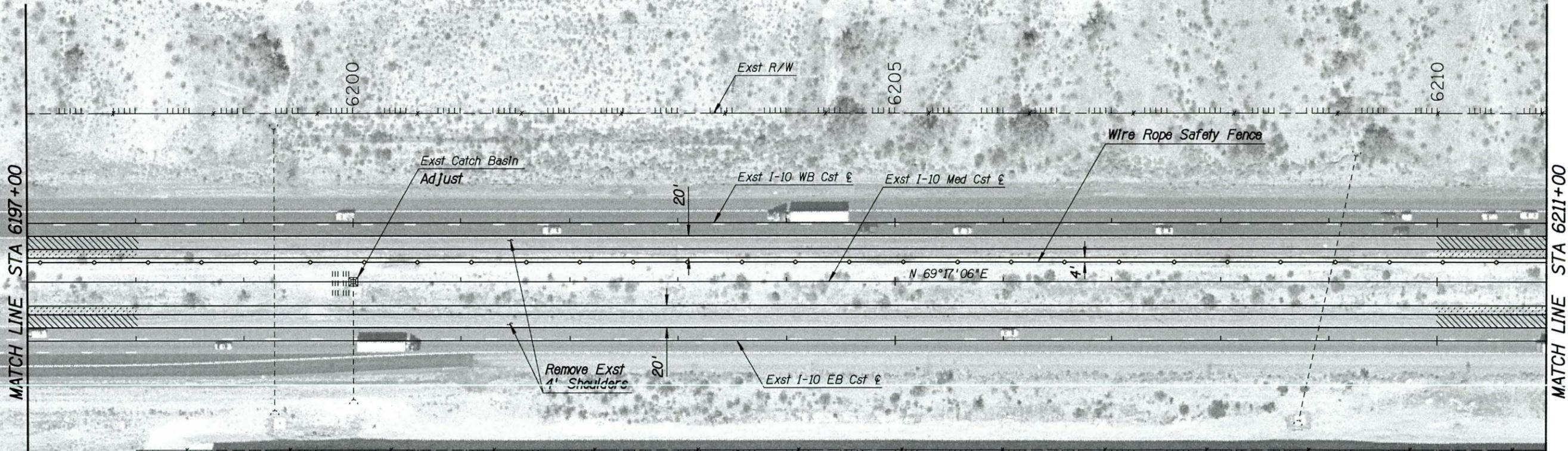
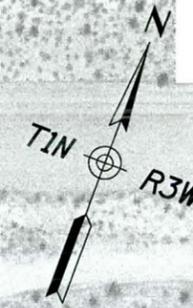
SURVEY NO. FINISHED PLANS REVISIONS DATE LOCATION FINISHED PLANS SURVEY NO. DATE REVISIONS LOCATION DATE

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

010 MA 113

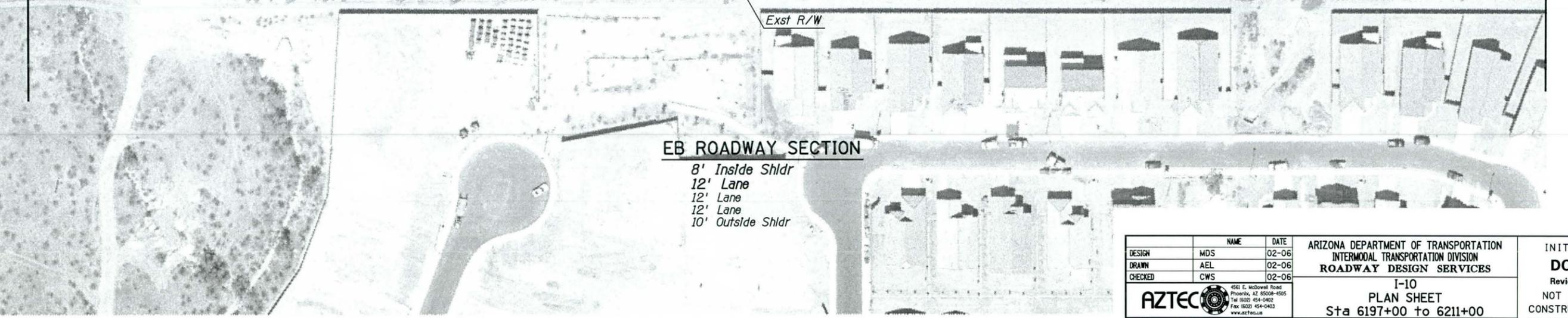
WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr



EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

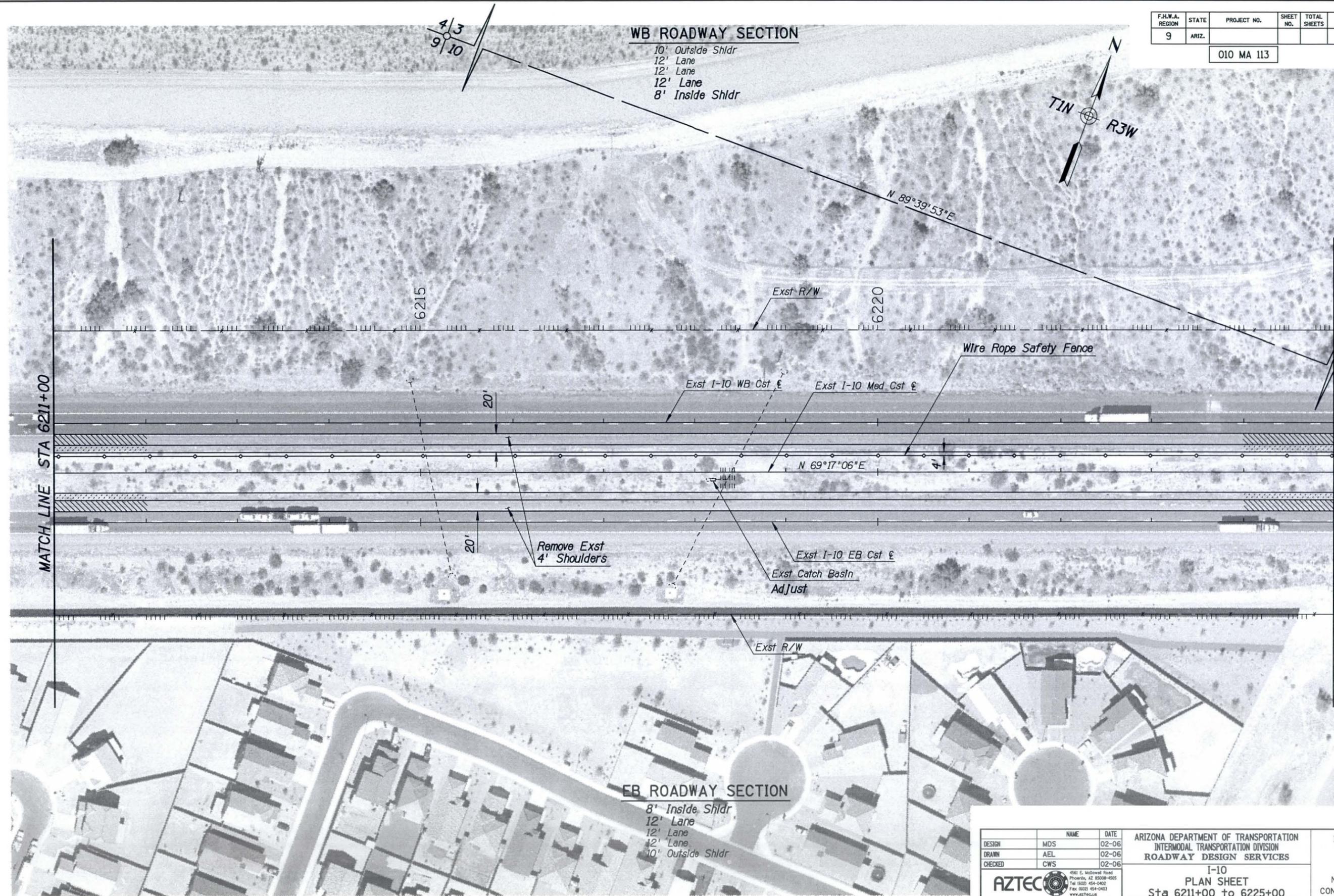


DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		4561 E. McDowell Road Phoenix, AZ 85008-6505 Tel: (602) 454-0402 Fax: (602) 454-0403 www.aztec.com		I-10 PLAN SHEET Sta 6197+00 to 6211+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO. 24 OF 45	
TRACS NO. H6877 OIL					

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

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

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				
010 MA 113					



EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES I-10 PLAN SHEET Sta 6211+00 to 6225+00	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 01L				25 OF 45	

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

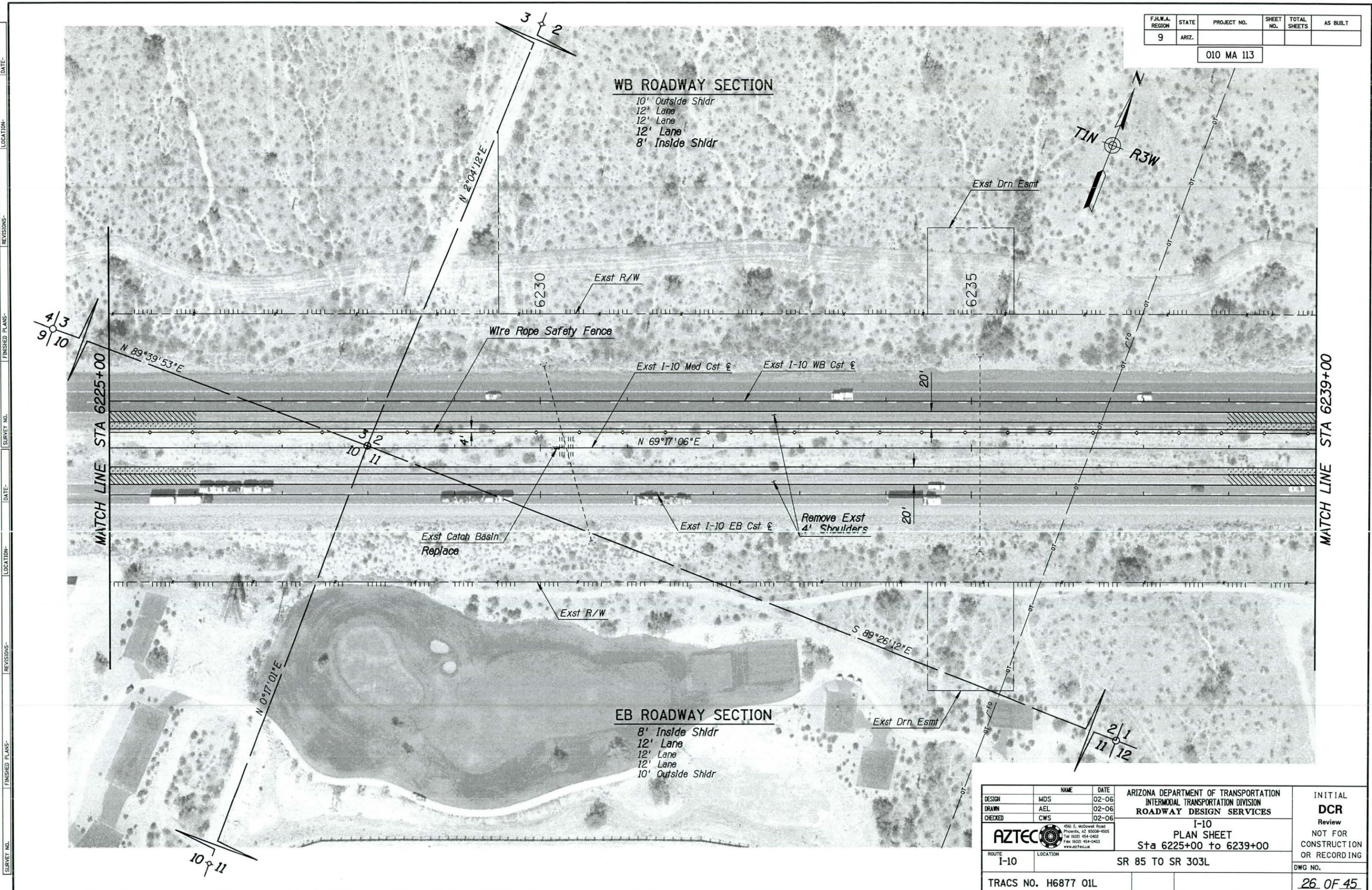
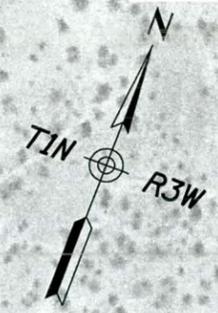
010 MA 113

WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr

EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr



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

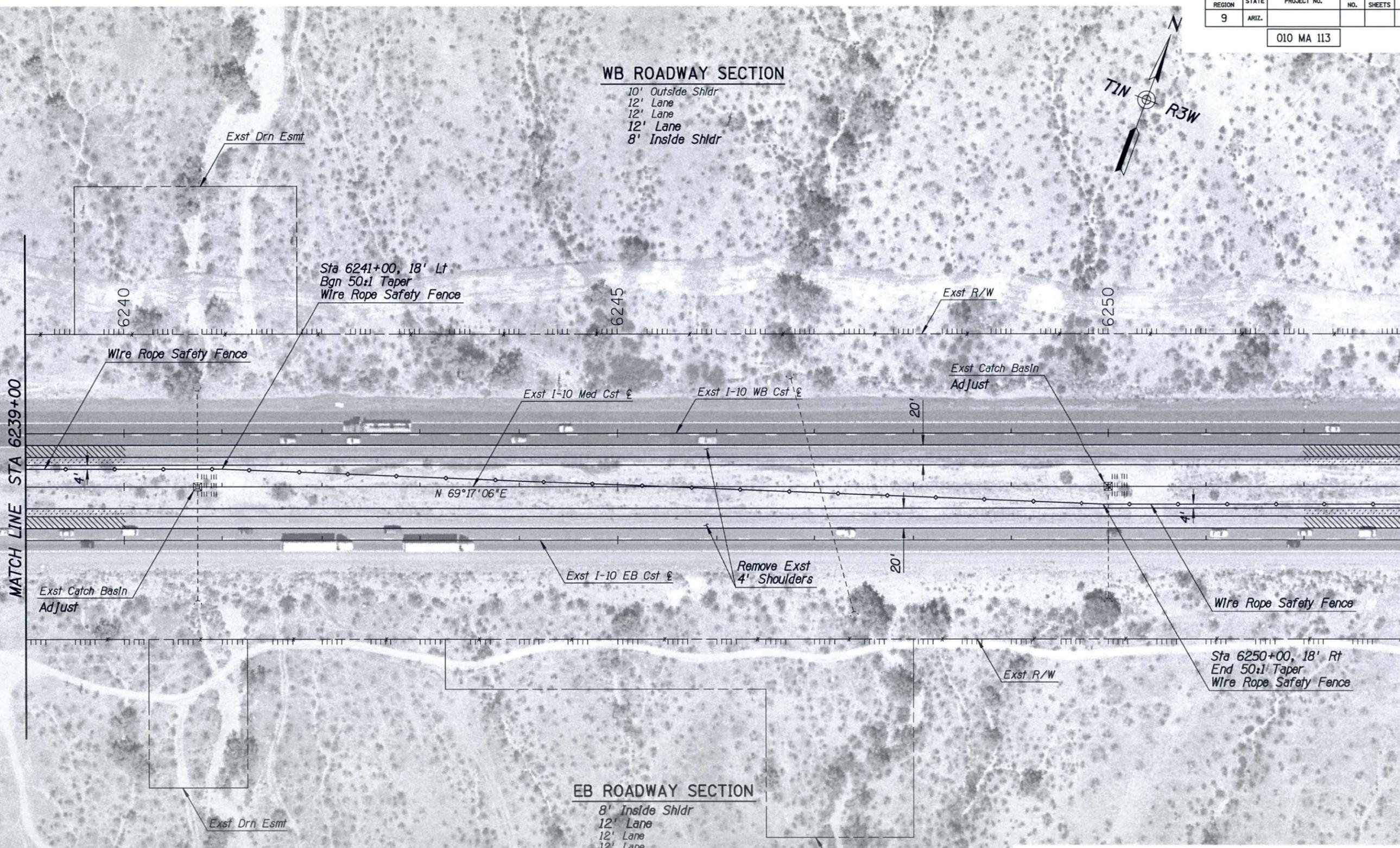
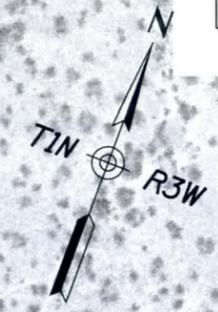
DESIGN	MDS	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES I-10 PLAN SHEET Sta 6225+00 to 6239+00	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL				
CHECKED	CWS				
ROUTE		LOCATION		DWG NO.	
I-10		SR 85 TO SR 303L		26 OF 45	
TRACS NO. H6877 01L					

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

010 MA 113

WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr



EB ROADWAY SECTION

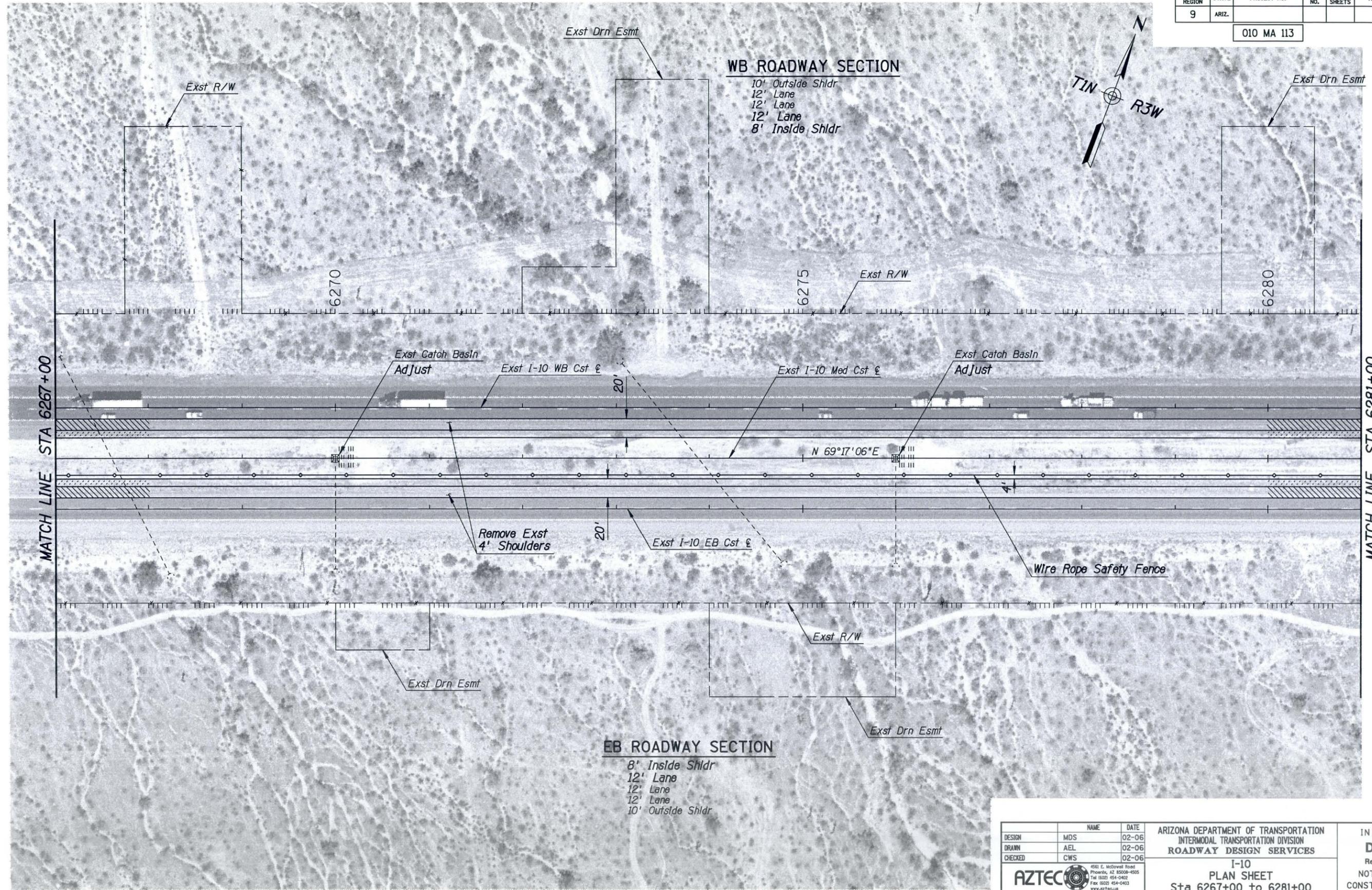
- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		450 E. McDowell Road Phoenix, AZ 85008-4505 Tel (602) 454-0402 Fax (602) 454-0403 www.aztecusa.com		I-10 PLAN SHEET Sta 6239+00 to 6253+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 OIL				27 OF 45	

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

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

010 MA 113



MATCH LINE STA 6267+00

MATCH LINE STA 6281+00

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

WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr

EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	I-10 PLAN SHEET Sta 6267+00 to 6281+00	
TRACS NO. H6877 OIL				DWG NO. 29 OF 45	

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

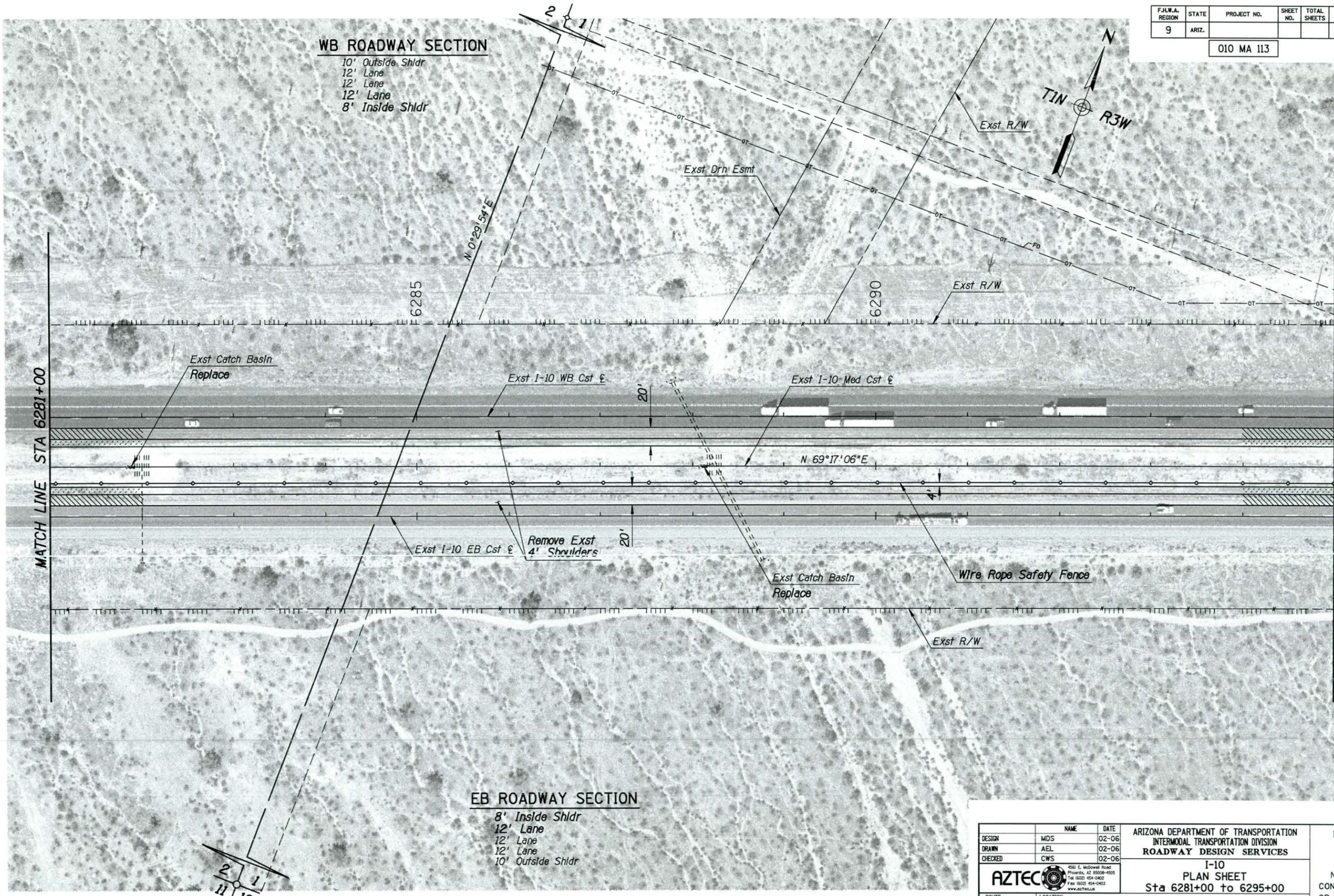
010 MA 113

WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr

EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr



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

DESIGN	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
MDS		02-06		
AEL		02-06		
CWS		02-06		
AZTEC			4561 E. McDowell Road Phoenix, AZ 85008-4505 Tel: (602) 454-0402 Fax: (602) 454-0403 www.aztecus.com	
ROUTE	LOCATION	SR 85 TO SR 303L		DWG NO.
I-10				
TRACS NO. H6877 01L				30 OF 45

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

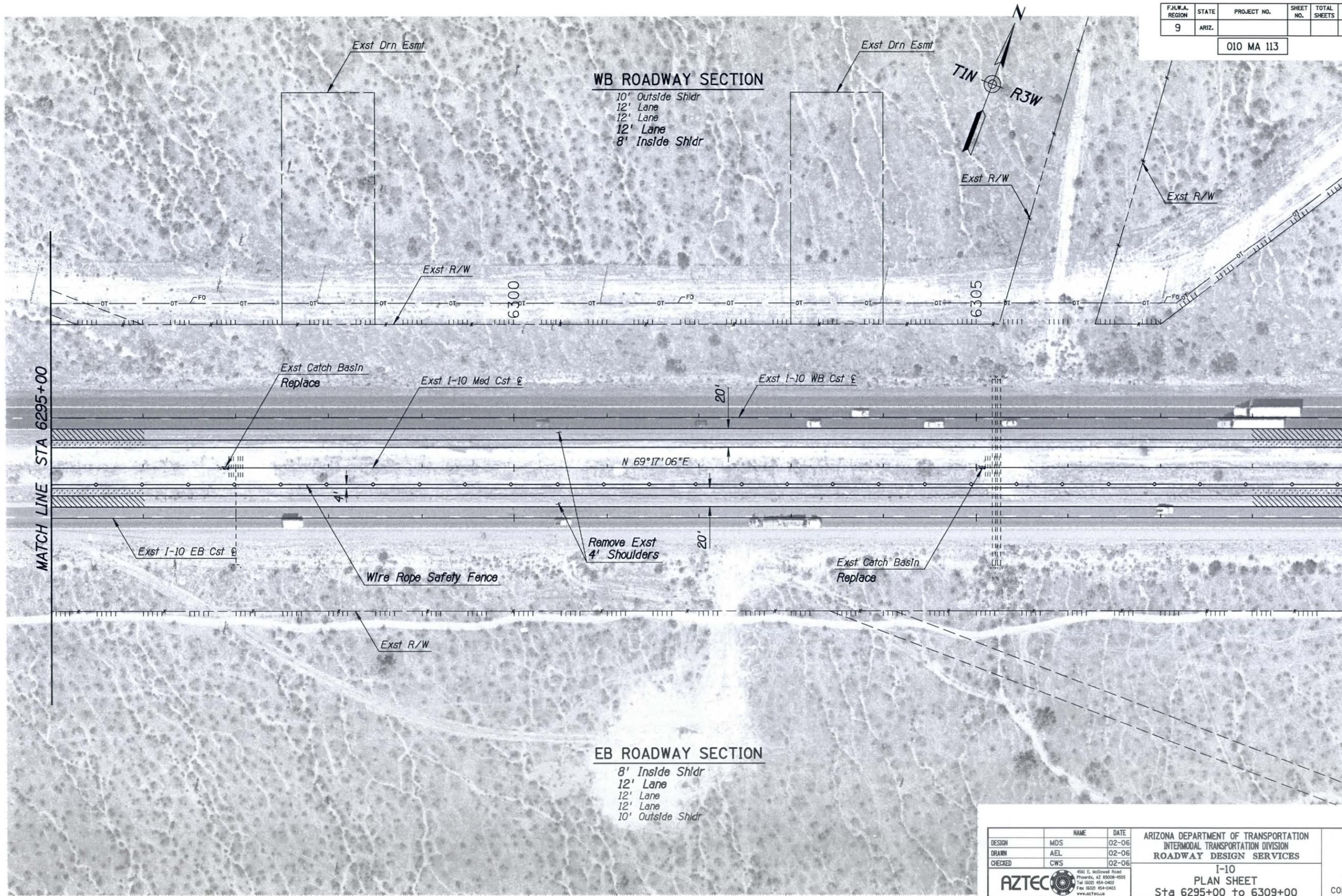
010 MA 113

WB ROADWAY SECTION

10' Outside Shldr
12' Lane
12' Lane
12' Lane
8' Inside Shldr

EB ROADWAY SECTION

8' Inside Shldr
12' Lane
12' Lane
12' Lane
10' Outside Shldr



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

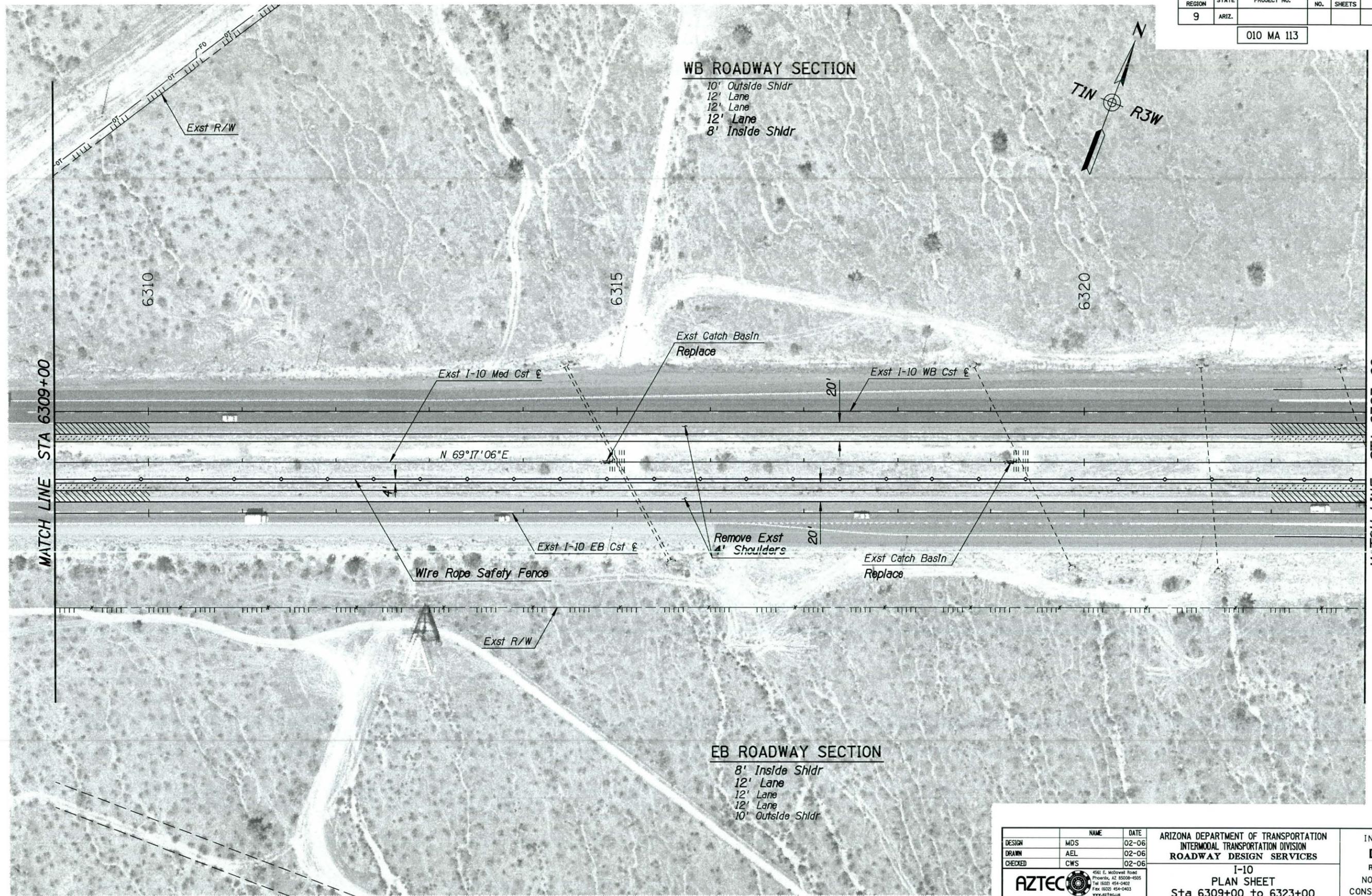
MATCH LINE STA 6295+00

MATCH LINE STA 6309+00

DESIGN	MDS	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	02-06		
CHECKED	CWS	02-06		
			I-10 PLAN SHEET Sta 6295+00 to 6309+00	DWG NO.
ROUTE	I-10	LOCATION			SR 85 TO SR 303L
TRACS NO. H6877 OIL				31 OF 45

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

010 MA 113



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

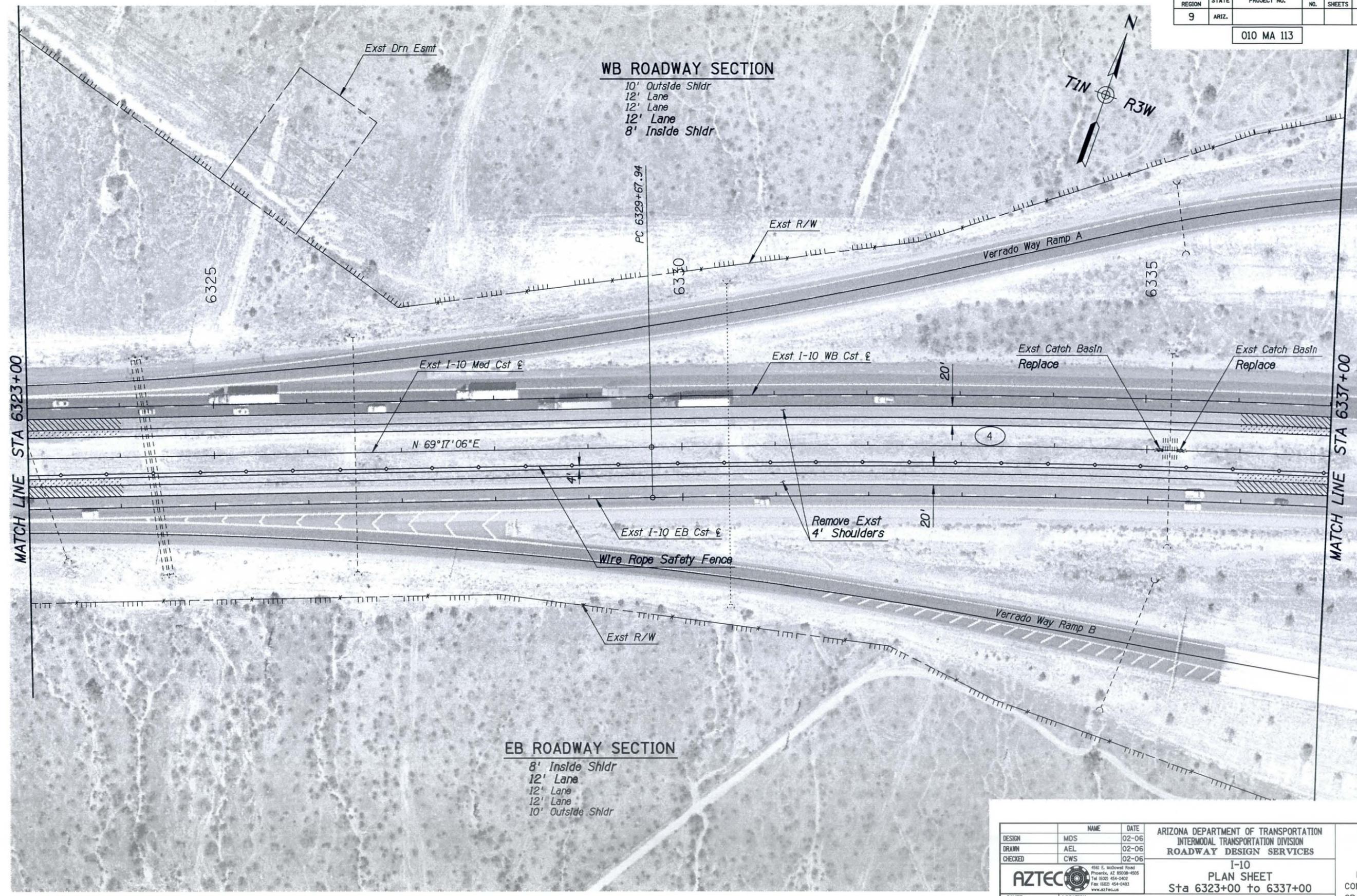
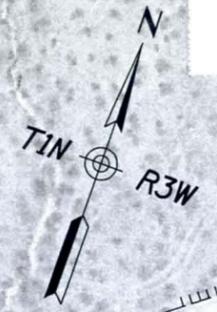
DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC				I-10 PLAN SHEET Sta 6309+00 to 6323+00	DWG NO. 32 OF 45
ROUTE	I-10	LOCATION	SR 85 TO SR 303L		
TRACS NO. H6877 OIL					

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

010 MA 113

WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr



EB ROADWAY SECTION

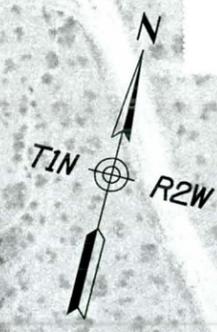
- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		450 E. McDowell Road Phoenix, AZ 85008-4505 Tel (602) 454-0402 Fax (602) 454-0403 www.aztecus.com		I-10 PLAN SHEET Sta 6323+00 to 6337+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 01L				33 OF 45	

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

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

010 MA 113

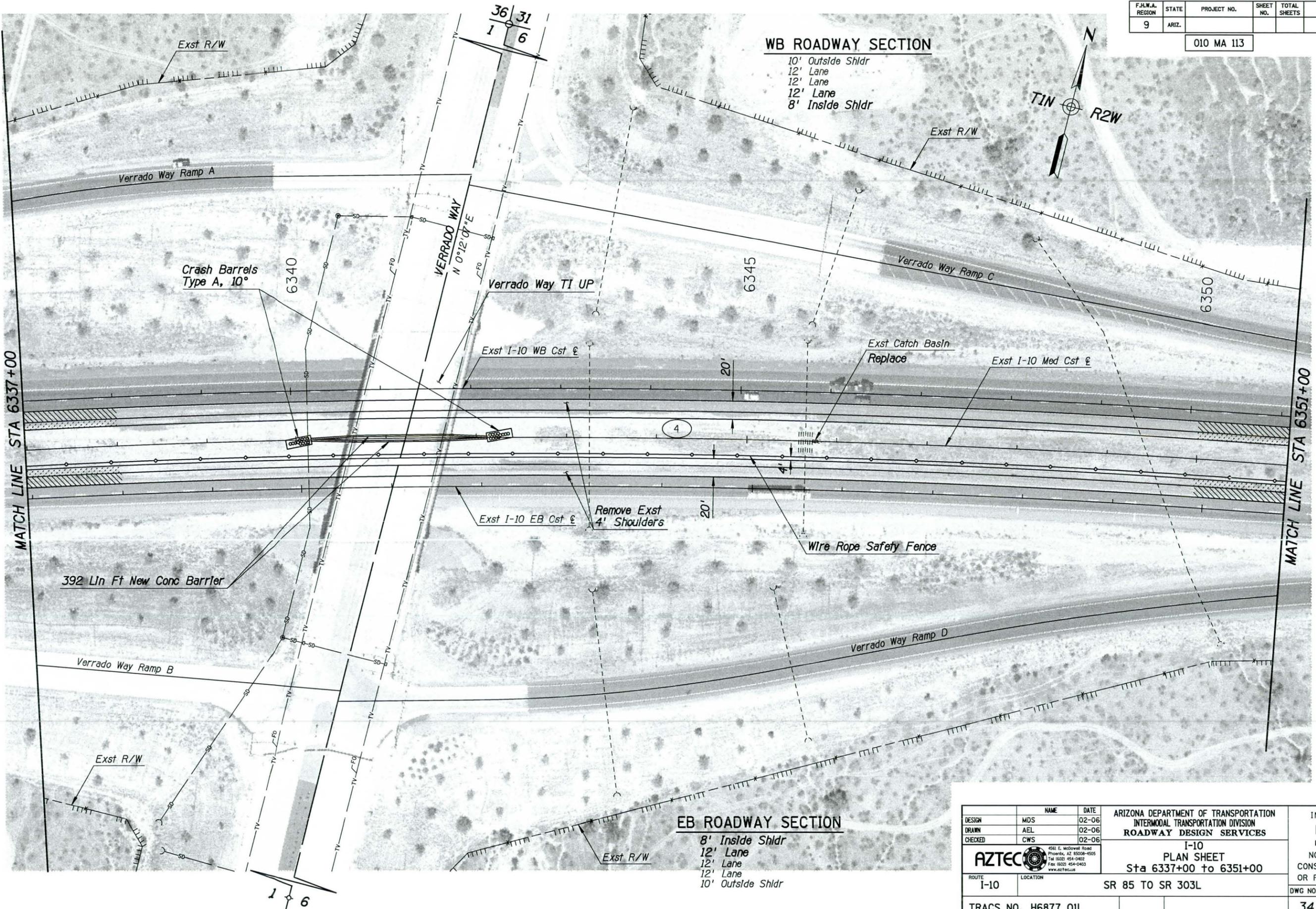


WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr

EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

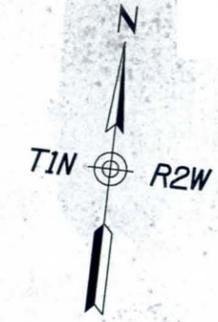


DATE: _____ LOCATION: _____ REVISIONS: _____ FINISHED PLANS: _____ SURVEY NO. _____ DATE: _____ LOCATION: _____ REVISIONS: _____ FINISHED PLANS: _____ SURVEY NO. _____

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES I-10 PLAN SHEET Sta 6337+00 to 6351+00	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
ROUTE I-10 LOCATION SR 85 TO SR 303L		TRACS NO. H6877 OIL		DWG NO. 34 OF 45	

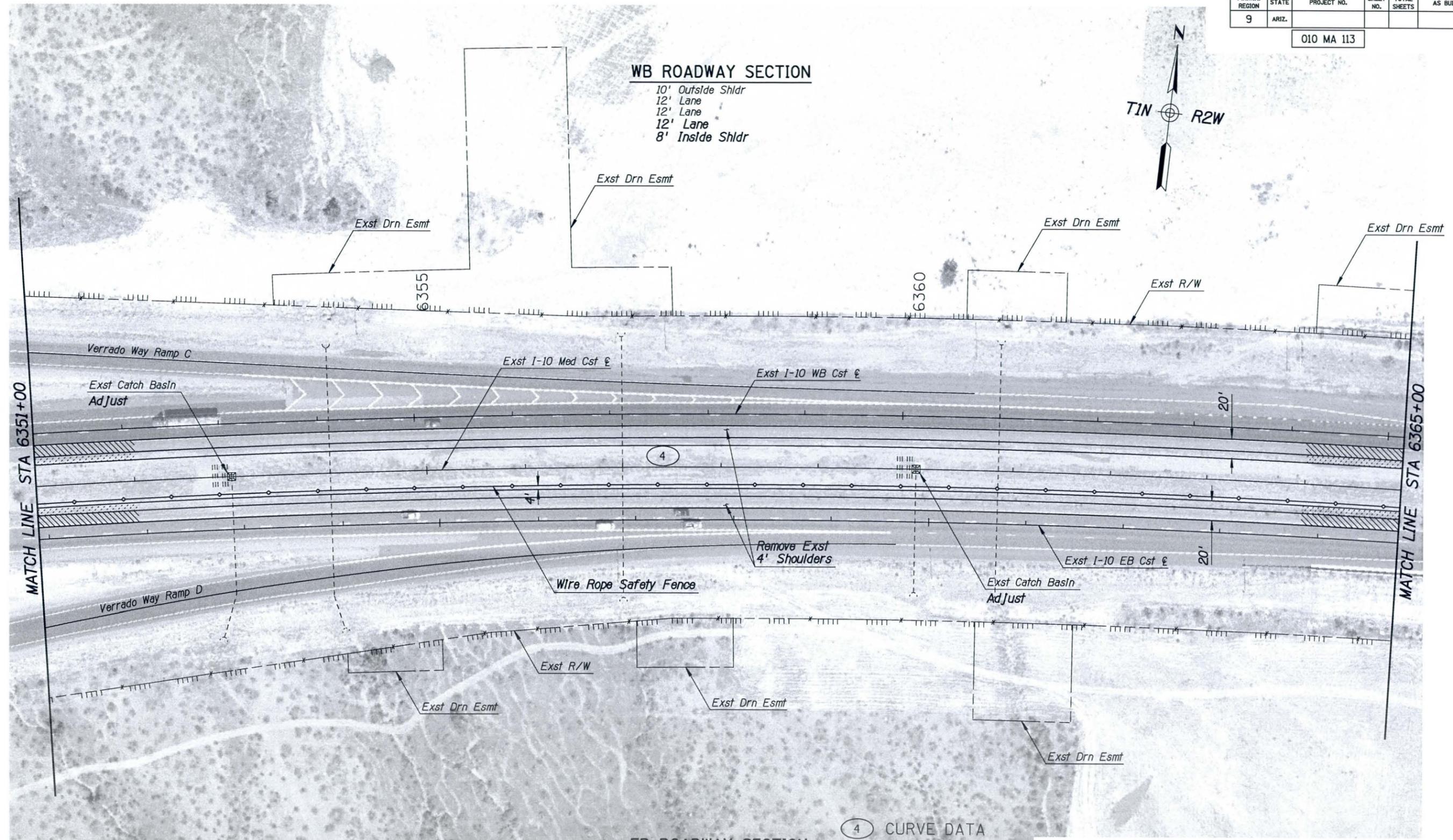
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

010 MA 113



WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr



EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

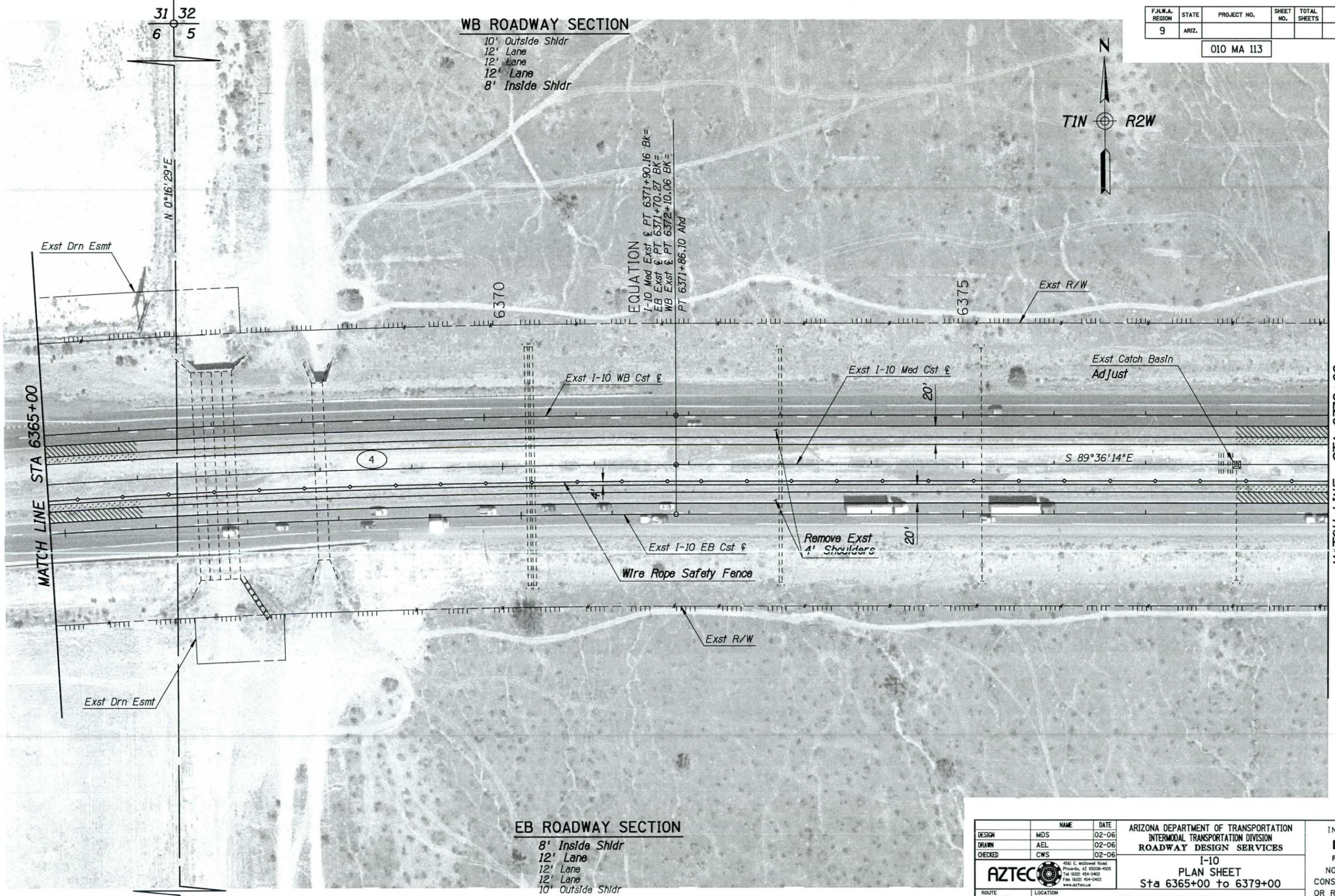
④ CURVE DATA
 PI Sta 6351+03.26
 Main Curve
 $\Delta = 21^\circ 06' 40''$ Rt
 $D = 00^\circ 30' 00''$
 $R = 11459.16'$
 $L = 4222.22'$
 $T = 2135.33'$
 $Ext = 197.25'$
 $Super = 0.024/m$

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
ROUTE I-10		LOCATION SR 85 TO SR 303L		I-10 PLAN SHEET Sta 6351+00 TO 6365+00	
				DWG NO. 35 OF 45	
TRACS NO. H6877 01L					

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

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

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				
010 MA 113					



WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr

EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

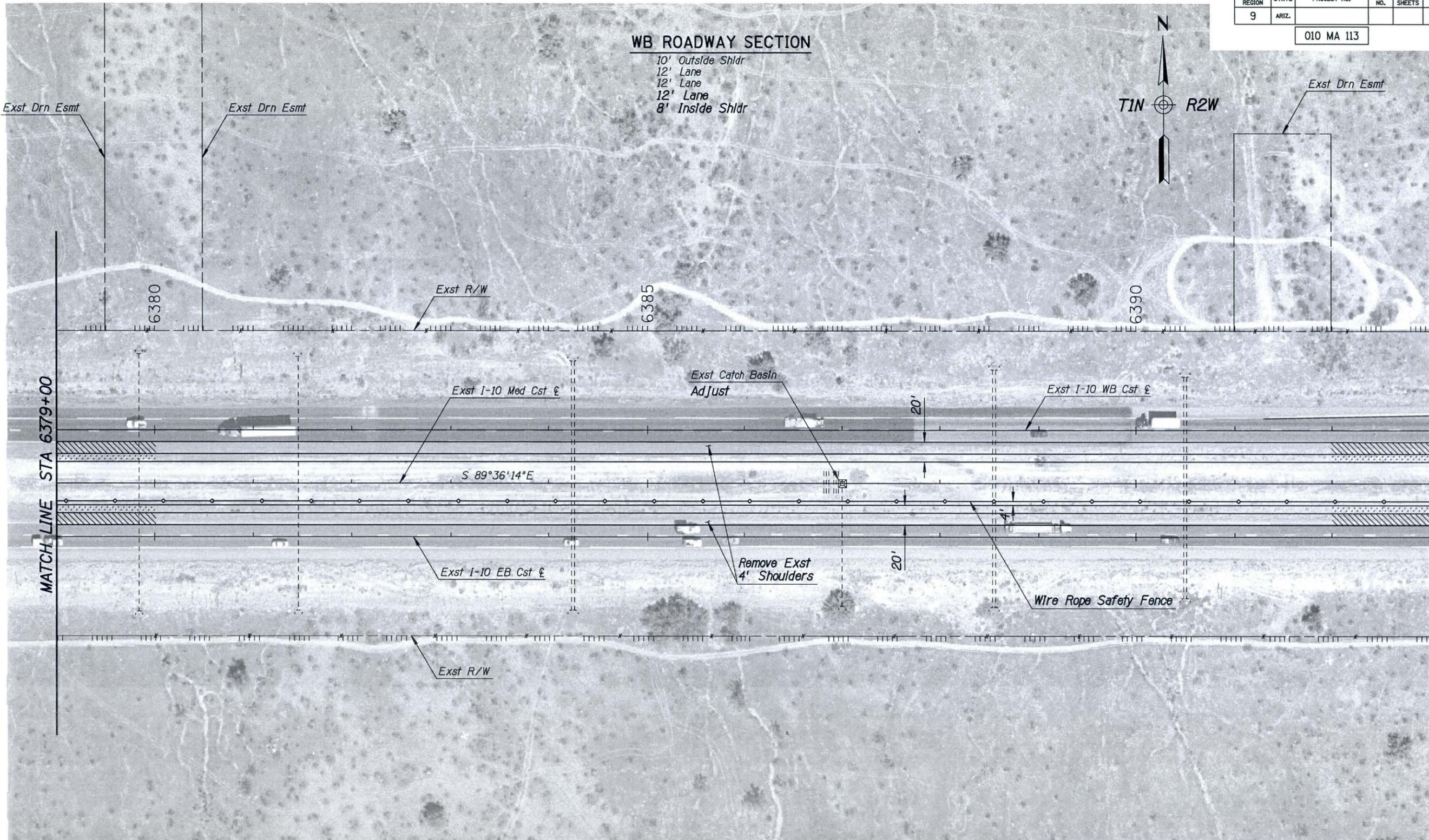
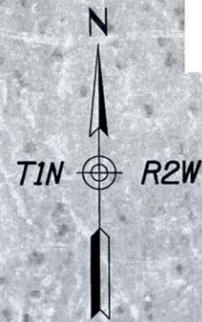
DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		<small>4501 E. McDowell Road Phoenix, AZ 85008-6505 Tel (602) 454-0402 Fax (602) 454-0403 www.aztec.us</small>		I-10 PLAN SHEET Sta 6365+00 to 6379+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 OIL				36 OF 45	

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

010 MA 113

WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr



MATCH LINE STA 6379+00

MATCH LINE STA 6393+00

EB ROADWAY SECTION

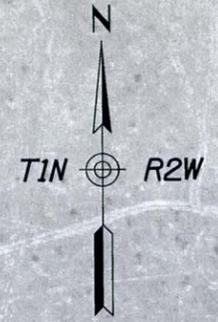
- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
		<small>4911 E. McDowell Road Phoenix, AZ 85008-4505 Tel (602) 454-0402 Fax (602) 454-0403 www.aztec.us</small>		I-10 PLAN SHEET Sta 6379+00 to 6393+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 01L				37 OF 45	

SURVEY NO. DATE FINISHED PLANS REVISIONS LOCATION DATE

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

010 MA 113



WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr

100 Lin Ft Exst Guard Rail
Remove

87.5 Lin Ft New Guard Rail

77 Lin Ft
Exst Chain Link Cable Barrier
Remove

Jackrabbt Trll TI OP
To be Widened

50 Lin Ft New Guard Rail
w/ End Terminal (Typ)

30 Lin Ft
New Chain Link Cable Barrier
C-12.30 (Typ)

Exst Catch Basln
Adjust

Exst I-10 Med Cst &

Exst I-10 WB Cst &

S 89°36'14"E

Exst I-10 EB Cst &

Remove Exst
4' Shoulders

Sta 6413+00, 18' Rt
Bgn 50:1 Taper
Wire Rope Safety Fence

Sta 6416+00, 12' Rt
End 50:1 Taper
Wire Rope Safety Fence
End Terminal

Wire Rope Safety Fence

Sta 6416+25.5, 12' Rt
Wire Rope Safety Fence
End Anchor

337.5 Lin Ft Exst Guard Rail
Remove
287.5 Lin Ft New Guard Rail
w/ Attenuator (Typ)

77 Lin Ft
Exst Chain Link Cable Barrier
Remove

Thrie Beam Guard Rail
Transition SD 1.03 (Typ)

EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

MATCH LINE STA 6407+00

MATCH LINE STA 6421+00

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
ROUTE		LOCATION		I-10 Sta 6407+00 TO 6421+00	
I-10		SR 85 TO SR 303L		DWG NO.	
TRACS NO. H6877 01L				39 OF 45	

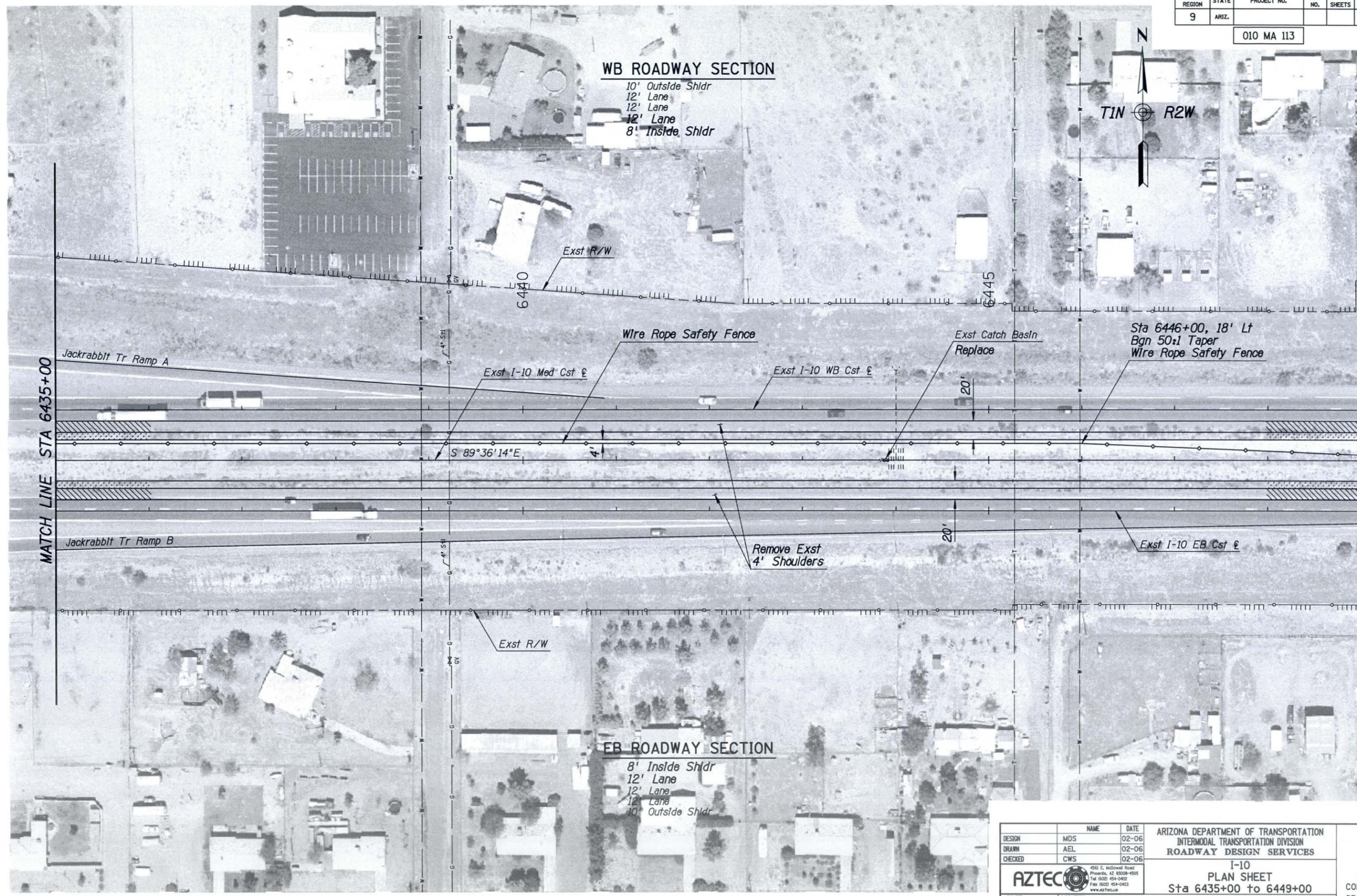
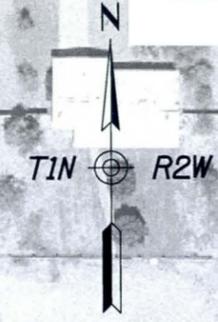
SURVEY NO. FINISHED PLANS- REVISIONS- LOCATION- DATE- FINISHED PLANS- REVISIONS- LOCATION- DATE- SURVEY NO.

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

010 MA 113

WB ROADWAY SECTION

10' Outside Shldr
12' Lane
12' Lane
12' Lane
8' Inside Shldr



EB ROADWAY SECTION

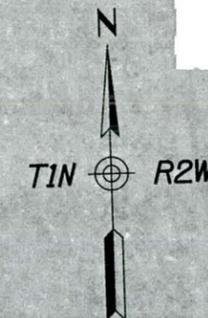
8' Inside Shldr
12' Lane
12' Lane
12' Lane
10' Outside Shldr

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		4561 E. McDowell Road Phoenix, AZ 85008-4505 Tel (602) 454-0402 Fax (602) 454-0403 www.aztecusa.com		I-10 PLAN SHEET Sta 6435+00 to 6449+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 01L				41 OF 45	

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

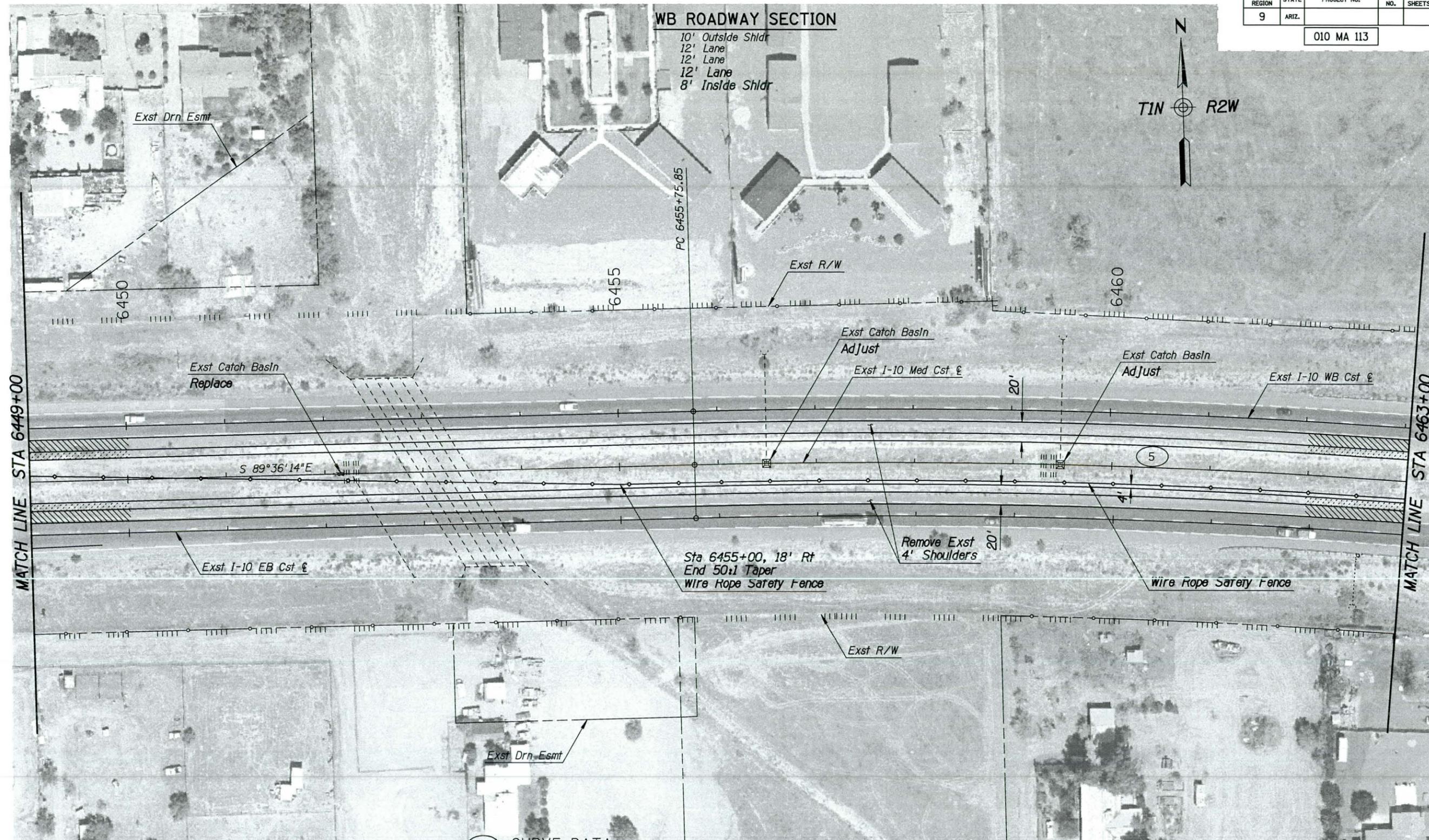
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

010 MA 113



WB ROADWAY SECTION

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr



(5) **CURVE DATA**
 PI Sta 6462+44.21
 Main Curve
 $\Delta=10^{\circ}00'00''$ Rt
 $D=00^{\circ}45'00''$
 $R=7639.44'$
 $L=1333.33'$
 $T=668.36'$
 $Ext=29.18'$
 $Super=0.036/ft$

EB ROADWAY SECTION

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
				I-10 PLAN SHEET Sta 6449+00 to 6463+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 OIL				42 OF 45	

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

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

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

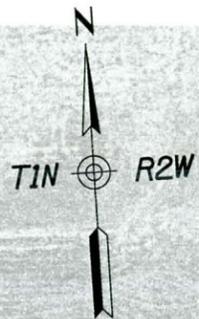
010 MA 113

WB ROADWAY SECTION

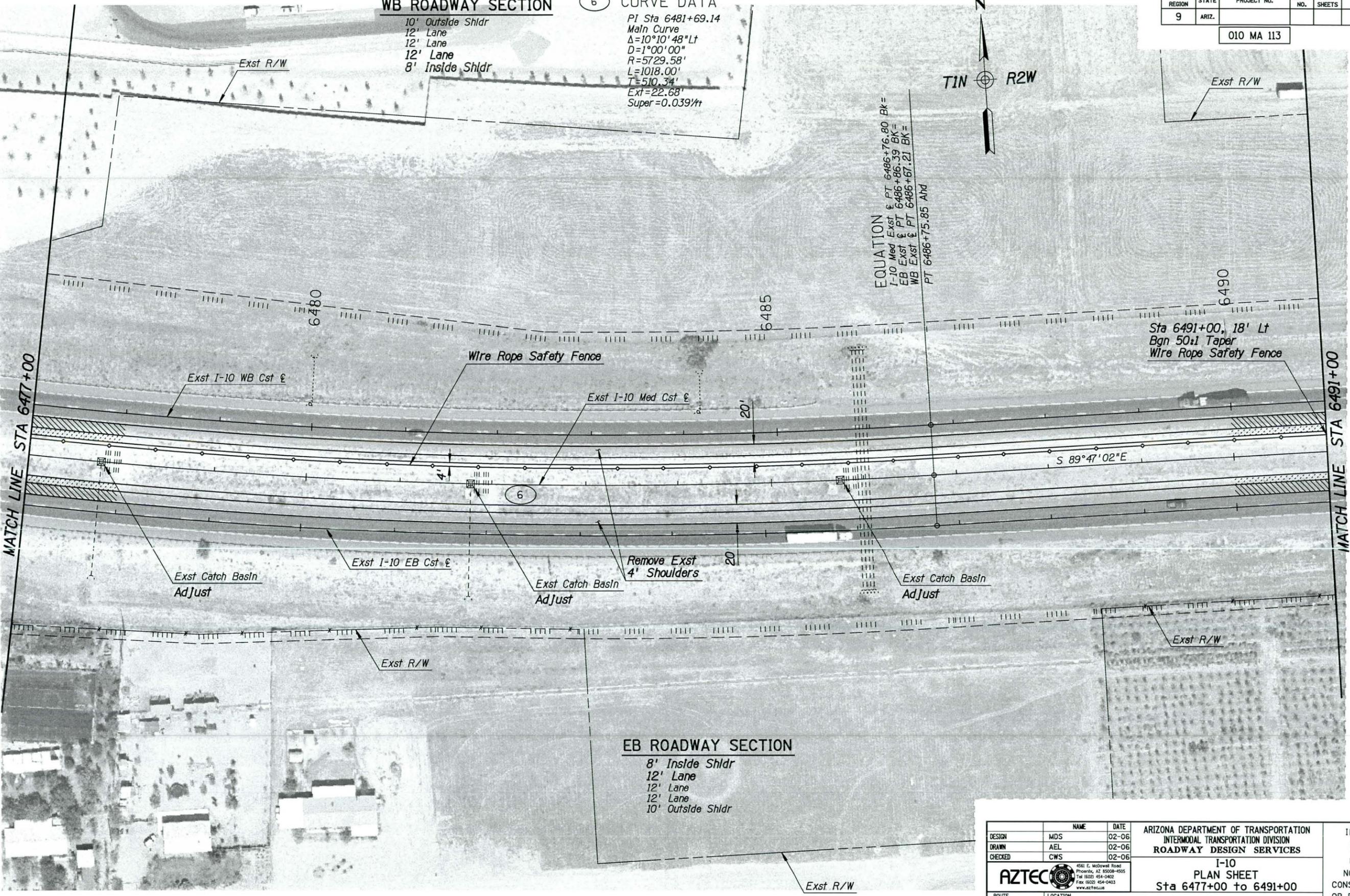
10' Outside Shldr
12' Lane
12' Lane
8' Inside Shldr

6 CURVE DATA

PI Sta 6481+69.14
Main Curve
 $\Delta=10^{\circ}10'48''$ Lt
 $D=1^{\circ}00'00''$
 $R=5729.58'$
 $L=1018.00'$
 $T=510.34'$
 $Ext=22.68'$
 $Super=0.039'/ft$



EQUATION
I-10 Med Exst & PT 6486+76.80 BK=
EB Exst & PT 6486+86.39 BK=
WB Exst & PT 6486+67.21 BK=
PT 6486+75.85 AM



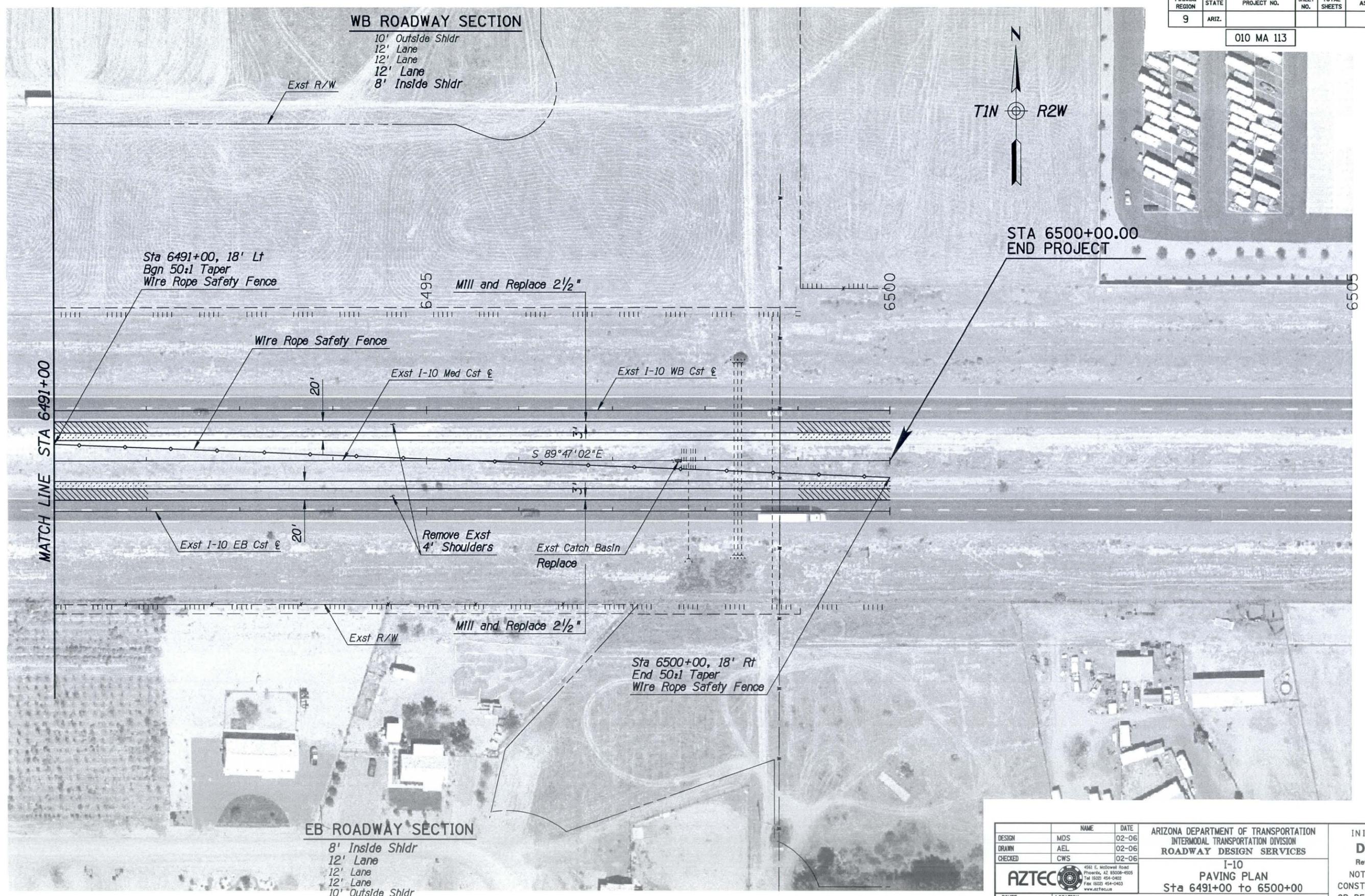
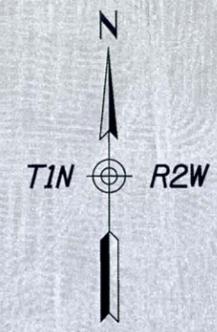
EB ROADWAY SECTION

8' Inside Shldr
12' Lane
12' Lane
12' Lane
10' Outside Shldr

DESIGN	MDS	DATE	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	DATE	02-06		
CHECKED	CWS	DATE	02-06		
AZTEC		<small>661 E. McDowell Road Phoenix, AZ 85008-6505 Tel: (602) 454-0402 Fax: (602) 454-0403 www.aztecinc.com</small>		I-10 PLAN SHEET Sta 6477+00 to 6491+00	
ROUTE	I-10	LOCATION	SR 85 TO SR 303L	DWG NO.	
TRACS NO. H6877 01L				44 OF 45	

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

010 MA 113



MATCH LINE STA 6491+00

STA 6500+00.00
END PROJECT

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

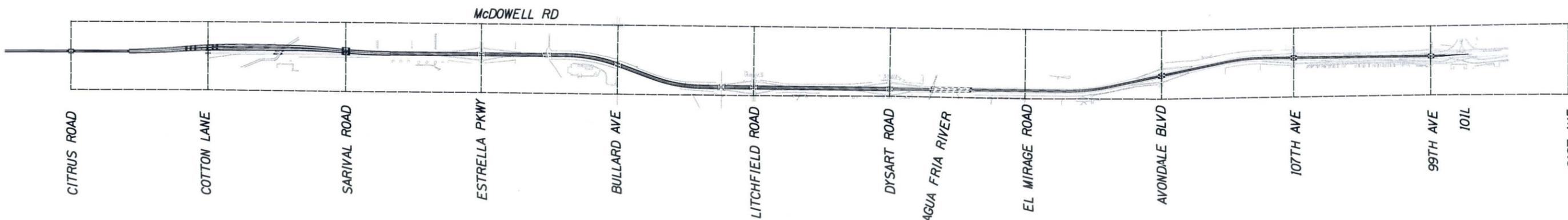
DESIGN	MDS	02-06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	AEL	02-06		
CHECKED	CWS	02-06		
			I-10 PAVING PLAN Sta 6491+00 to 6500+00	DWG NO.
ROUTE	I-10	LOCATION			SR 85 TO SR 303L
TRACS NO. H6877 01L				45 OF 45



STATE OF ARIZONA
 DEPARTMENT OF TRANSPORTATION
 INTERMODAL TRANSPORTATION DIVISION
 PLAN AND PROFILE OF PROPOSED
STATE HIGHWAY
 010 MA 125



INITIAL
 DESIGN CONCEPT REPORT
 APPENDIX D, PART 2
 FEBRUARY, 2006



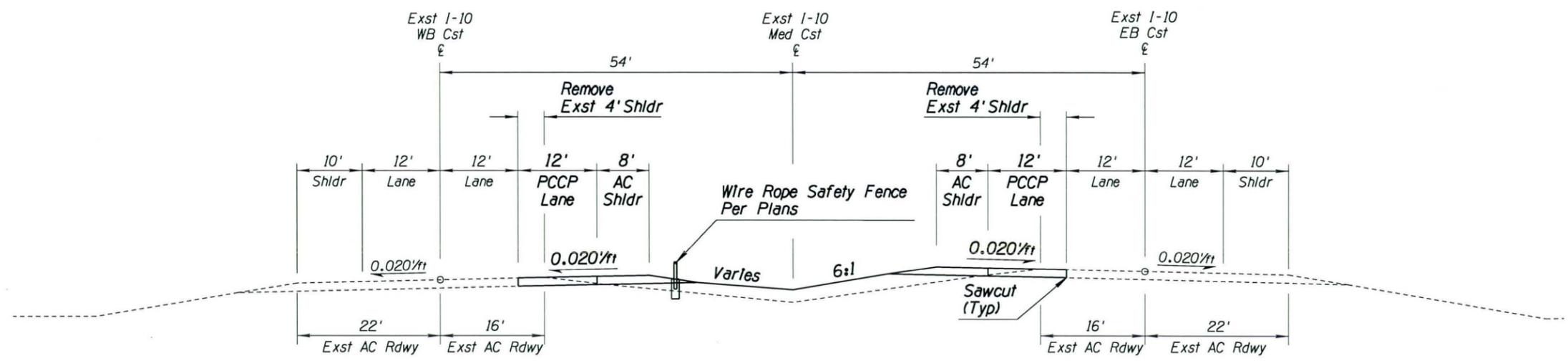
I-10 (PAPAGO) MEDIAN WIDENING
SR 303L TO SR 101L

ARIZONA DEPARTMENT OF TRANSPORTATION
 INTERMODAL TRANSPORTATION DIVISION
 APPROVED: SAM ELLERS
 STATE ENGINEER

APPROVED _____ DATE _____
 ASSISTANT STATE ENGINEER

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

010 MA 125



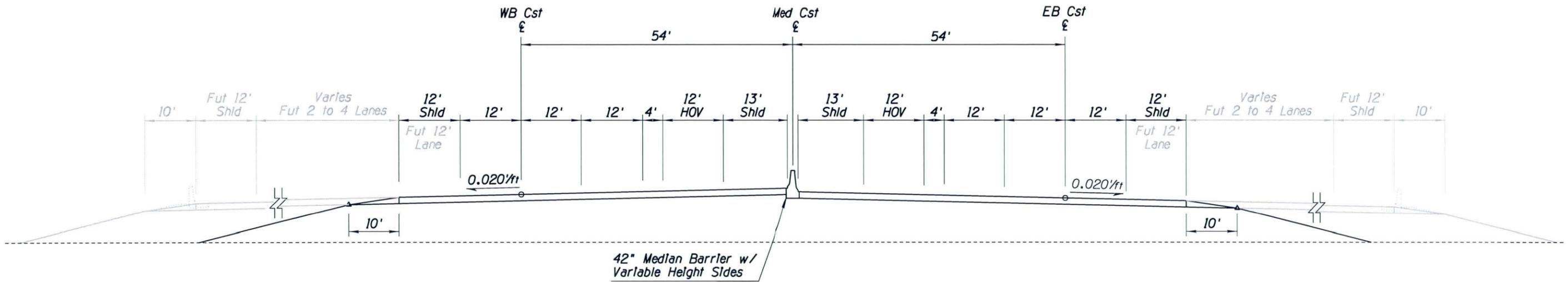
TYPICAL SECTION A
Sta 6500+00 (West of Citrus Rd) to 6547+43 (east of Citrus Rd)

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

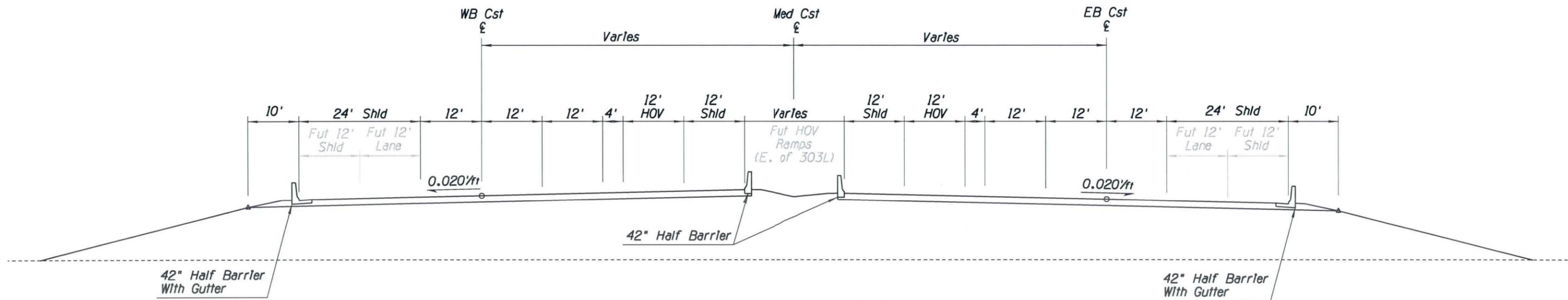
DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		DESIGN SHEET TYPICAL SECTIONS		DWG NO	
ROUTE	LOCATION		SR 303L TO SR 101L		
TRACS NO.	H6879 OIL				2 OF 66

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

010 MA 125



TYPICAL SECTION B
At Beginning and Ending Realignment Curves

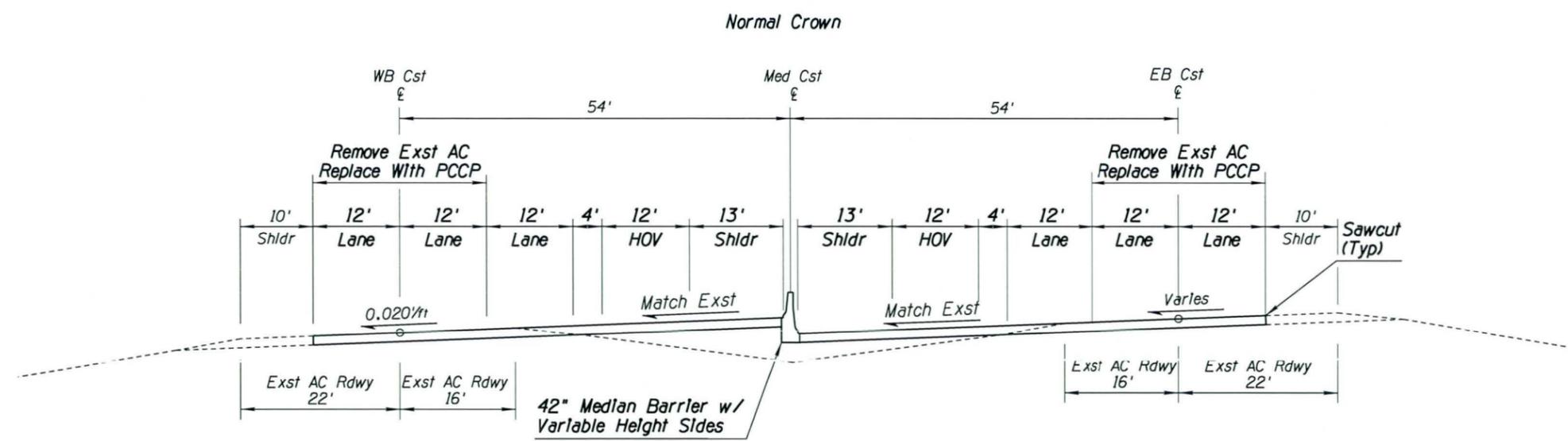
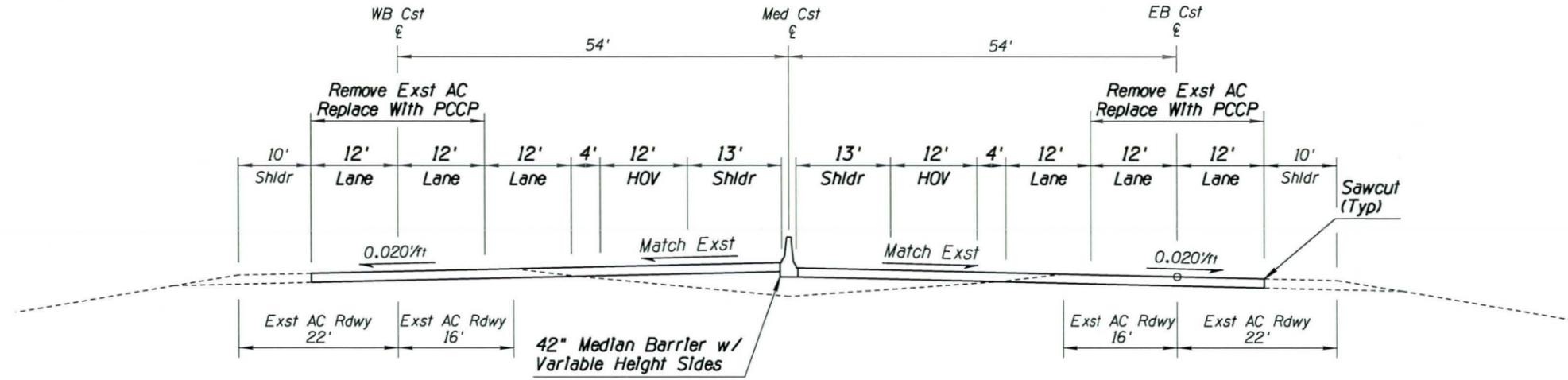


TYPICAL SECTION C
Through Middle of System TI (Between Ramps)

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		DESIGN SHEET TYPICAL SECTIONS		DWG NO	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	3 OF 66	
TRACS NO.	H6879 01L				

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

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Aux Lanes By Others
Estrella Pkwy to Bullard Ave
Bullard Ave to Litchfield Rd

Aux Lanes By Others
Estrella Pkwy to Bullard Ave
Bullard Ave to Litchfield Rd

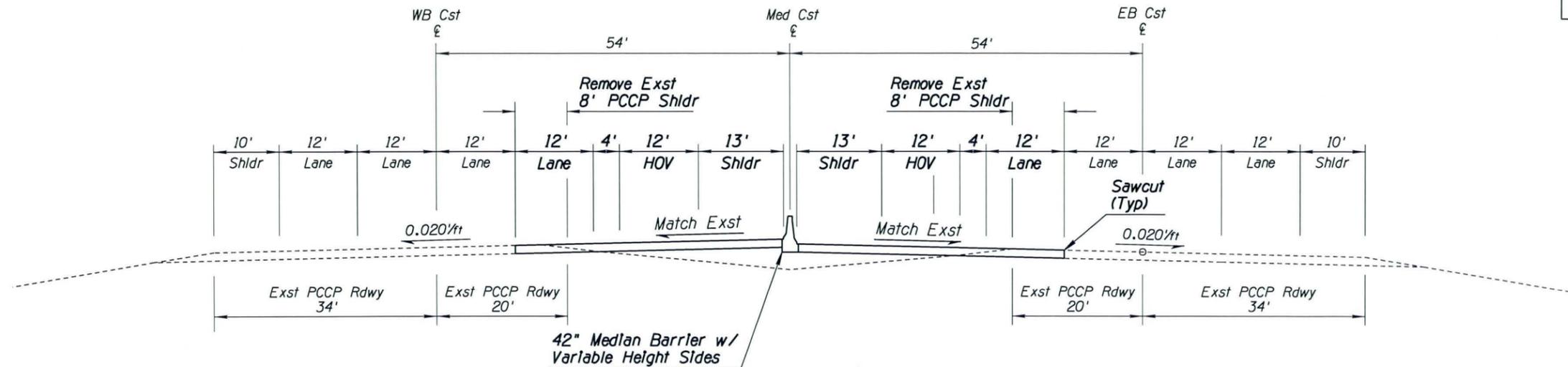
TYPICAL SECTION D
Sta 6648+00 (East of Sarival Rd) to 6840+43 (Dysart Rd)

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		DESIGN SHEET TYPICAL SECTIONS		DWG NO	
ROUTE	LOCATION		SR 303L TO SR 101L		
TRACS NO.	H6879 OIL				4 OF 66

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

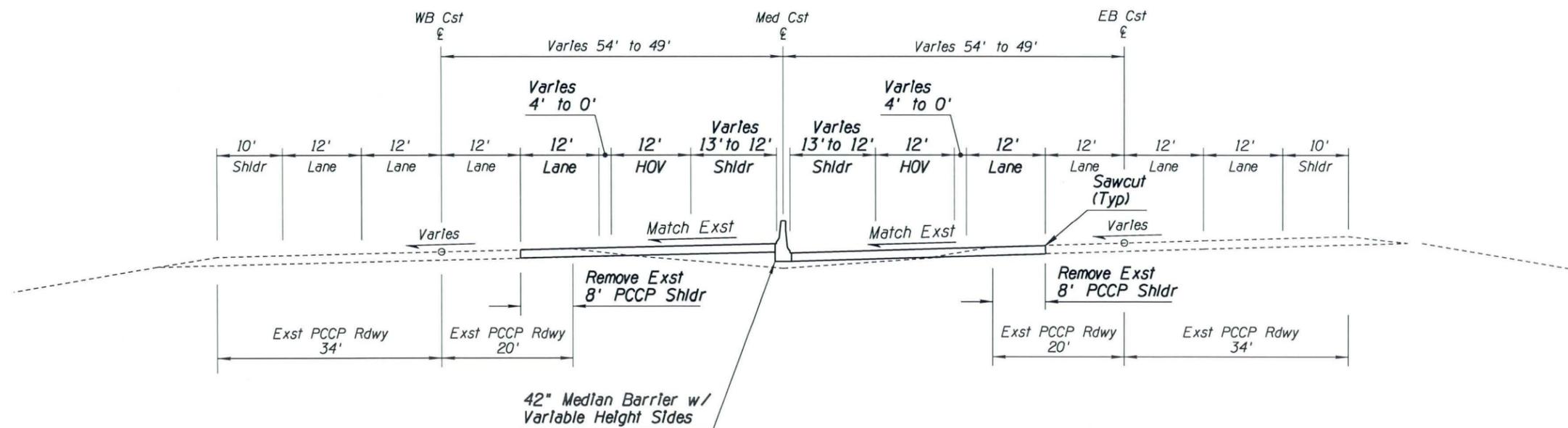
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

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TYPICAL SECTION E

Sta 6842+80 (Dysart Rd) to 6909+71.51 (PC of Curve West of Avondale Blvd)



TYPICAL SECTION F

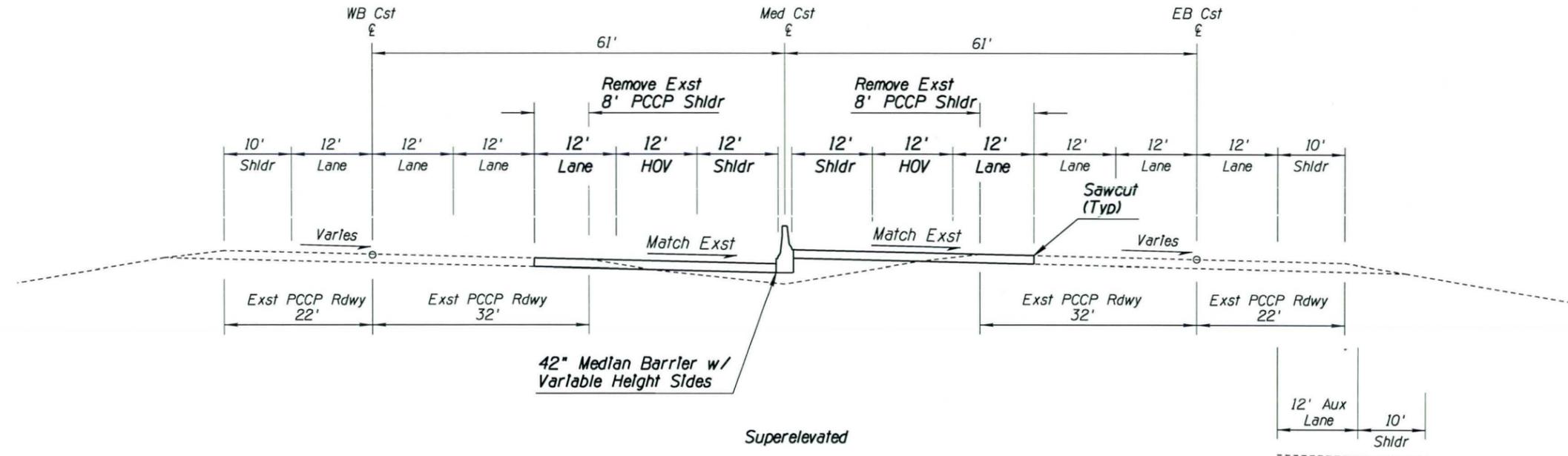
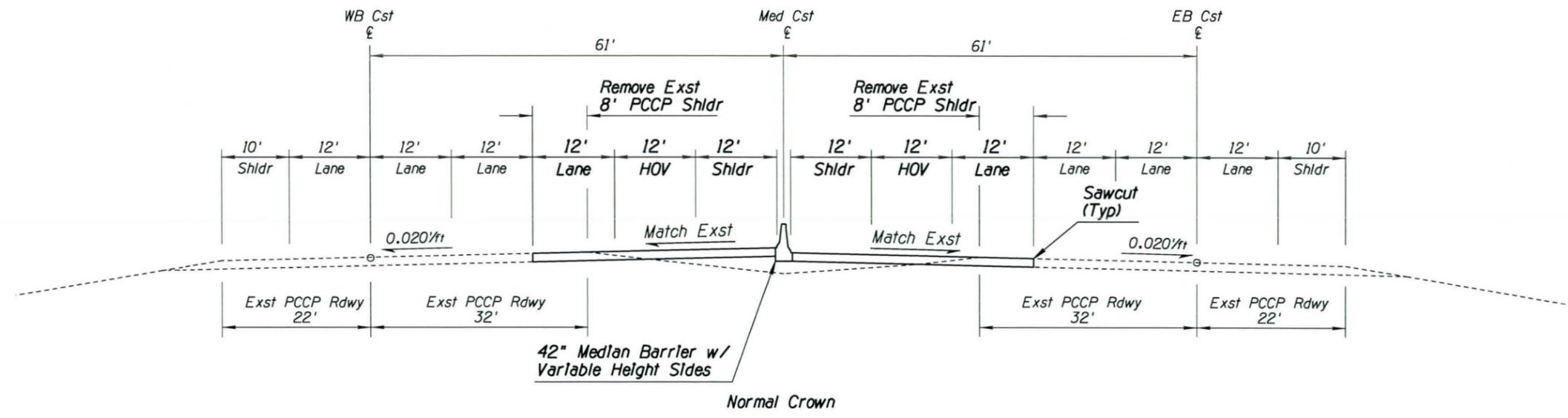
Sta 6909+71.51 to 6926+38.18 (PC to PT of Curve West of Avondale Blvd)

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

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		DESIGN SHEET TYPICAL SECTIONS			
ROUTE	LOCATION		SR 303L TO SR 101L		DWG NO
I-10					5 OF 66
TRACS NO.	H6879 OIL				

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

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TYPICAL SECTION G

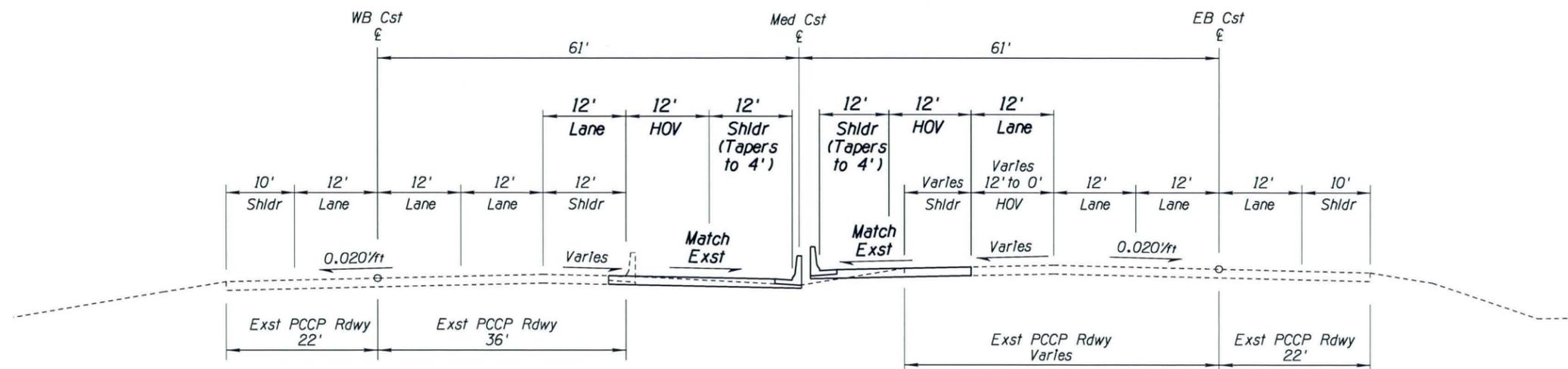
Sta 6926+38.18 (PT of Curve West of Avondale Blvd) to 7054+00 (East of 99th Ave OP)

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		DESIGN SHEET TYPICAL SECTIONS		DWG NO	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L		
TRACS NO.	H6879 OIL			6 OF 66	

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

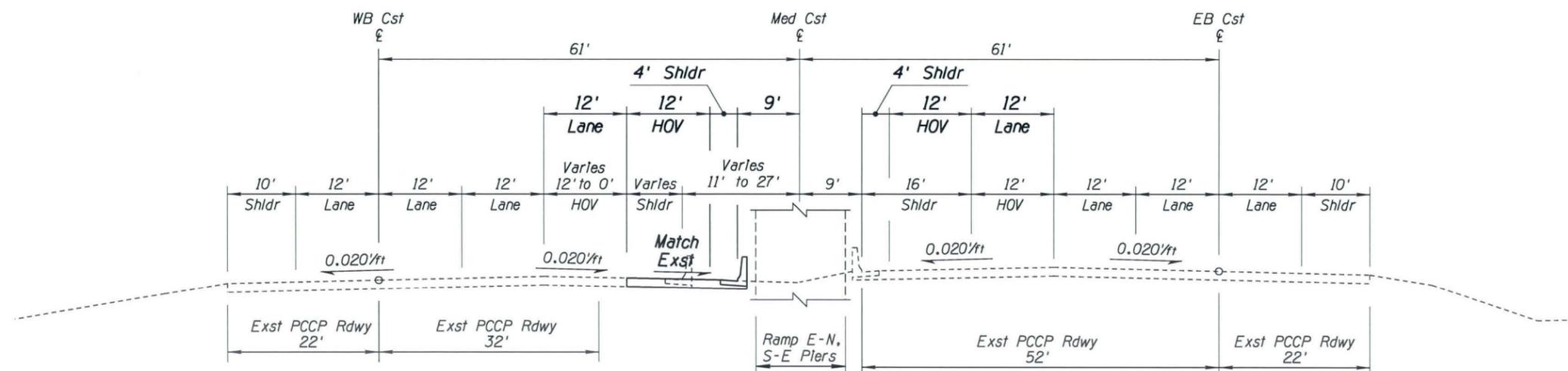
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

010 MA 125



TYPICAL SECTION H

Sta 7054+00 (East of 99th Ave OP) to 7060+75 (West of 101L Ramp E-N Pler)



TYPICAL SECTION I

Sta 7060+75 (West of 101L Ramp E-N Pler) to 7066+10 (Just East Of 101L Ramp S-E Pler)

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		DESIGN SHEET TYPICAL SECTIONS			
ROUTE	LOCATION		SR 303L TO SR 101L		DWG NO
I-10					7 OF 66
TRACS NO.	H6879 OIL				

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

010 MA 125

**ROADWAY SECTION
I-10 WB**

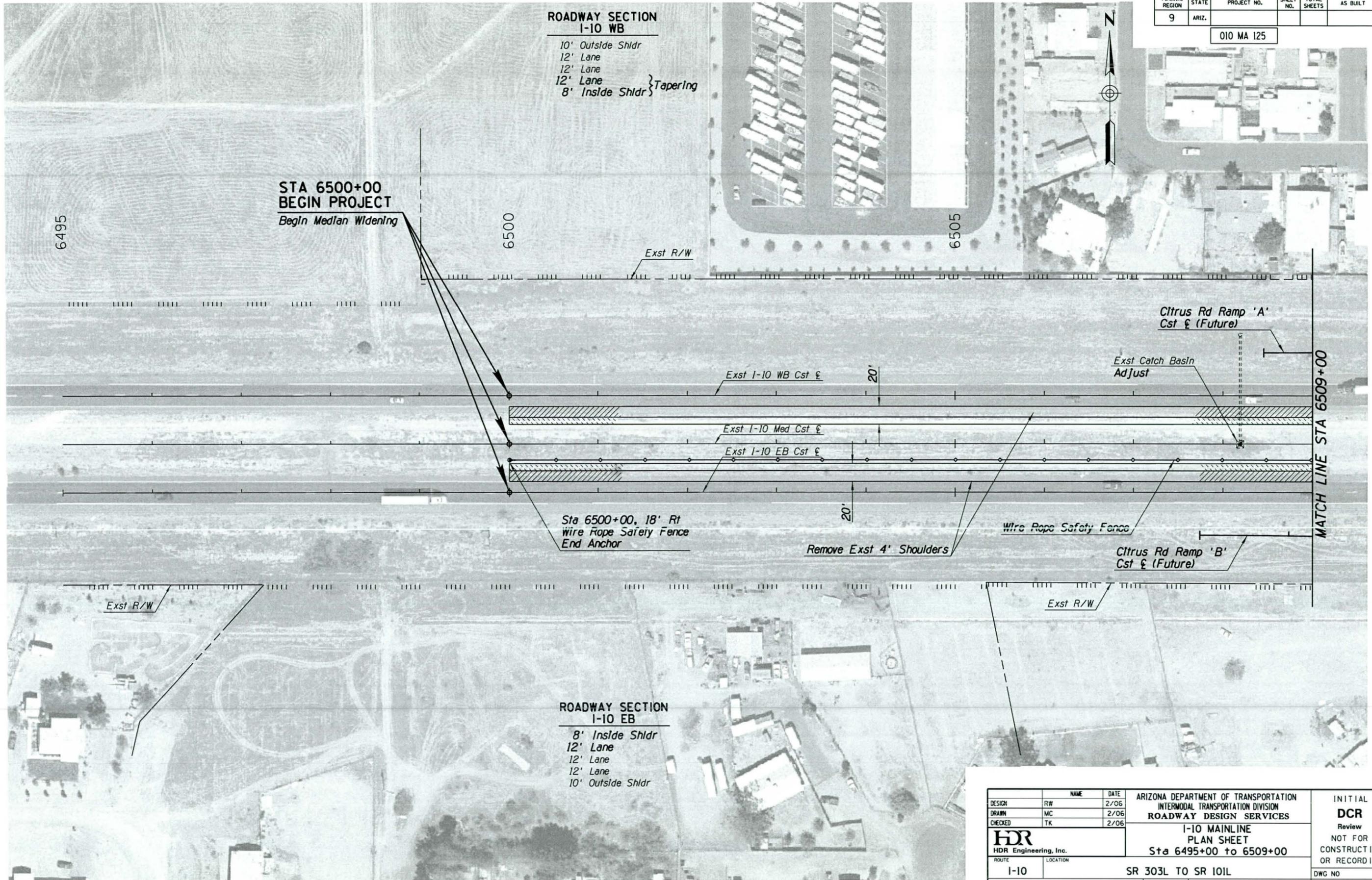
- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr } Tapering

**ROADWAY SECTION
I-10 EB**

- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

**STA 6500+00
BEGIN PROJECT**
Begin Median Widening

MATCH LINE STA 6509+00



DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.				I-10 MAINLINE PLAN SHEET Sta 6495+00 to 6509+00	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	DWG NO	
TRACS NO.	H6879 OIL				8 OF 66

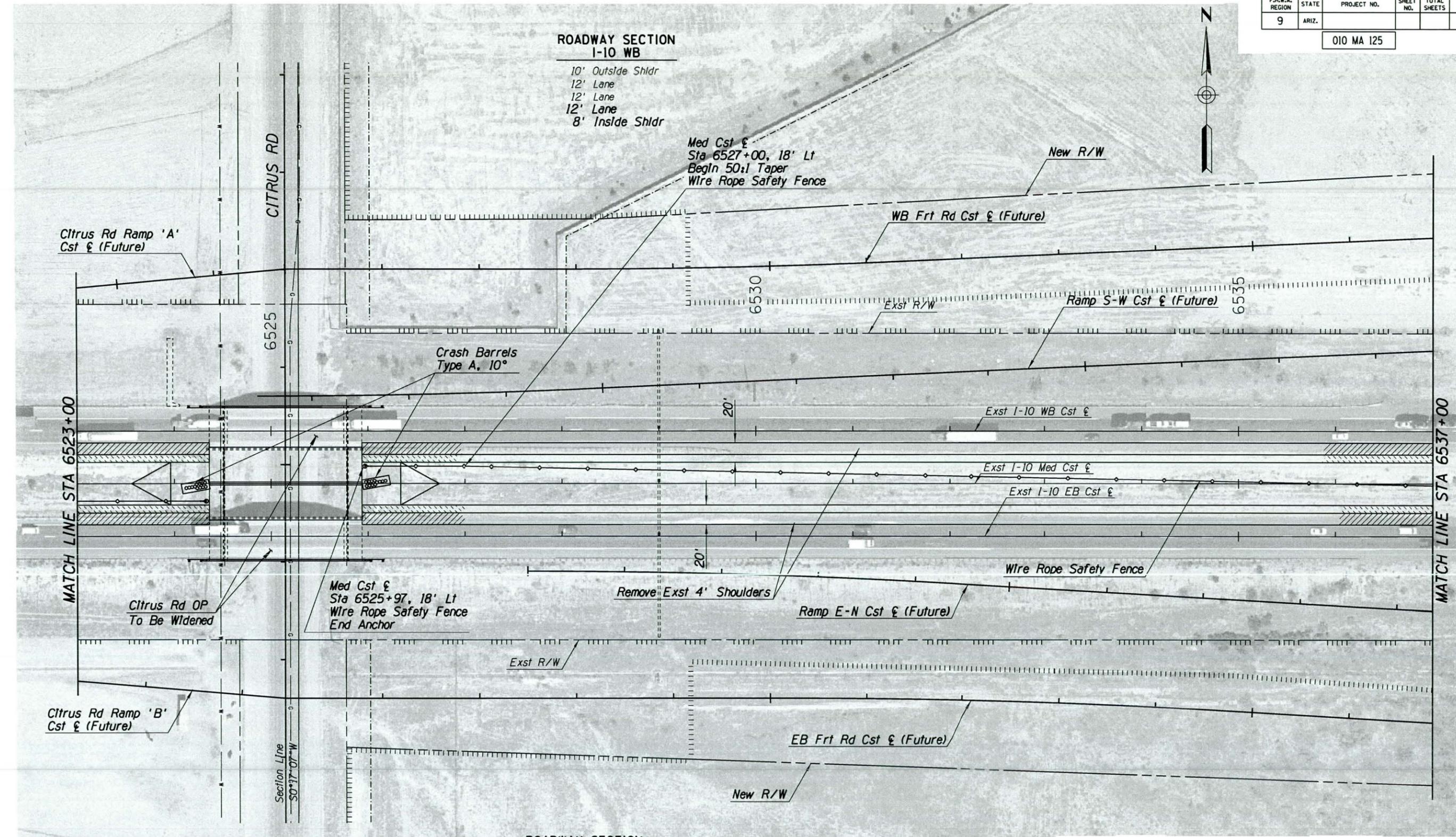
DATE: _____ LOCATION: _____ REVISIONS: _____ FINISHED PLANS: _____ SURVEY NO. _____ DATE: _____ LOCATION: _____ REVISIONS: _____ FINISHED PLANS: _____ SURVEY NO. _____

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

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**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr



**ROADWAY SECTION
I-10 EB**

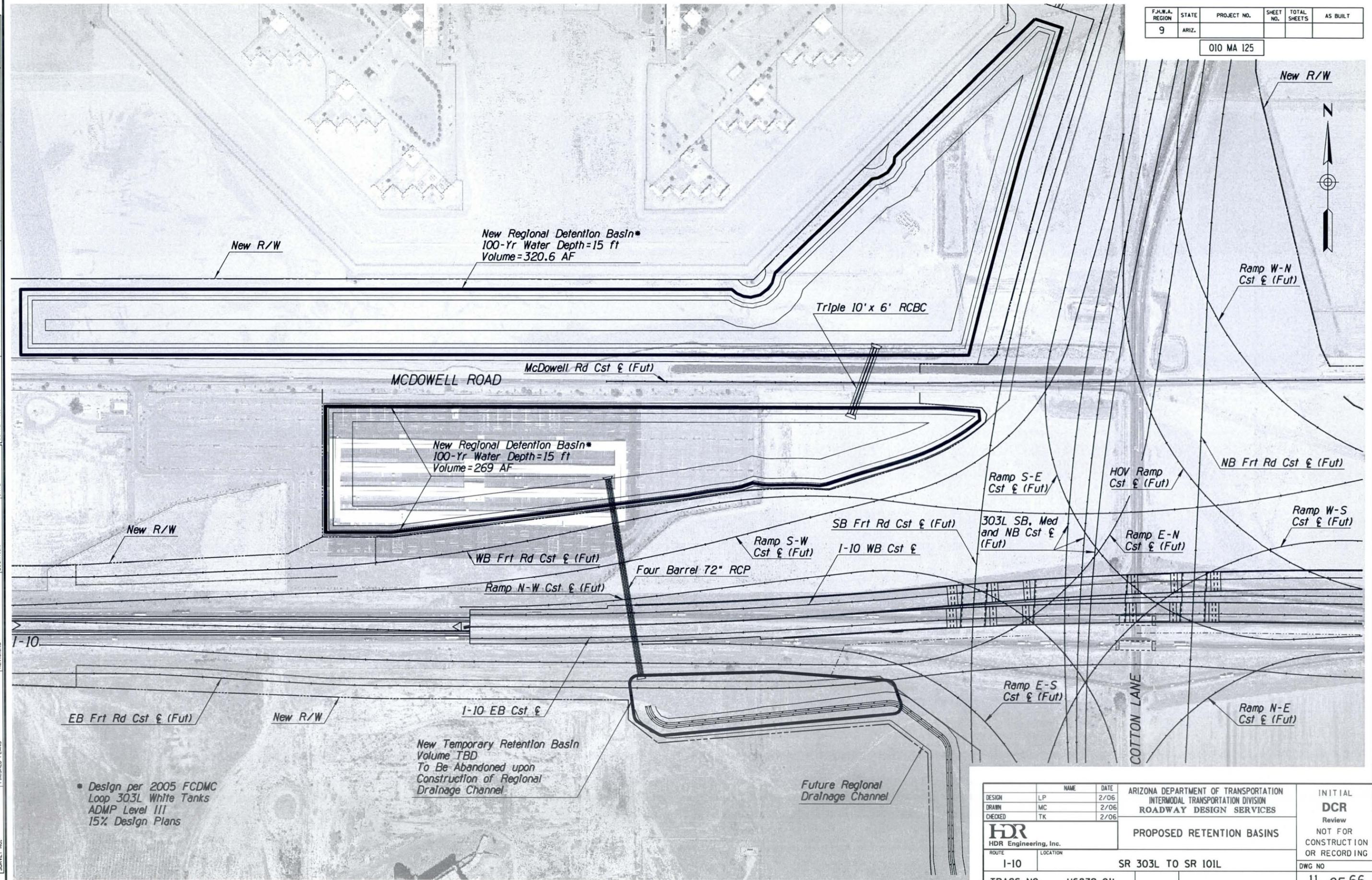
- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6523+00 to 6537+00			
ROUTE	I-10	LOCATION	SR 303L TO SR 101L		
TRACS NO.	H6879 OIL				DWG NO. 10 OF 66

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

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

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* Design per 2005 FCDMC Loop 303L White Tanks ADMP Level III 15% Design Plans

New Temporary Retention Basin
Volume TBD
To Be Abandoned upon Construction of Regional Drainage Channel.

Future Regional Drainage Channel

DESIGN	LP	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.				PROPOSED RETENTION BASINS	
ROUTE	LOCATION		SR 303L TO SR 101L		
I-10		DWG NO			
TRACS NO.	H6879 OIL		11 OF 66		

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

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

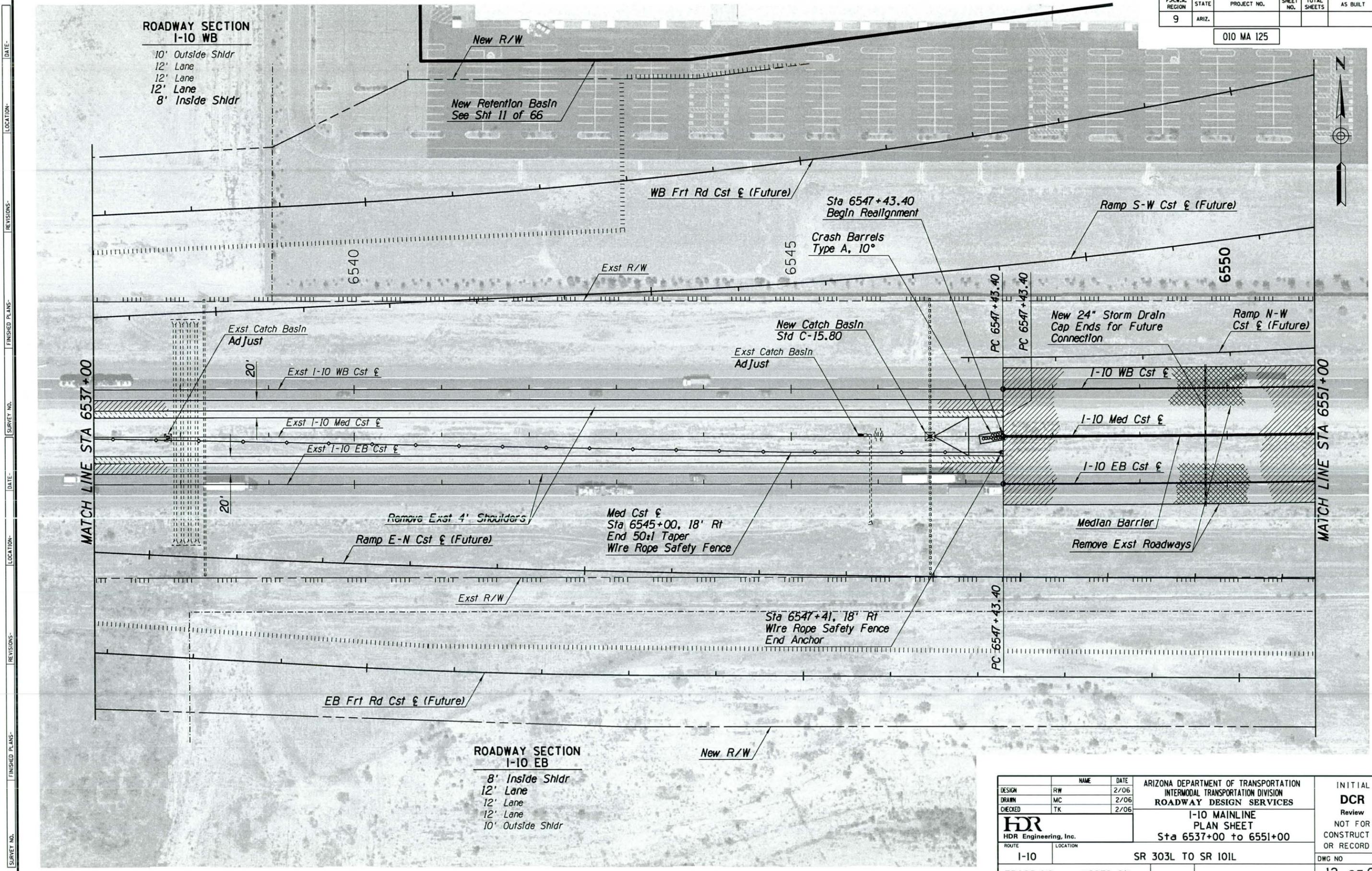
010 MA 125

**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 8' Inside Shldr

**ROADWAY SECTION
I-10 EB**

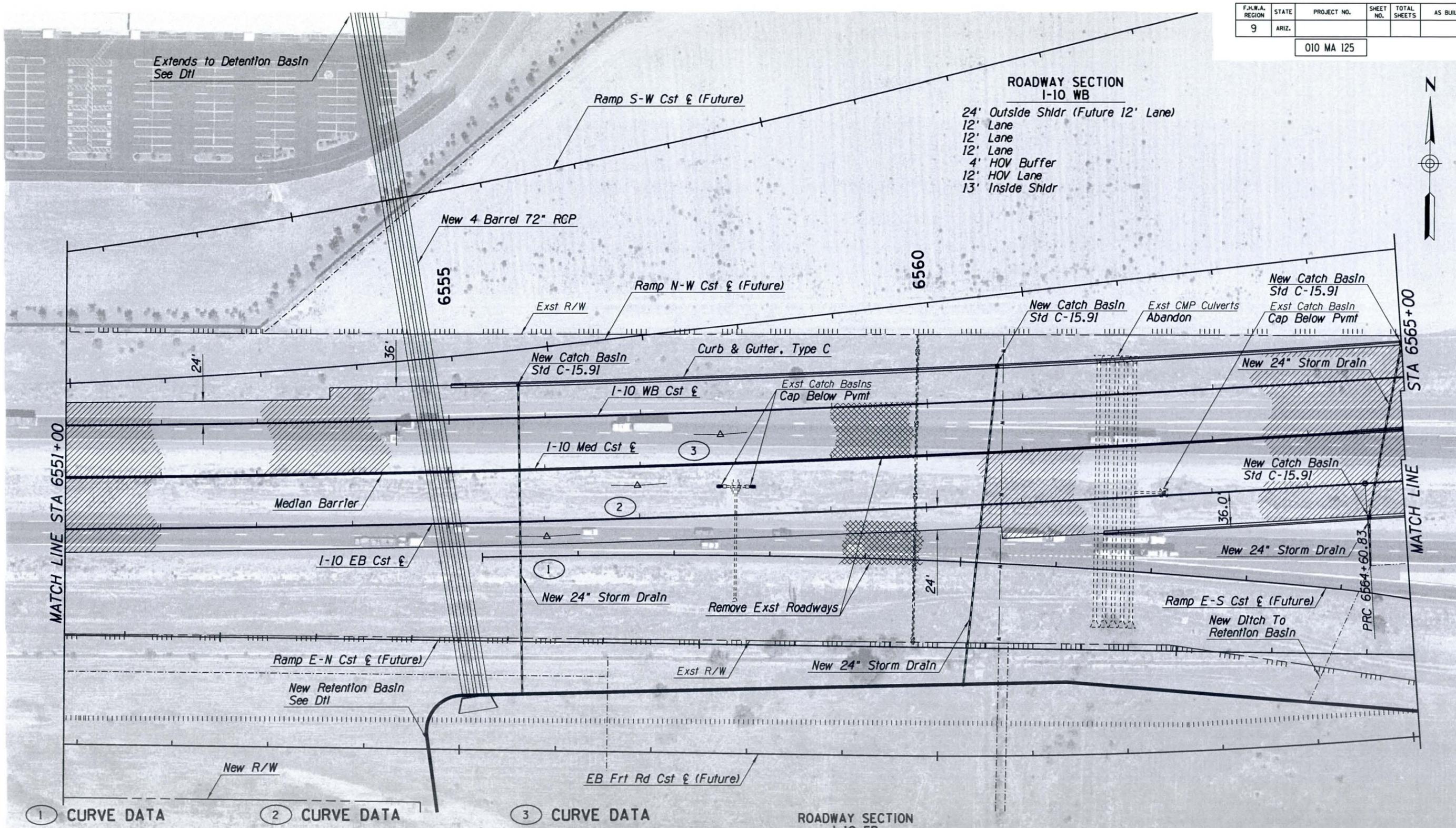
- 8' Inside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr



DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
 HDR Engineering, Inc.				I-10 MAINLINE PLAN SHEET Sta 6537+00 to 6551+00	
ROUTE	I-10			LOCATION	SR 303L TO SR 101L
TRACS NO.	H6879 OIL			DWG NO.	12 OF 66

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

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ROADWAY SECTION I-10 WB
 24' Outside Shldr (Future 12' Lane)
 12' Lane
 12' Lane
 12' Lane
 4' HOV Buffer
 12' HOV Lane
 13' Inside Shldr



1 CURVE DATA
 PI Sta 6556+02.51
 Main Curve
 $\Delta=4^{\circ}17'01''$ Left
 $D=0^{\circ}14'58''$
 $R=22972.32$
 $L=1717.43$
 $T=859.11$
 $Ext=16.06$
 Super = NC

2 CURVE DATA
 PI Sta 6556+97.03
 Main Curve
 $\Delta=4^{\circ}45'55''$ Left
 $D=0^{\circ}15'00''$
 $R=22918.32$
 $L=1906.17$
 $T=953.64$
 $Ext=19.83$

3 CURVE DATA
 PI Sta 6557+83.12
 Main Curve
 $\Delta=5^{\circ}12'26''$ Left
 $D=0^{\circ}15'02''$
 $R=22864.32$
 $L=2078.01$
 $T=1039.72$
 $Ext=23.63$
 Super = NC

ROADWAY SECTION I-10 EB
 13' Inside Shldr
 12' HOV Lane
 4' HOV Buffer
 12' Lane
 12' Lane
 12' Lane
 24' Outside Shldr (Future 12' Lane)

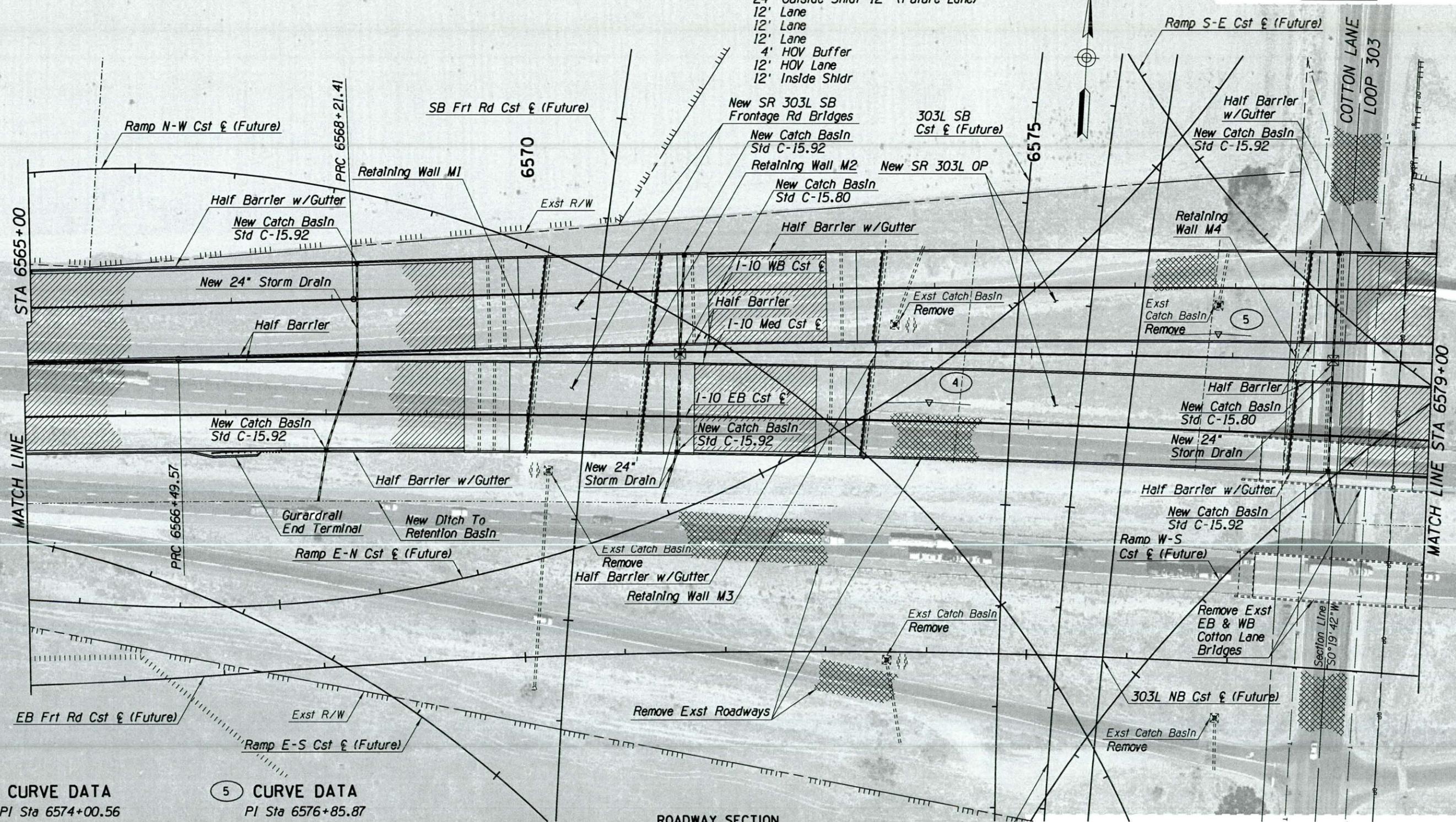
DESIGN	RW	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC		2/06		
CHECKED	TK		2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6551+00 to 6565+00		DWG NO	
ROUTE	LOCATION	SR 303L TO SR 101L			
TRACS NO.	H6879 OIL				13 OF 66

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

010 MA 125

**ROADWAY SECTION
I-10 WB**

- 24' Outside Shldr 12' (Future Lane)
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 12' Inside Shldr



4 CURVE DATA
 PI Sta 6574+00.56
 Main Curve
 $\Delta=4^{\circ}41'46''$ Right
 $D=0^{\circ}15'00''$
 $R=22918.32$
 $L=1878.41$
 $T=939.73$
 $Ext=19.26$
 Super = NC

5 CURVE DATA
 PI Sta 6576+85.87
 Main Curve
 $\Delta=5^{\circ}10'41''$ Right
 $D=0^{\circ}15'00''$
 $R=22918.32$
 $L=2071.19$
 $T=1036.30$
 $Ext=23.42$

- ROADWAY SECTION
I-10 EB**
- 12' Inside Shldr
 - 12' HOV Lane
 - 4' HOV Buffer
 - 12' Lane
 - 12' Lane
 - 12' Lane
 - 24' Outside Shldr (Future 12' Lane)

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6565+00 to 6579+00		DWG NO 14 OF 66	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	TRACS NO. H6879 OIL	

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

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

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6 CURVE DATA

PI Sta 6579+46.28
 Main Curve
 $\Delta=5^{\circ}37'11''$ Right
 $D=0^{\circ}15'00''$
 $R=22918.32$
 $L=2247.94$
 $T=1124.87$
 $Ext=27.59$
 Super = NC

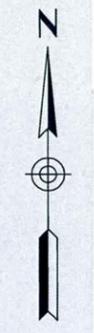
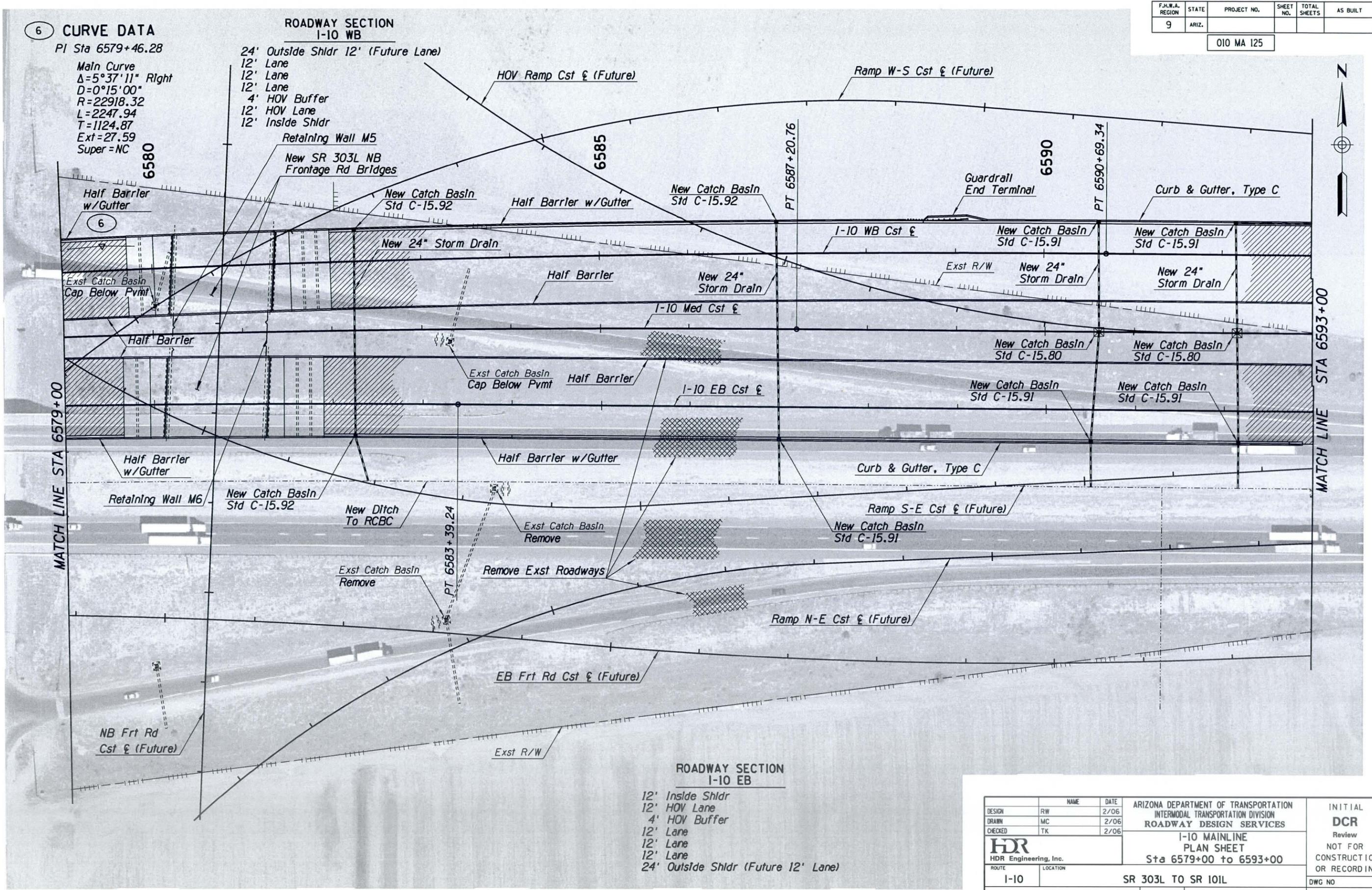
ROADWAY SECTION I-10 WB

24' Outside Shldr 12' (Future Lane)
 12' Lane
 12' Lane
 12' Lane
 4' HOV Buffer
 12' HOV Lane
 12' Inside Shldr

Retaining Wall M5
 New SR 303L NB Frontage Rd Bridges

ROADWAY SECTION I-10 EB

12' Inside Shldr
 12' HOV Lane
 4' HOV Buffer
 12' Lane
 12' Lane
 12' Lane
 24' Outside Shldr (Future 12' Lane)



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

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.				I-10 MAINLINE PLAN SHEET Sta 6579+00 to 6593+00	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	DWG NO	
TRACS NO.	H6879 OIL				15 OF 66

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

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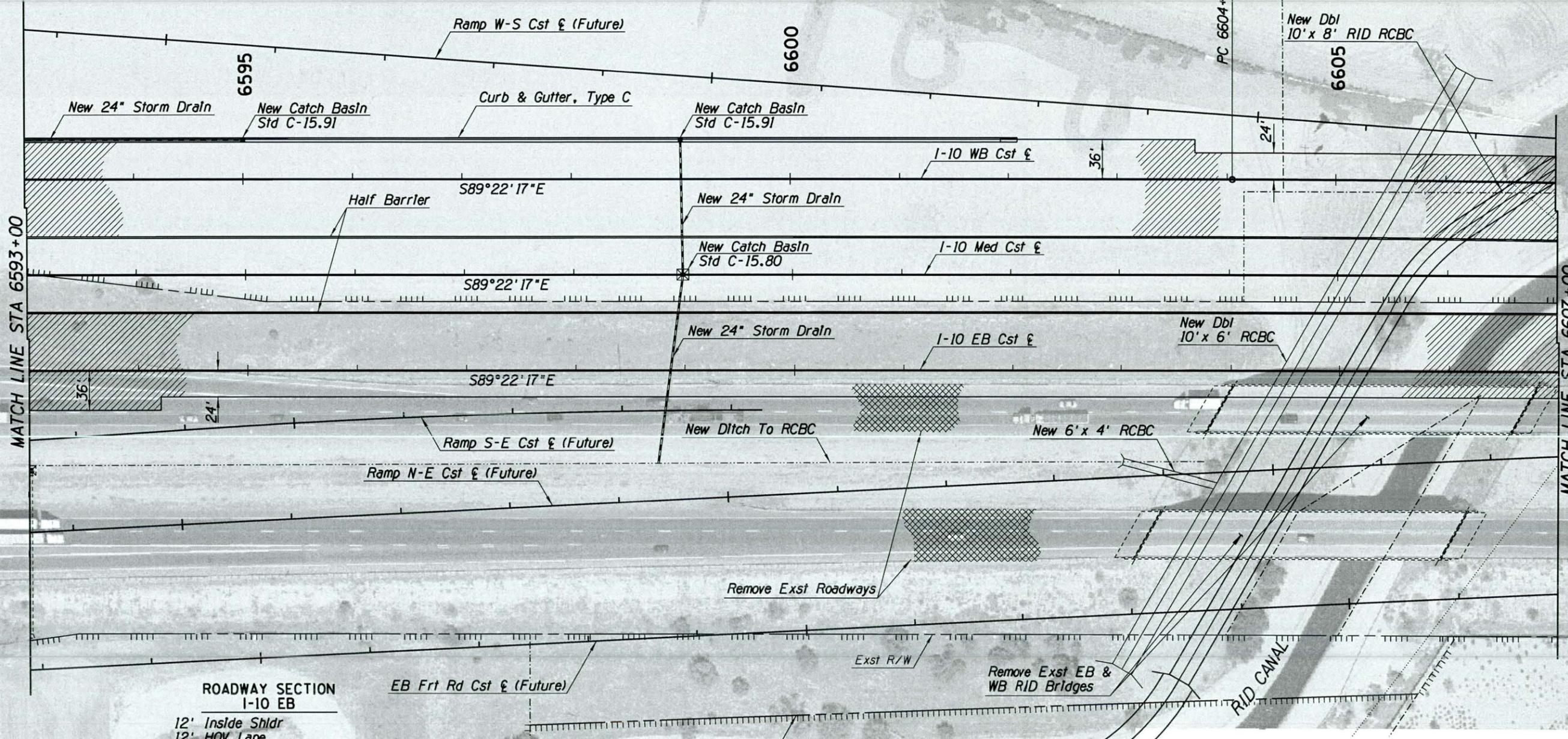


**ROADWAY SECTION
I-10 WB**

- 24' Outside Shldr 12' (Future Lane)
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 12' Inside Shldr

**ROADWAY SECTION
I-10 EB**

- 12' Inside Shldr
 - 12' HOV Lane
 - 4' HOV Buffer
 - 12' Lane
 - 12' Lane
 - 12' Lane
 - 12' Outside Shldr (Future Lane)
 - 12' Future Lane
 - 12' Future Lane
 - 12' Future Outside Shldr
- } Future Construction



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

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6593+00 to 6607+00		DWG NO	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L		
TRACS NO.	H6879 OIL				16 OF 66

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

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**ROADWAY SECTION
I-10 WB**

- 12' Future Outside Shldr
- 12' Future Lane
- 12' Future Lane
- 12' Future Lane
- 12' Future Lane
- 12' Outside Shldr (Future Lane)
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 12' Inside Shldr

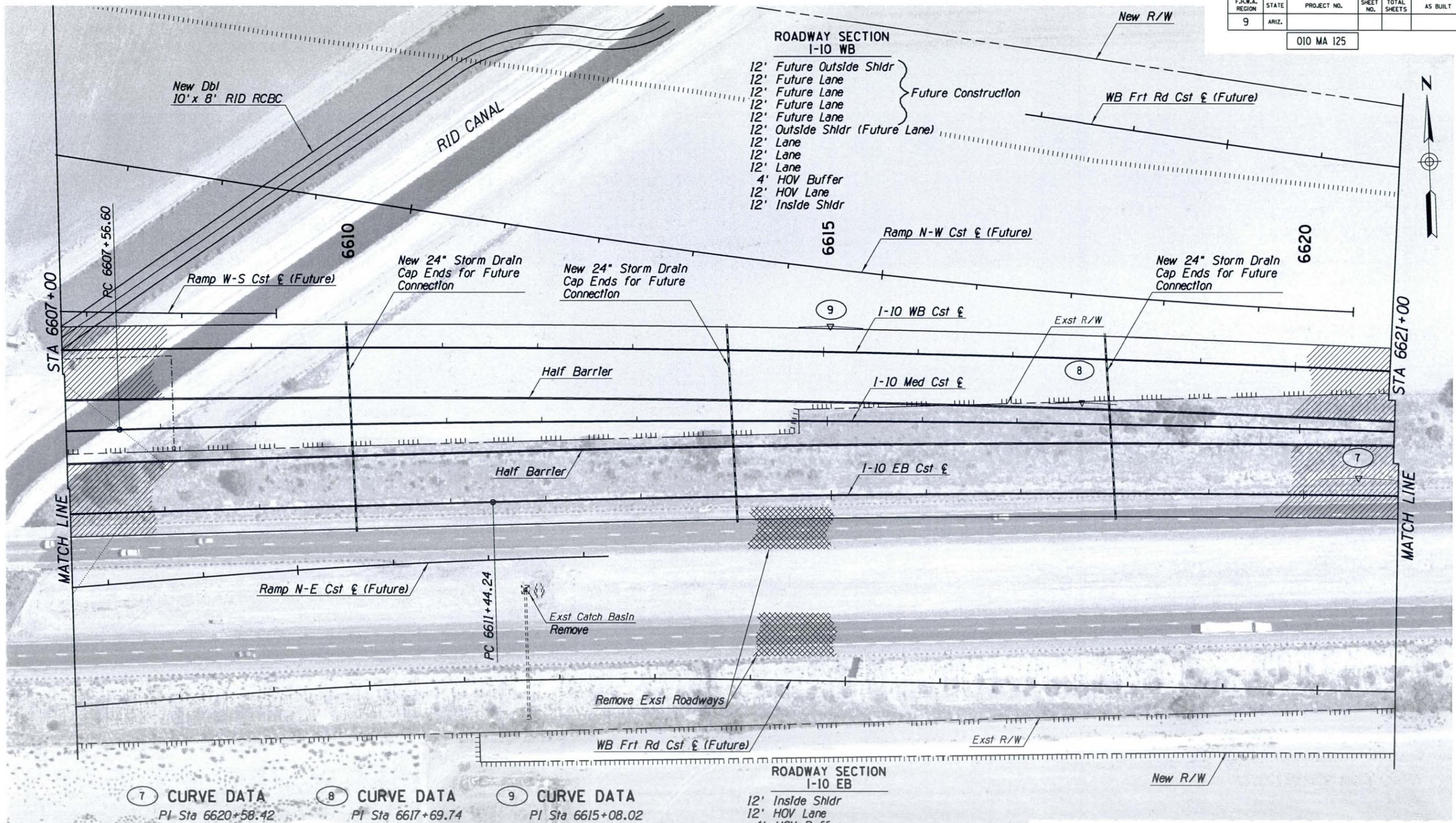
Future Construction

WB Frt Rd Cst & (Future)

**ROADWAY SECTION
I-10 EB**

- 12' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Outside Shldr (Future Lane)
- 12' Future Lane
- 12' Future Lane
- 12' Future Lane
- 12' Future Lane
- 12' Future Outside Shldr

Future Construction



7 CURVE DATA

PI Sta 6620+58.42
 Main Curve
 $\Delta=4^{\circ}34'06''$ Right
 $D=0^{\circ}15'00''$
 $R=22918.32$
 $L=1827.38$
 $T=914.18$
 $Ext=18.23$
 Super=NC

8 CURVE DATA

PI Sta 6617+69.74
 Main Curve
 $\Delta=5^{\circ}03'45''$ Right
 $D=0^{\circ}15'00''$
 $R=22918.32$
 $L=2024.96$
 $T=1013.14$
 $Ext=22.38$

9 CURVE DATA

PI Sta 6615+08.02
 Main Curve
 $\Delta=5^{\circ}30'48''$ Right
 $D=0^{\circ}15'00''$
 $R=22918.32$
 $L=2205.35$
 $T=1103.53$
 $Ext=26.55$
 Super=NC

DESIGN	RW	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC		2/06		
CHECKED	TK		2/06		
ROUTE		LOCATION		I-10 MAINLINE PLAN SHEET Sta 6607+00 to 6621+00	
I-10		SR 303L TO SR 101L		DWG NO	
TRACS NO.		H6879 OIL		17 OF 66	

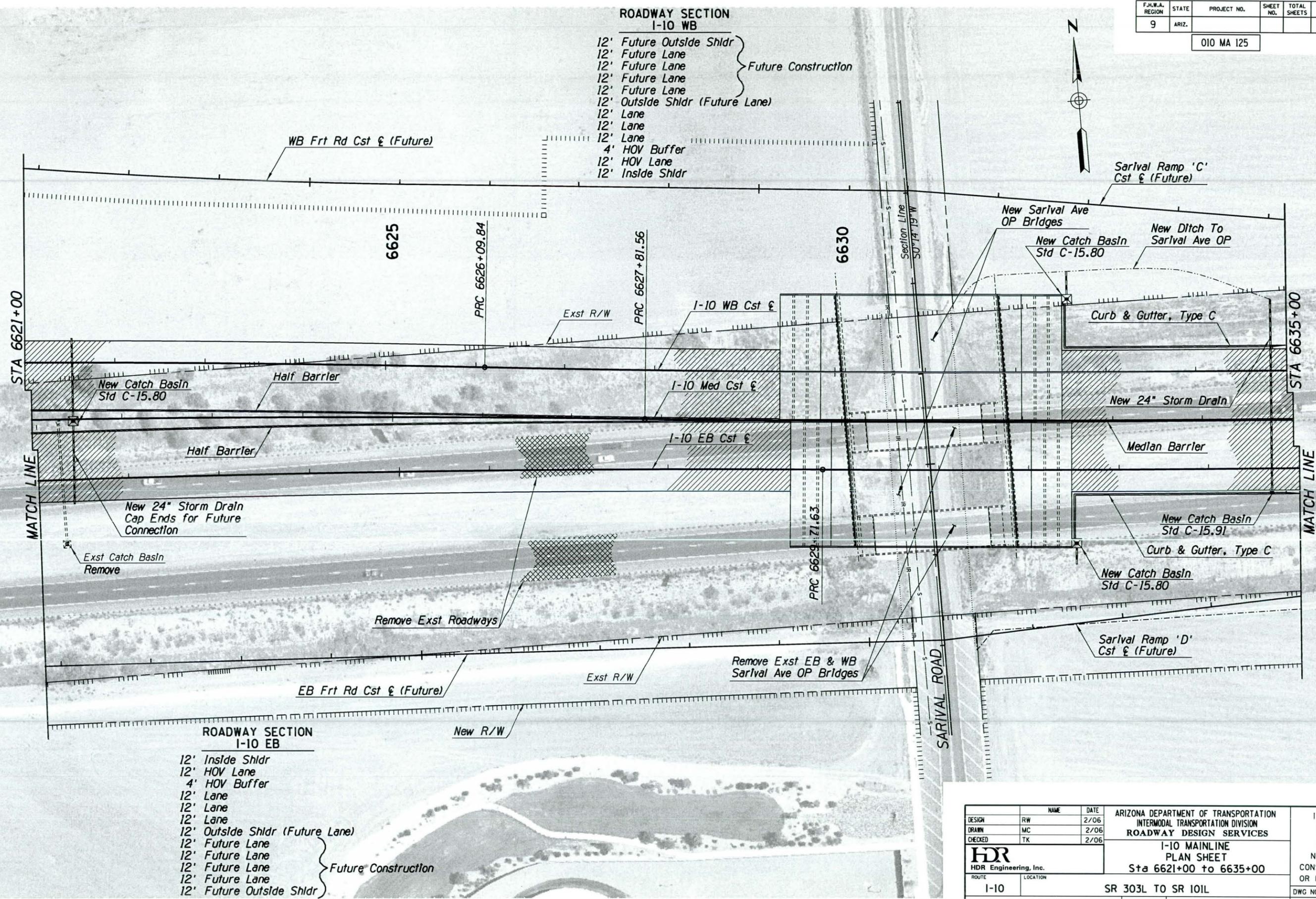
DATE: _____ LOCATION: _____ REVISIONS: _____ FINISHED PLANS: _____ SURVEY NO. _____ DATE: _____ LOCATION: _____ REVISIONS: _____ FINISHED PLANS: _____ SURVEY NO. _____

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

010 MA 125

**ROADWAY SECTION
I-10 WB**

- 12' Future Outside Shldr
 - 12' Future Lane
 - 12' Future Lane
 - 12' Future Lane
 - 12' Future Lane
 - 12' Outside Shldr (Future Lane)
 - 12' Lane
 - 12' Lane
 - 12' Lane
 - 4' HOV Buffer
 - 12' HOV Lane
 - 12' Inside Shldr
- } Future Construction



**ROADWAY SECTION
I-10 EB**

- 12' Inside Shldr
 - 12' HOV Lane
 - 4' HOV Buffer
 - 12' Lane
 - 12' Lane
 - 12' Lane
 - 12' Outside Shldr (Future Lane)
 - 12' Future Lane
 - 12' Future Lane
 - 12' Future Lane
 - 12' Future Lane
 - 12' Future Outside Shldr
- } Future Construction

DESIGN	RW	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC		2/06		
CHECKED	TK		2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6621+00 to 6635+00		DWG NO	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	18 OF 66	
TRACS NO.	H6879 OIL				

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

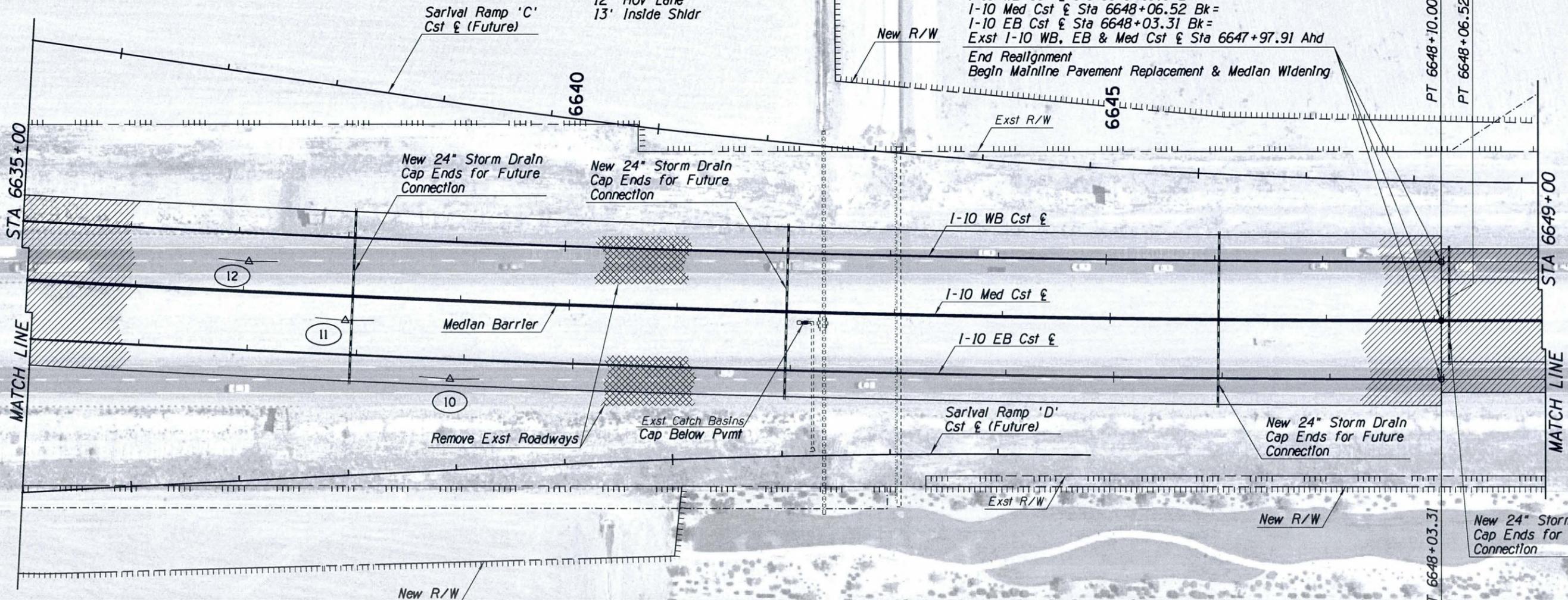
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

OIO MA 125

**ROADWAY SECTION
I-10 WB**

- 12' Future Outside Shldr
 - 12' Future Aux Lane
 - 12' Future Lane
 - 12' Future Lane
 - 12' Future Lane
 - 12' Outside Shldr (Future Lane)
 - 12' Lane
 - 12' Lane
 - 12' Lane
 - 4' HOV Buffer
 - 12' HOV Lane
 - 13' Inside Shldr
- } Future Construction

I-10 WB Cst & Sta 6648+10.0 Bk=
 I-10 Med Cst & Sta 6648+06.52 Bk=
 I-10 EB Cst & Sta 6648+03.31 Bk=
 Exst I-10 WB, EB & Med Cst & Sta 6647+97.91 Ahd
 End Realignment
 Begin Mainline Pavement Replacement & Median Widening



10 CURVE DATA
 PI Sta 6638+87.96
 Main Curve
 $\Delta=4^{\circ}34'06''$ Left
 $D=0^{\circ}14'58''$
 $R=22972.32$
 $L=1831.69$
 $T=916.33$
 $Ext=18.27$
 Super = NC

11 CURVE DATA
 PI Sta 6637+94.70
 Main Curve
 $\Delta=5^{\circ}03'45''$ Left
 $D=0^{\circ}00'00''$
 $R=22918.32$
 $L=2024.96$
 $T=1013.14$
 $Ext=22.38$

12 CURVE DATA
 PI Sta 6637+10.77
 Main Curve
 $\Delta=5^{\circ}30'48''$ Left
 $D=0^{\circ}15'02''$
 $R=22864.32$
 $L=2200.16$
 $T=1100.93$
 $Ext=26.49$
 Super = NC

**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
 - 12' HOV Lane
 - 4' HOV Buffer
 - 12' Lane
 - 12' Lane
 - 12' Lane
 - 12' Outside Shldr (Future Lane)
 - 12' Future Lane
 - 12' Future Lane
 - 12' Future Lane
 - 12' Future Aux Lane
 - 12' Future Outside Shldr
- } Future Construction

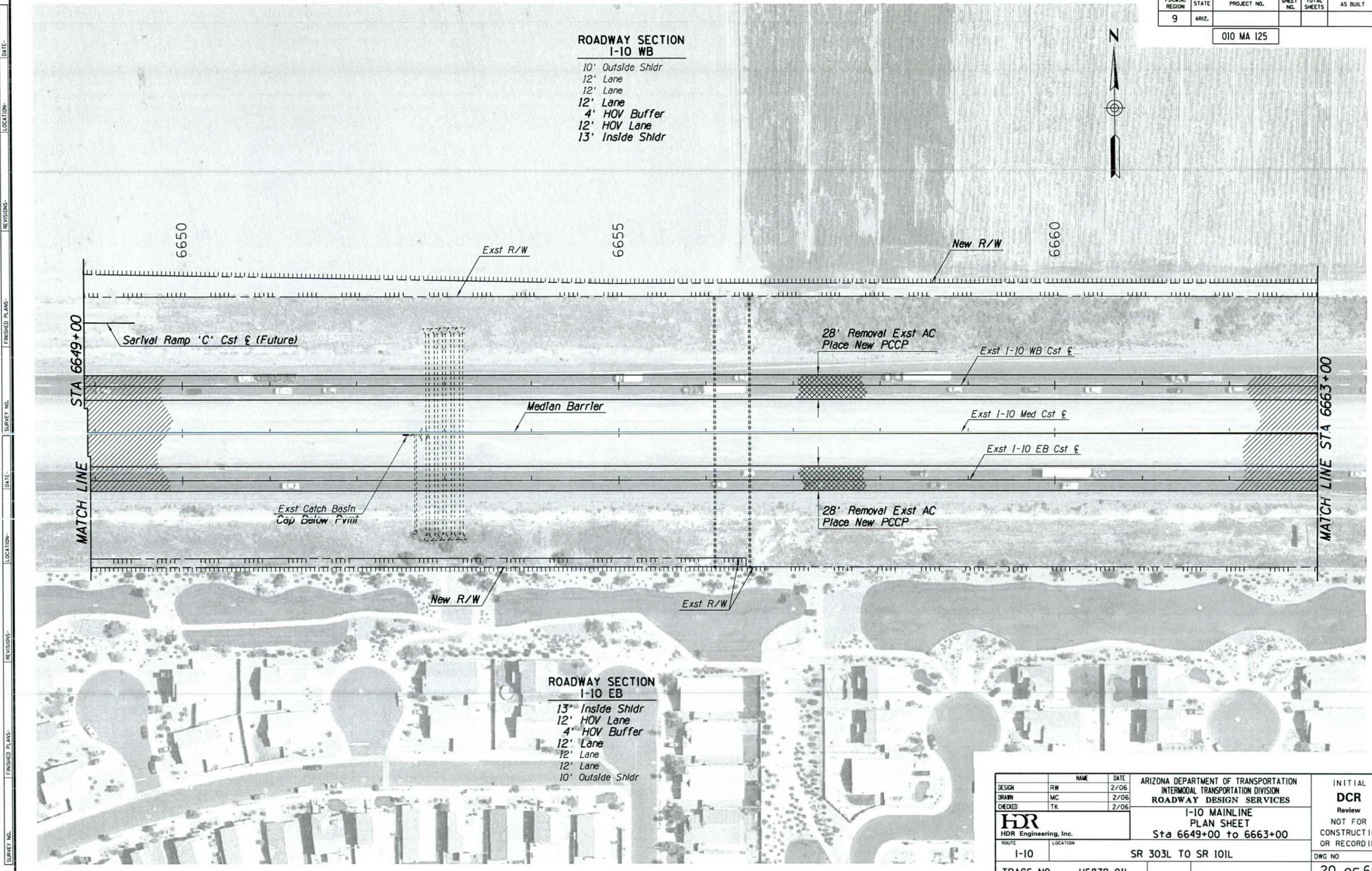
DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6635+00 to 6649+00		DWG NO	19 OF 66
ROUTE	LOCATION		SR 303L TO SR 101L		
TRACS NO.	H6879 OIL				

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

010 MA 125

**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr



**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 10' Outside Shldr

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

DESIGN	RW	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	2/06		
CHECKED	TK	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6649+00 to 6663+00		DWG NO 20 OF 66
ROUTE	LOCATION	SR 303L TO SR 101L		
TRACS NO.		H6879 OIL		

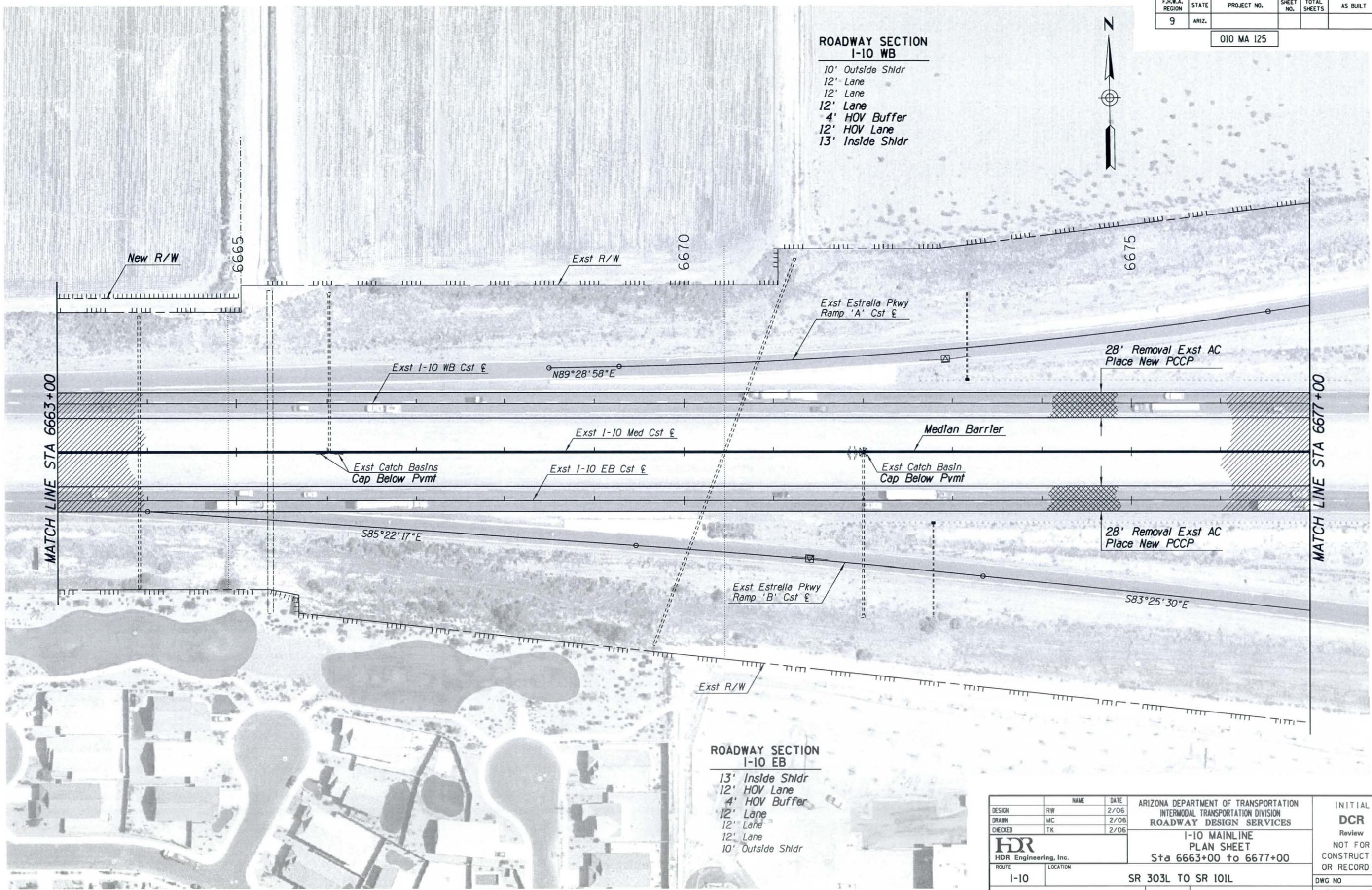
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

010 MA 125



**ROADWAY SECTION
I-10 WB**
 10' Outside Shldr
 12' Lane
 12' Lane
 12' Lane
 4' HOV Buffer
 12' HOV Lane
 13' Inside Shldr

**ROADWAY SECTION
I-10 EB**
 13' Inside Shldr
 12' HOV Lane
 4' HOV Buffer
 12' Lane
 12' Lane
 12' Lane
 10' Outside Shldr



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

DESIGN	RW	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	2/06		
CHECKED	TK	2/06		
 HDR Engineering, Inc.			I-10 MAINLINE PLAN SHEET Sta 6663+00 to 6677+00	DWG NO
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	21 OF 66
TRACS NO.	H6879 OIL			

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

010 MA 125



**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr

Exst R/W

Exst R/W

Exst Estrella Pkwy
Ramp 'A' Cst &

Exst Estrella Pkwy
Ramp 'C' Cst &

N82°11'30"E

S83°50'11"E

28' Removal Exst AC
Place New PCCP

28' Removal Exst AC
Place New PCCP

6680

6685

6690

PARKWAY

ESTRELLA

Section Line

MATCH LINE STA 6677+00

MATCH LINE STA 6691+00

Median Barrier

Exst I-10 WB Cst &

Exst I-10 Med Cst &

Median Barrier

Exst I-10 EB Cst &

Exst Catch Basin
Cap Below Pymt

28' Removal Exst AC
Place New PCCP

28' Removal Exst AC
Place New PCCP

Estrella Parkway TI OP
To Be Widened

S83°25'30"E

N80°26'21"E

Exst Estrella Pkwy
Ramp 'B' Cst &

Exst Estrella Pkwy
Ramp 'D' Cst &

Exst R/W

Exst R/W

**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	RW	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	2/06		
CHECKED	TK	2/06		
 HDR Engineering, Inc.			I-10 MAINLINE PLAN SHEET Sta 6677+00 to 6691+00	DWG NO 22 OF 66
ROUTE	LOCATION			
I-10	SR 303L TO SR 101L			
TRACS NO.	H6879 OIL			

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

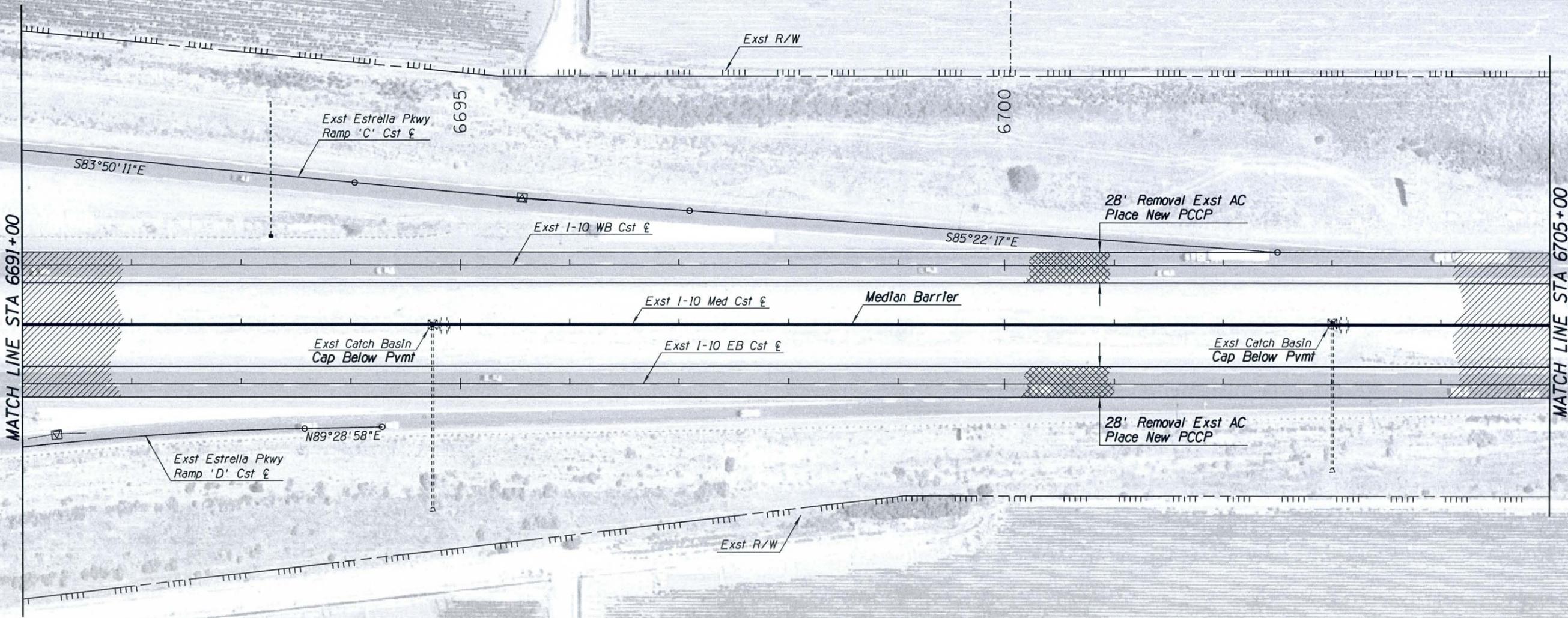
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

010 MA 125



**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr



**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 10' Outside Shldr

MATCH LINE STA 6691+00

MATCH LINE STA 6705+00

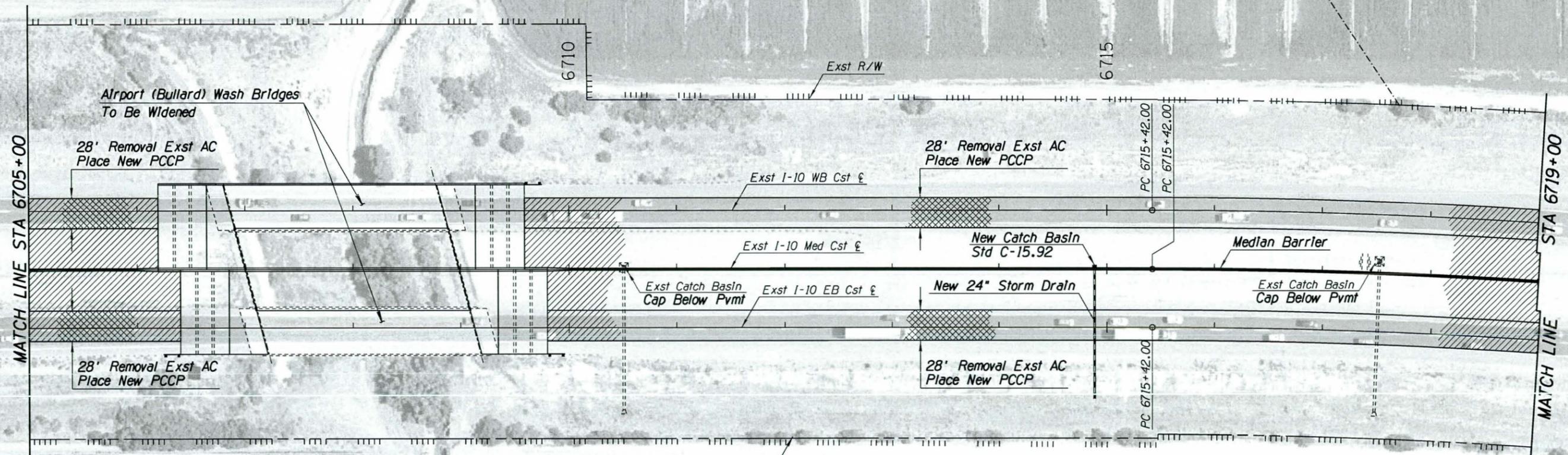
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DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6691+00 to 6705+00			DWG NO 23 OF 66
ROUTE	I-10	LOCATION	SR 303L TO SR 101L		
TRACS NO.	H6879 OIL				

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

010 MA 125

**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr



**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

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

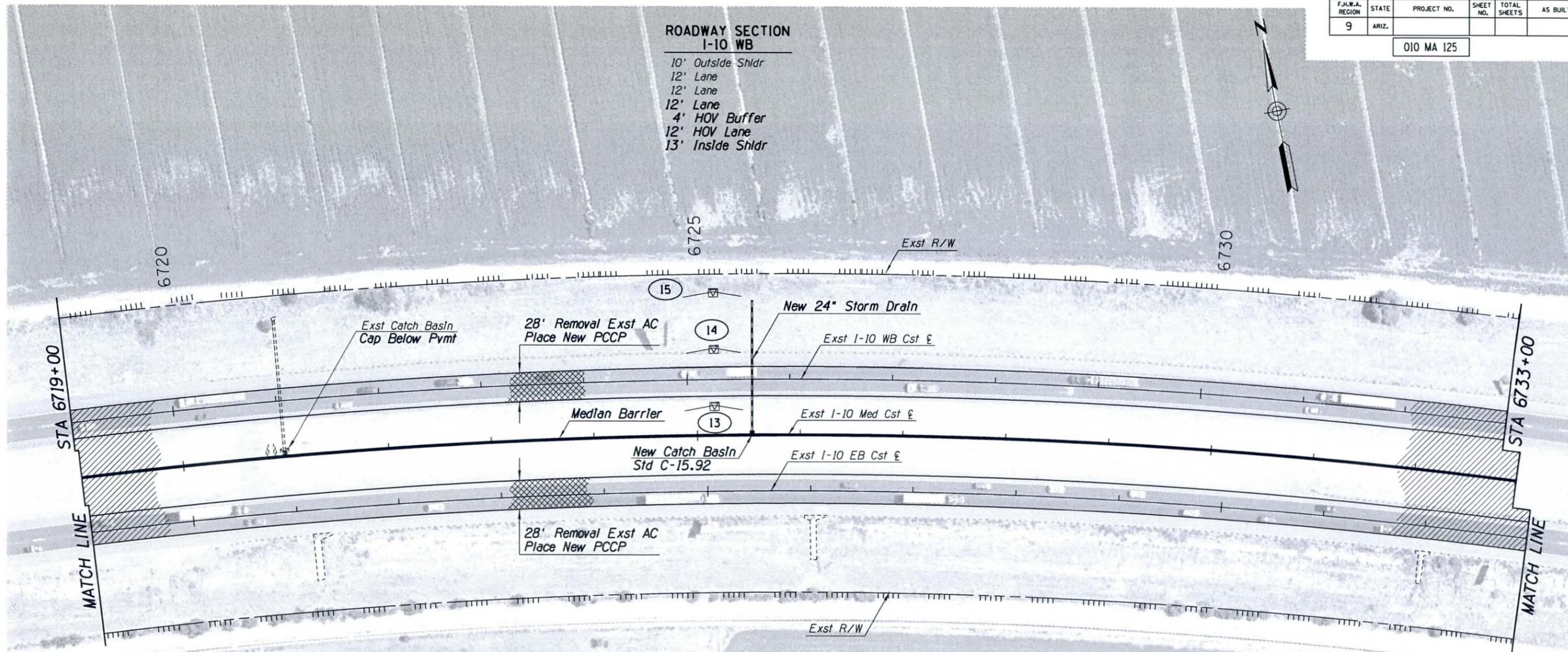
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DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6705+00 to 6719+00		DWG NO 24 OF 66	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L		
TRACS NO.	H6879 OIL				

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

010 MA 125

**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr



13	CURVE DATA	14	CURVE DATA	15	CURVE DATA
	PI Sta 6725+17.18		PI Sta 6729+83.62		PI Sta 6725+35.74
	Main Curve		Main Curve		Main Curve
	$\Delta=19^{\circ}29'56''$ Right		$\Delta=19^{\circ}29'56''$ Right		$\Delta=19^{\circ}29'56''$ Right
	$D=1^{\circ}00'34''$		$D=1^{\circ}00'00''$		$D=0^{\circ}59'26''$
	$R=5675.58$		$R=5729.58$		$R=5783.58$
	$L=1931.50$		$L=1949.88$		$L=1968.26$
	$T=975.18$		$T=984.46$		$T=993.74$
	$Ext=83.17$		$Ext=83.96$		$Ext=84.75$
	$Super=0.039'/ft$				$Super=0.039'/ft$

**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
 HDR Engineering, Inc.				I-10 MAINLINE PLAN SHEET Sta 6719+00 to 6733+00	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	DWG NO 25 OF 66	
TRACS NO.	H6879 OIL				

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

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

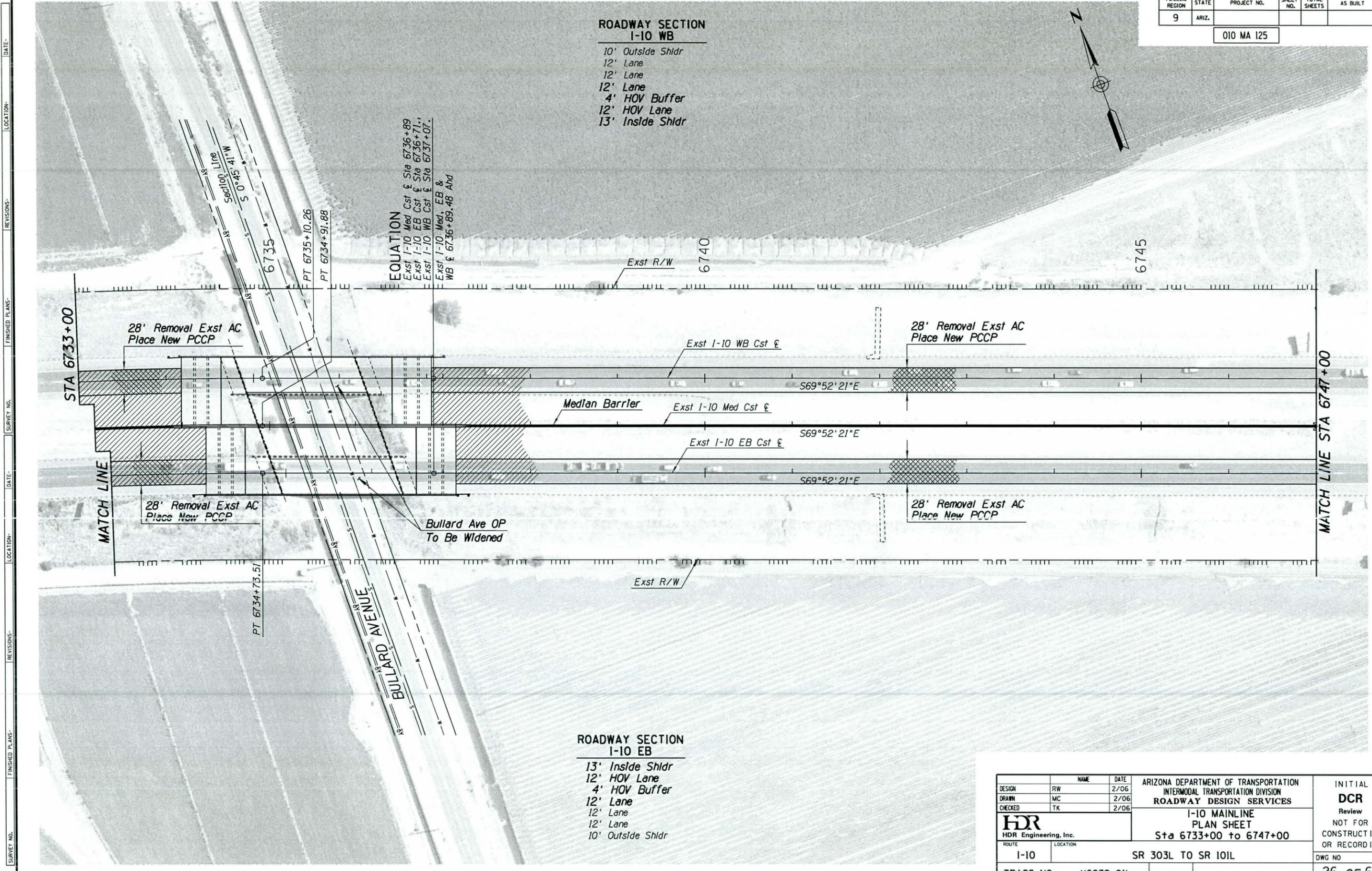
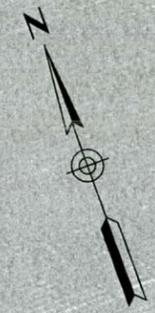
010 MA 125

**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr

**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr



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

DESIGN	RW	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	2/06		
CHECKED	TK	2/06		
 HDR Engineering, Inc.			I-10 MAINLINE PLAN SHEET Sta 6733+00 to 6747+00	
ROUTE	I-10		LOCATION	SR 303L TO SR 101L
TRACS NO.	H6879 OIL		DWG NO 26 OF 66	

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

O10 MA 125

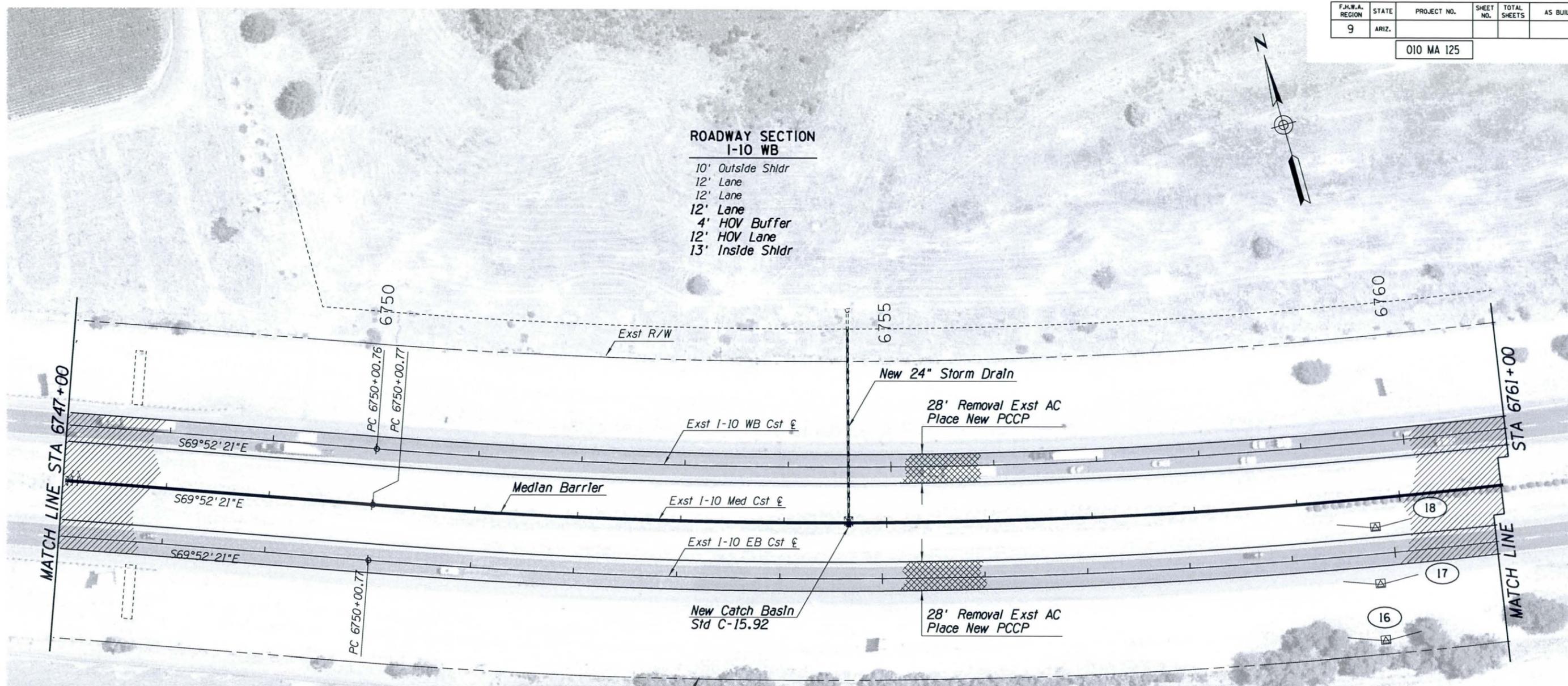


**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr

**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr



16	CURVE DATA	17	CURVE DATA	18	CURVE DATA
	PI Sta 6759+74.35		PI Sta 6759+83.62		PI Sta 6759+92.88
	Main Curve		Main Curve		Main Curve
	$\Delta=19^{\circ}28'03''$ Left		$\Delta=19^{\circ}28'03''$ Left		$\Delta=19^{\circ}28'03''$ Left
	$D=1^{\circ}00'34''$		$D=1^{\circ}00'00''$		$D=0^{\circ}59'26''$
	$R=5675.58$		$R=5729.58$		$R=5783.58$
	$L=1928.41$		$L=1946.76$		$L=1965.11$
	$T=973.59$		$T=982.85$		$T=992.12$
	$Ext=82.90$		$Ext=83.69$		$Ext=84.48$
	$Super=0.039/ft$				$Super=0.039/ft$

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.			I-10 MAINLINE PLAN SHEET Sta 6747+00 to 6761+00		
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	DWG NO	27 OF 66
TRACS NO.	H6879 OIL				

SURVEY NO. FINISHED PLANS DATE REVISIONS FINISHED PLANS DATE SURVEY NO. FINISHED PLANS DATE REVISIONS FINISHED PLANS DATE SURVEY NO.

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

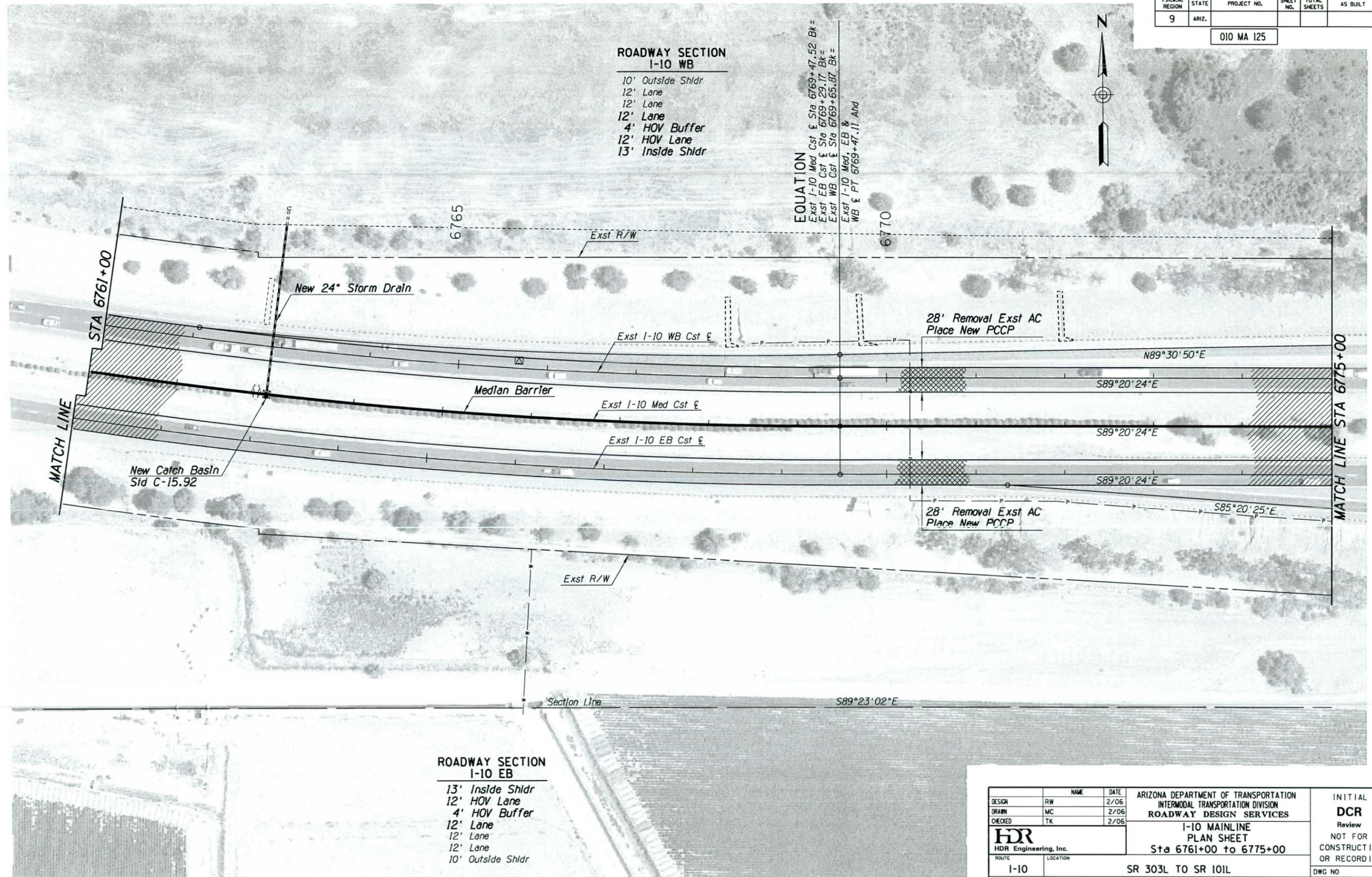
010 MA 125

**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr

EQUATION

Exst I-10 Med Cst & Sta 6769+47.52 Bk =
 Exst EB Cst & Sta 6769+29.17 Bk =
 Exst WB Cst & Sta 6769+65.87 Bk =
 Exst I-10 Med, EB & WB & PT 6769+47.11 Ahd



**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.				I-10 MAINLINE PLAN SHEET Sta 6761+00 to 6775+00	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L		
TRACS NO.	H6879 OIL			DWG NO. 28 OF 66	

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

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

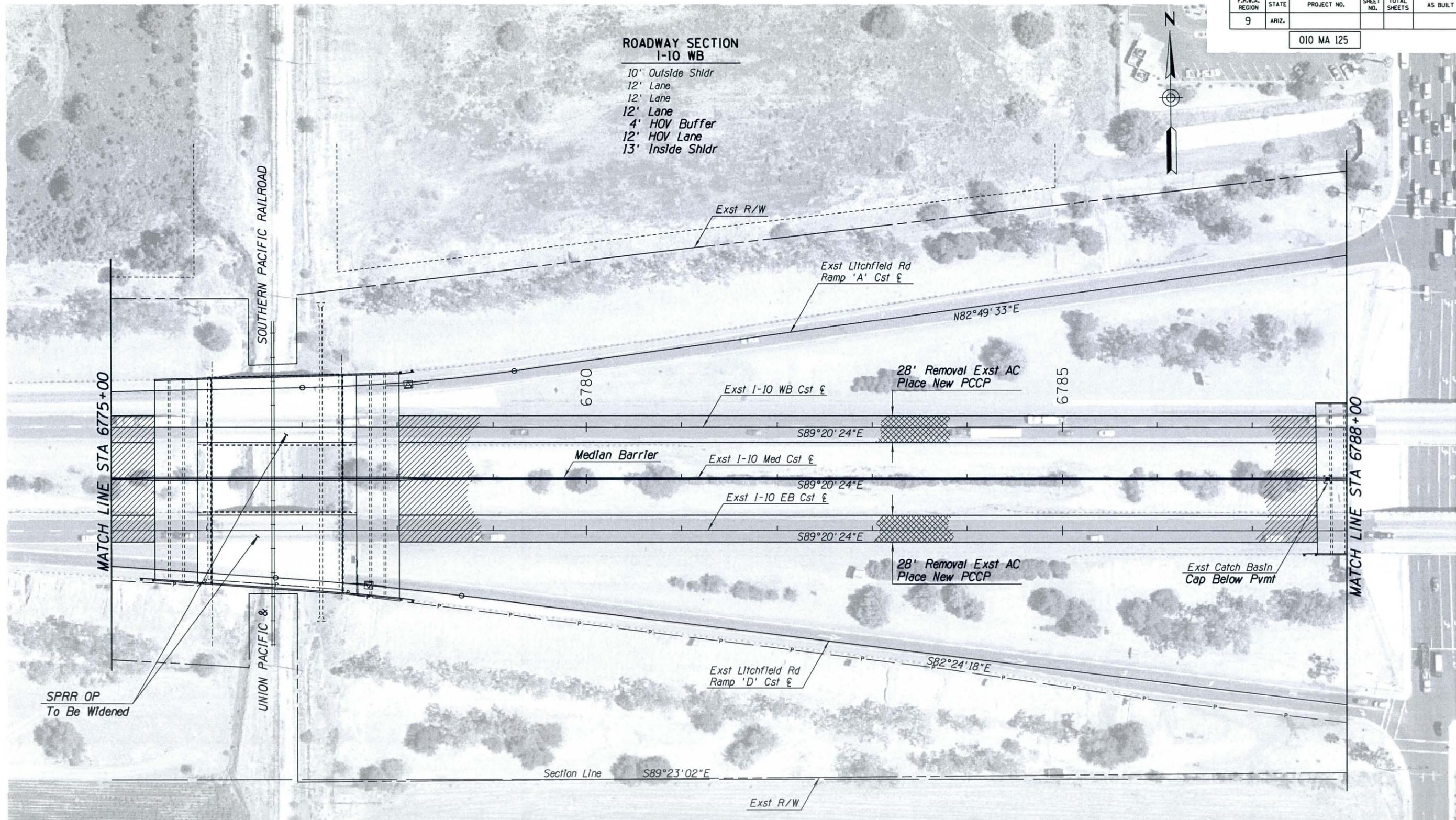
010 MA 125

**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr

**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 10' Outside Shldr



DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6775+00 to 6788+00		DWG NO	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	29 OF 66	
TRACS NO.	H6879 OIL				

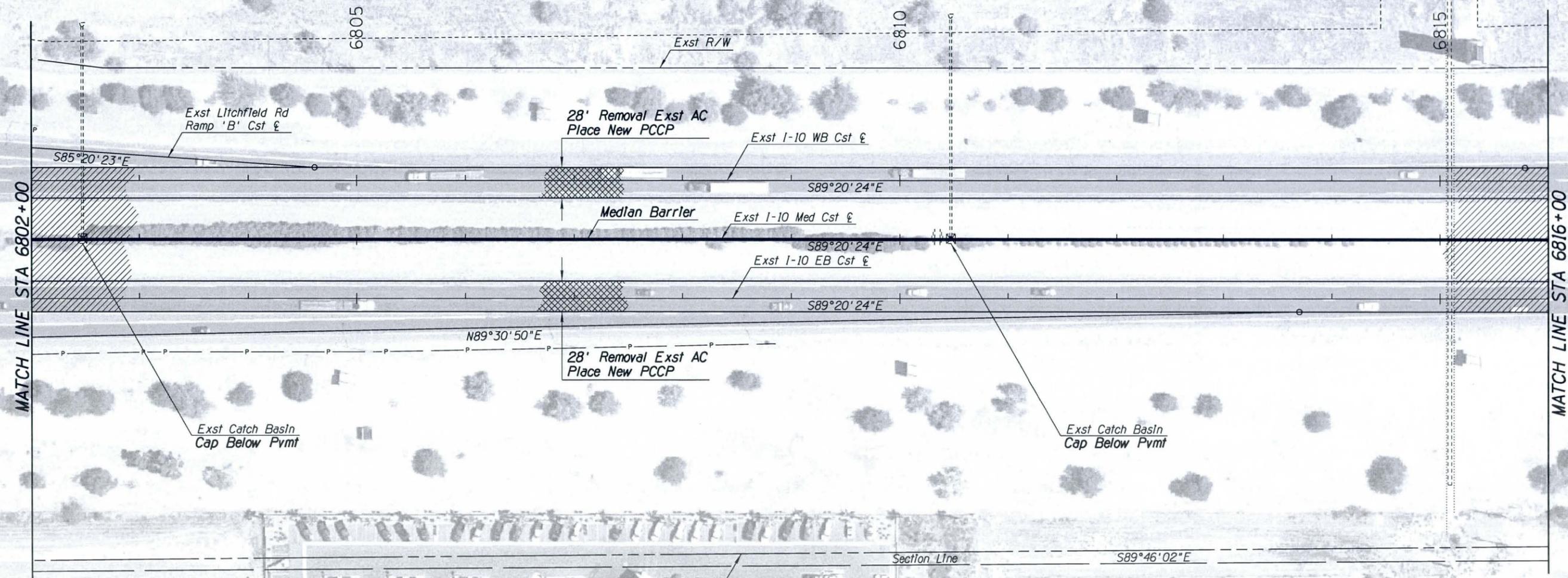
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

010 MA 125



**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr



**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

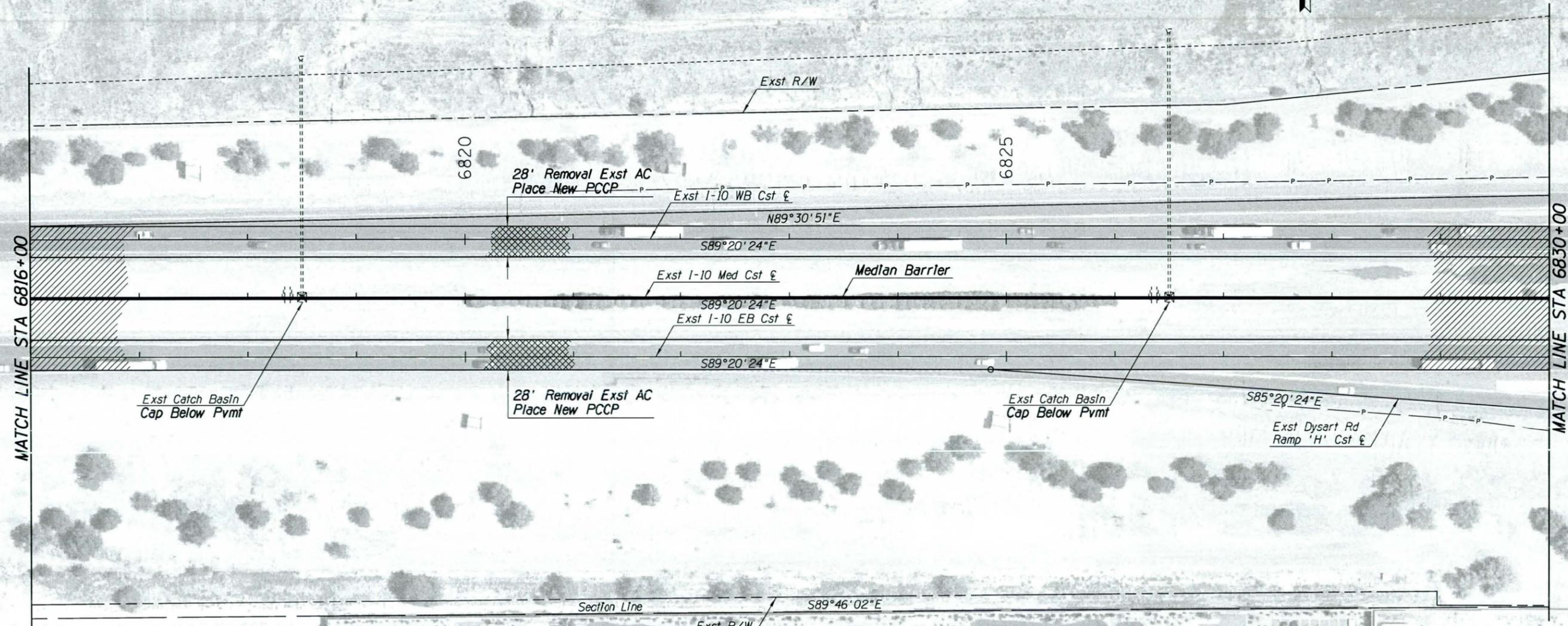
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DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6802+00 to 6816+00			
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	DWG NO	
TRACS NO.	H6879 OIL				31 OF 66

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

010 MA 125

**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr



**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6816+00 to 6830+00		DWG NO 32 OF 66	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L		
TRACS NO.	H6879 OIL				

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

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

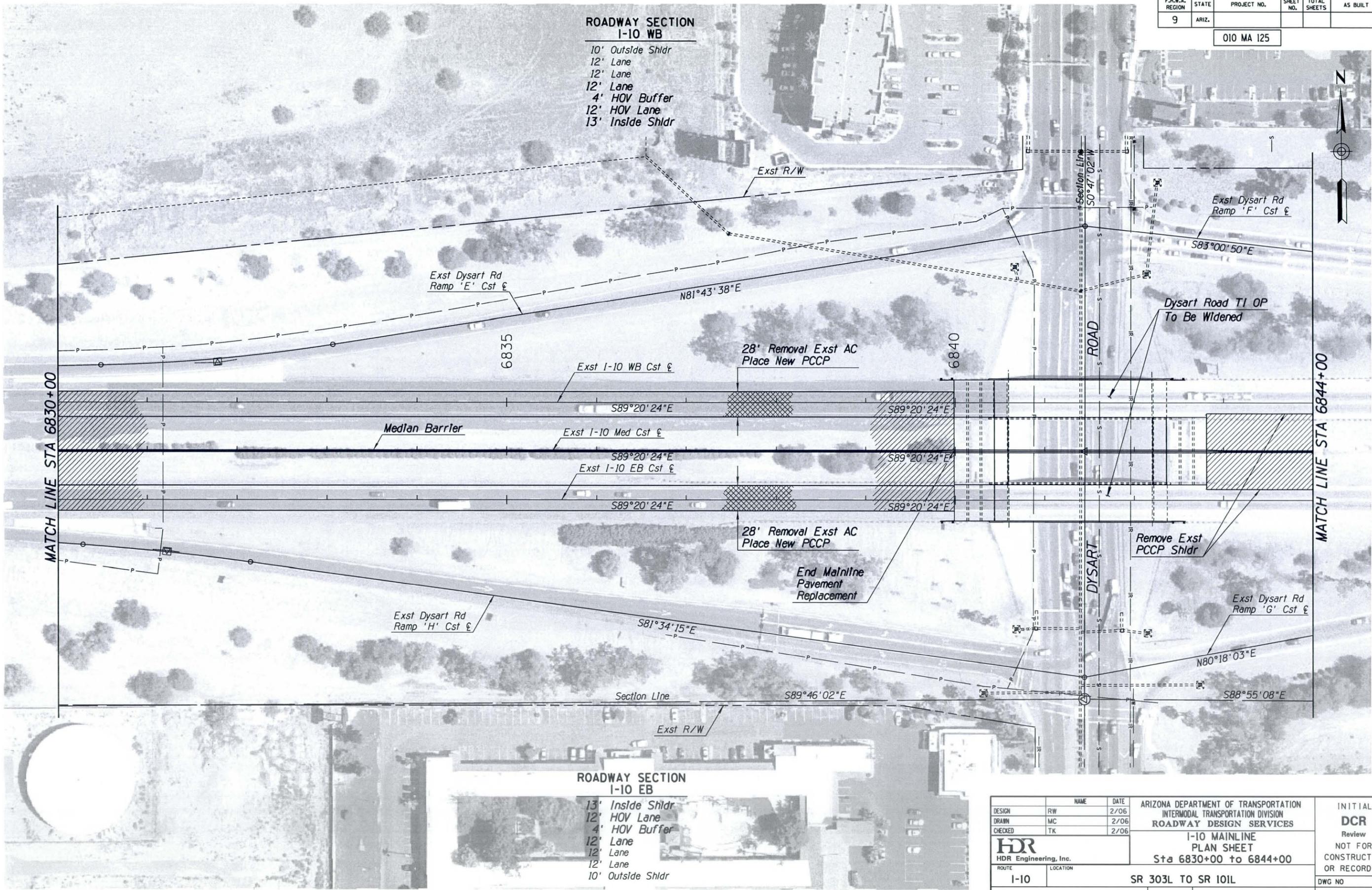
010 MA 125

**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr

**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr



MATCH LINE STA 6830+00

MATCH LINE STA 6844+00

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

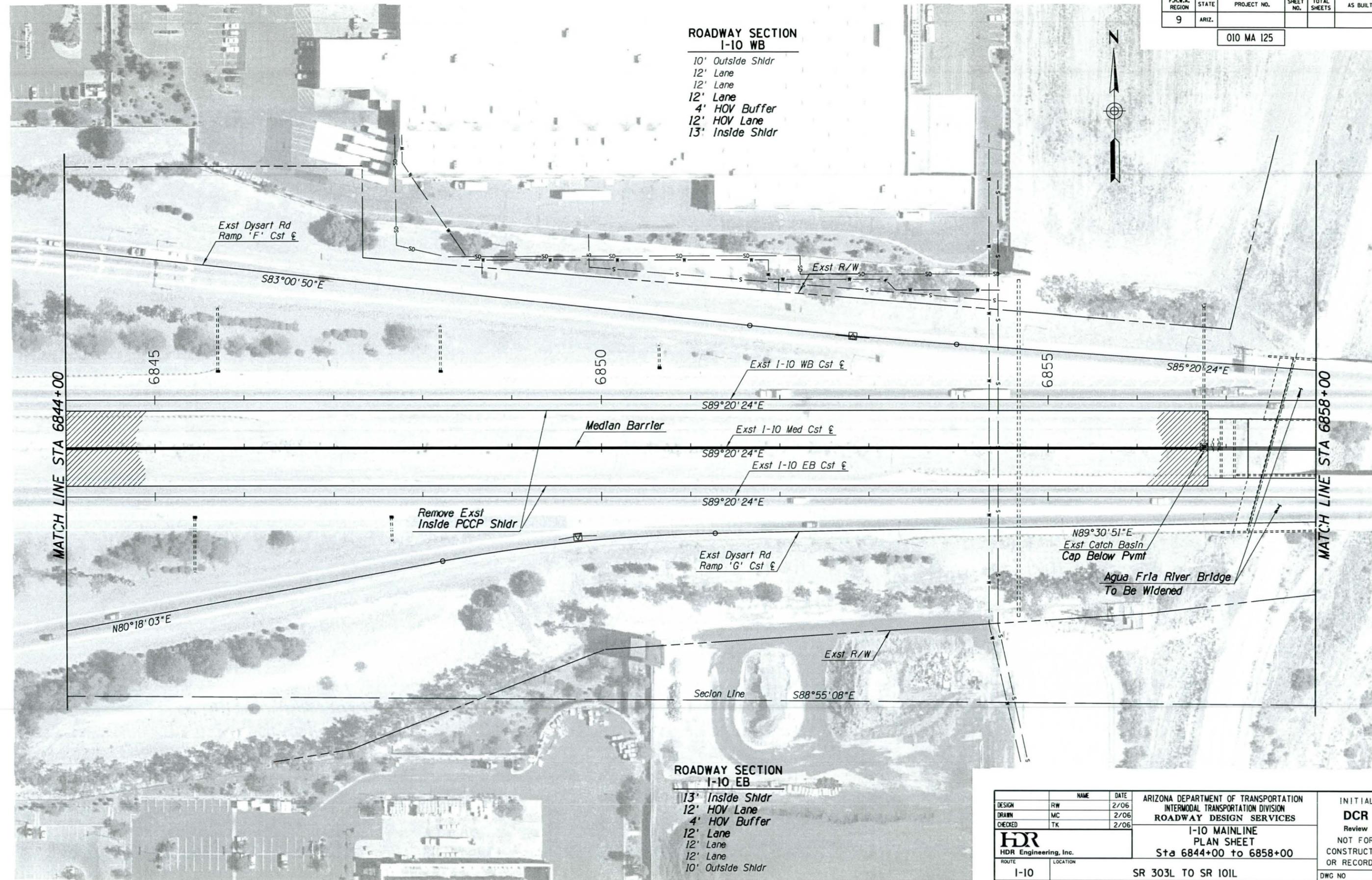
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DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
				I-10 MAINLINE PLAN SHEET Sta 6830+00 to 6844+00	DWG NO
ROUTE	I-10	LOCATION	SR 303L TO SR 101L		
TRACS NO.	H6879 OIL				33 OF 66

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

010 MA 125

**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr



**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	RW	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC		2/06		
CHECKED	TK		2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6844+00 to 6858+00			
ROUTE	LOCATION	SR 303L TO SR 101L			DWG NO
I-10					34 OF 66
TRACS NO.	H6879 OIL				

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

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

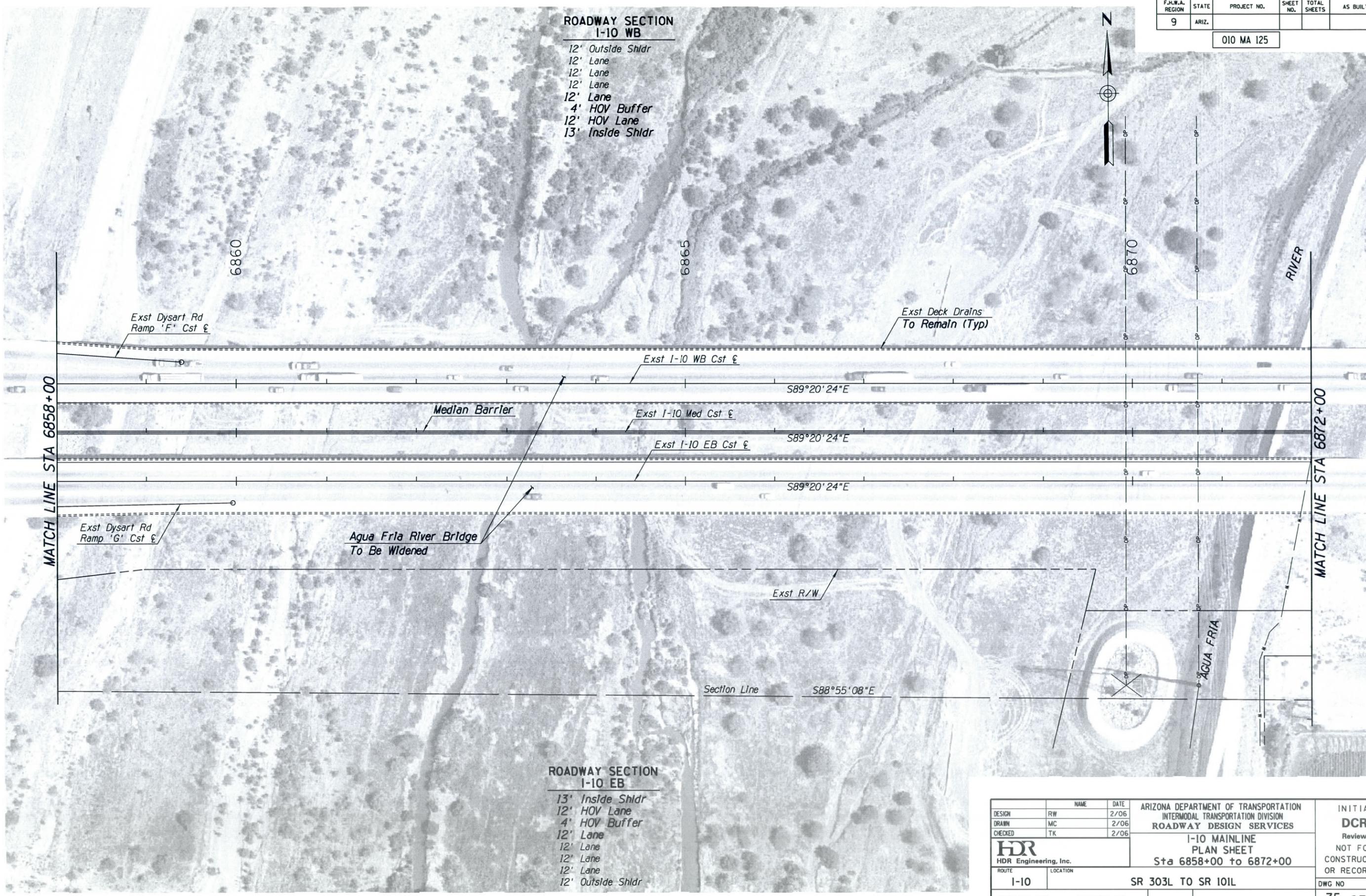
010 MA 125

**ROADWAY SECTION
I-10 WB**

- 12' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr

**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Outside Shldr



MATCH LINE STA 6858+00

MATCH LINE STA 6872+00

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6858+00 to 6872+00		DWG NO	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L		
TRACS NO.	H6879 OIL				35 OF 66

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

010 MA 125



**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr

6875

6880

6885

Agua Fria River Bridge
To Be Widened

Exst I-10 WB Cst ϵ

S89°20'24"E

Exst I-10 Med Cst ϵ

S89°20'24"E

Exst I-10 EB Cst ϵ

S89°20'24"E

Median Barrier

Remove Exst
Inside PCCP Shldr

Exst R/W

Section Line

S88°55'08"E

MATCH LINE STA 6872+00

MATCH LINE STA 6886+00

**ROADWAY SECTION
I-10 EB**

- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	RW	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC		2/06		
CHECKED	TK		2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6872+00 to 6886+00			
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	DWG NO	
TRACS NO.	H6879 OIL				36 OF 66

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

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

OIO MA 125



**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 4' HOV Buffer
- 12' HOV Lane
- 13' Inside Shldr

Section Line
S0°32'47"W

6890

6895

Exst Catch Basin
Cap Below Pvmf

Exst I-10 WB Cst ϕ

S89°20'24"E

Exst I-10 Med Cst ϕ

S89°20'24"E

Exst I-10 EB Cst ϕ

S89°20'24"E

Median Barrier

Remove Exst
Inside PCCP Shldr

Exst R/W

Exst R/W

Section Line
S88°55'08"E

Section Line
S89°53'19"E

MATCH LINE STA 6886+00

MATCH LINE STA 6900+00

**ROADWAY SECTION
I-10 EB**

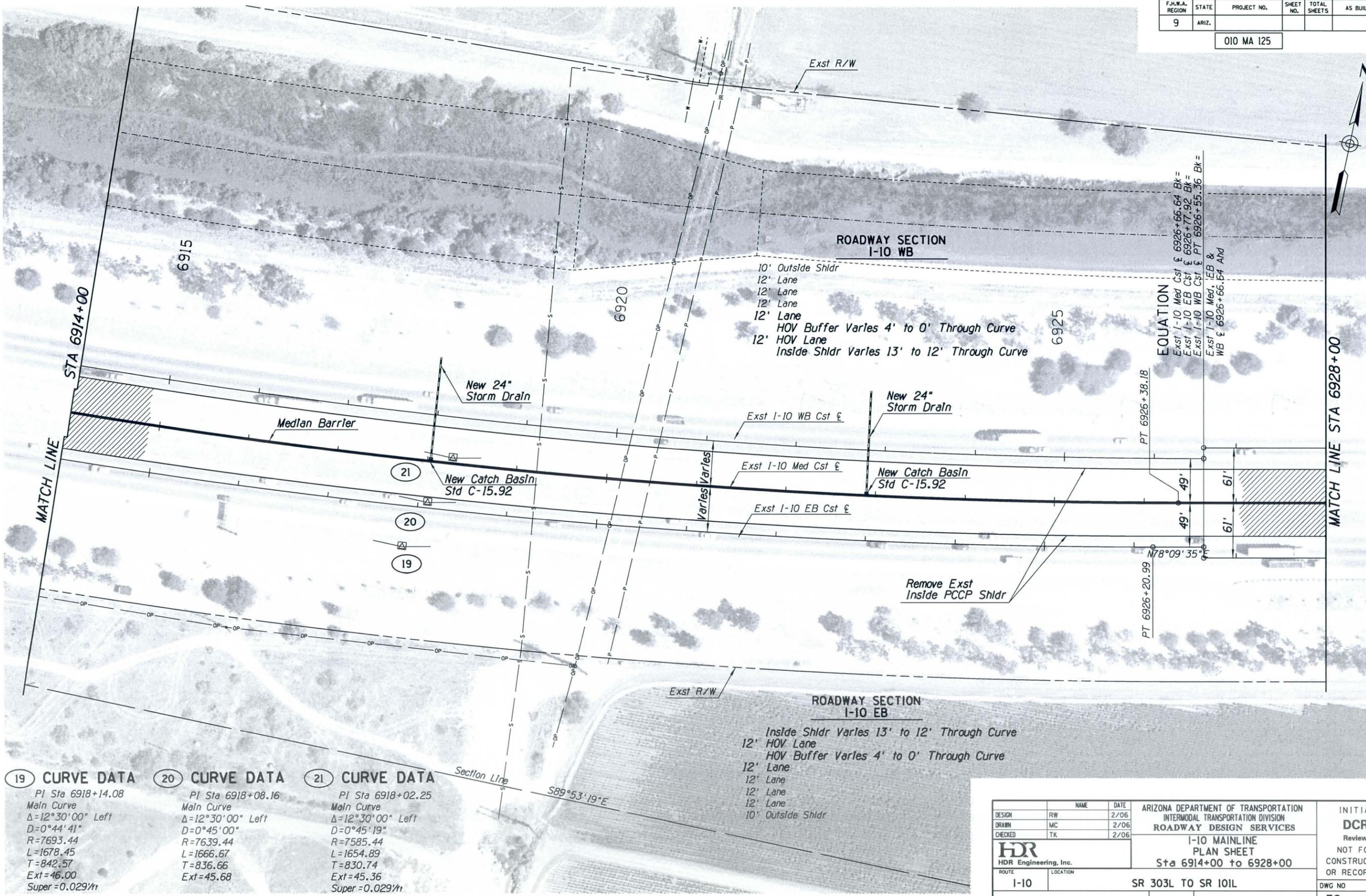
- 13' Inside Shldr
- 12' HOV Lane
- 4' HOV Buffer
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6886+00 to 6900+00		DWG NO	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	DWG NO	
TRACS NO.	H6879 OIL				37 OF 66

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

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

OIO MA 125



19 CURVE DATA	20 CURVE DATA	21 CURVE DATA
PI Sta 6918+14.08	PI Sta 6918+08.16	PI Sta 6918+02.25
Main Curve	Main Curve	Main Curve
$\Delta=12^{\circ}30'00''$ Left	$\Delta=12^{\circ}30'00''$ Left	$\Delta=12^{\circ}30'00''$ Left
D=0°44' 41"	D=0°45' 00"	D=0°45' 19"
R=7693.44	R=7639.44	R=7585.44
L=1678.45	L=1666.67	L=1654.89
T=842.57	T=836.66	T=830.74
Ext=46.00	Ext=45.68	Ext=45.36
Super = 0.029/ft		Super = 0.029/ft

ROADWAY SECTION I-10 EB

Inside Shldr Varies 13' to 12' Through Curve
 12' HOV Lane
 HOV Buffer Varies 4' to 0' Through Curve
 12' Lane
 12' Lane
 12' Lane
 10' Outside Shldr

ROADWAY SECTION I-10 WB

10' Outside Shldr
 12' Lane
 12' Lane
 12' Lane
 12' Lane
 HOV Buffer Varies 4' to 0' Through Curve
 12' HOV Lane
 Inside Shldr Varies 13' to 12' Through Curve

EQUATION

Exst I-10 Med Cst ξ 6926+66.64 Bk =
 Exst I-10 EB Cst ξ 6926+77.92 Bk =
 Exst I-10 WB Cst ξ PT 6926+55.36 Bk =
 Exst I-10 Med, EB & WB ξ 6926+66.64 Ahd

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		ROUTE		I-10	
		LOCATION		SR 303L TO SR 101L	
TRACS NO.		H6879 OIL		DWG NO	
				39 OF 66	

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

010 MA 125

**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 12' HOV Lane
- 12' Inside Shldr

Exst R/W



MATCH LINE STA 6928+00

MATCH LINE STA 6942+00

6930

6935

6940

N77°00'51"E

N70°40'02"E

Median Barrier

Exst I-10 Med Cst ξ

Exst I-10 EB Cst ξ

N82°09'36"E

Exst Catch Basin
Cap Below Pymt

Remove Exst
Inside PCCP Shldr

Exst Avondale
Ramp 'D' Cst ξ

N84°23'52"E

Exst R/W

**ROADWAY SECTION
I-10 EB**

- 12' Inside Shldr
- 12' HOV Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.				I-10 MAINLINE PLAN SHEET Sta 6928+00 to 6942+00	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L		
TRACS NO.	H6879 OIL			DWG NO. 40 OF 66	

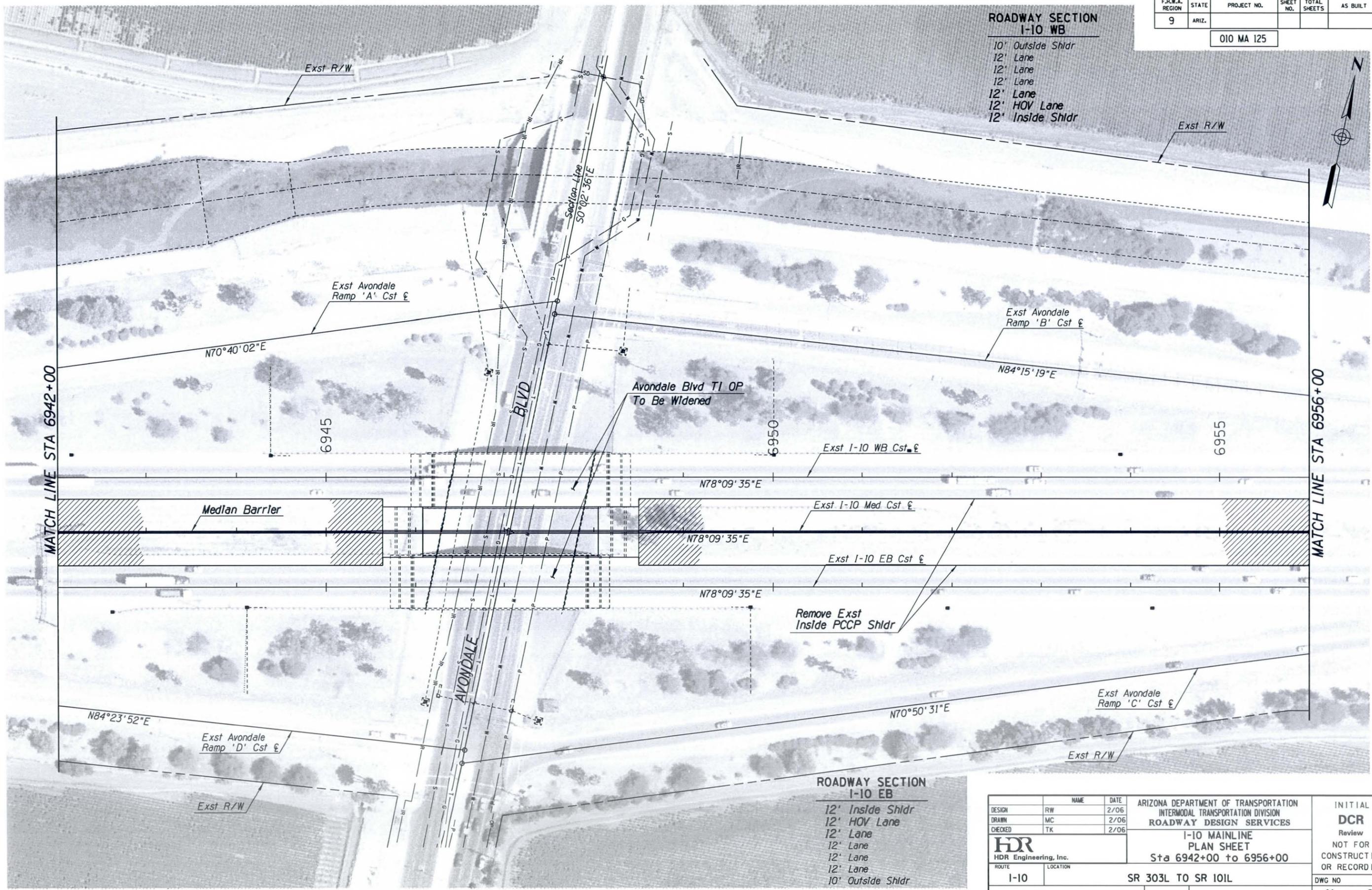
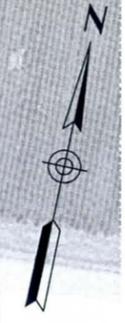
DATE: _____ LOCATION: _____ REVISIONS: _____ FINISHED PLANS: _____ SURVEY NO. _____ DATE: _____ LOCATION: _____ REVISIONS: _____ FINISHED PLANS: _____ SURVEY NO. _____

F.H.R.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

010 MA 125

**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 12' HOV Lane
- 12' Inside Shldr



**ROADWAY SECTION
I-10 EB**

- 12' Inside Shldr
- 12' HOV Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6942+00 to 6956+00			
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	DWG NO	
TRACS NO.	H6879 OIL				41 OF 66

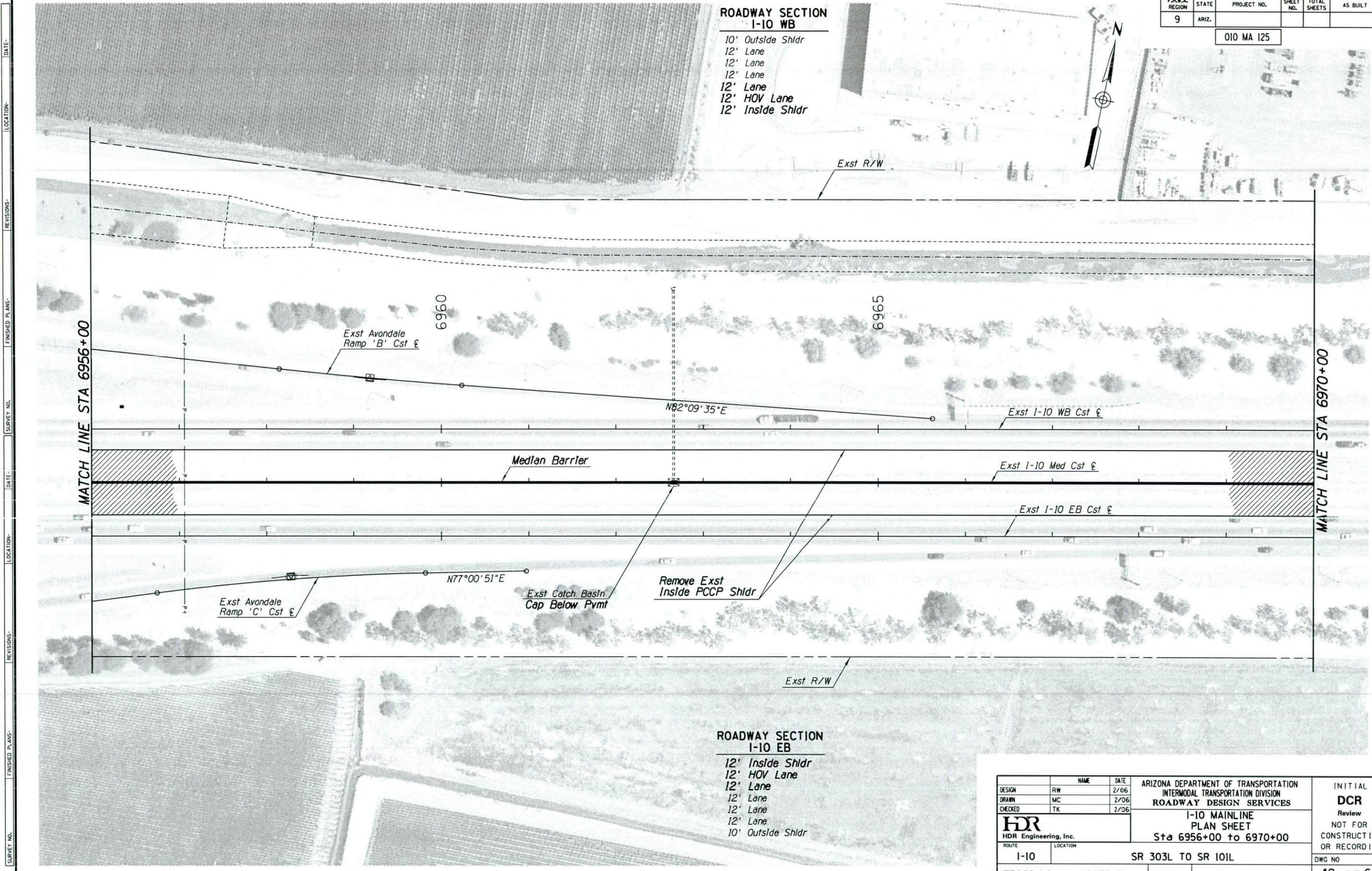
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F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

010 MA 125

**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 12' HOV Lane
- 12' Inside Shldr



**ROADWAY SECTION
I-10 EB**

- 12' Inside Shldr
- 12' HOV Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	RW	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC		2/06		
CHECKED	TK		2/06		
ROUTE		LOCATION		I-10 MAINLINE PLAN SHEET Sta 6956+00 to 6970+00	
I-10		SR 303L TO SR 101L		DWG NO	
TRACS NO.		H6879 OIL		42 OF 66	

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

F.H.R.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

010 MA 125

**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 12' HOV Lane
- 12' Inside Shldr

22 CURVE DATA

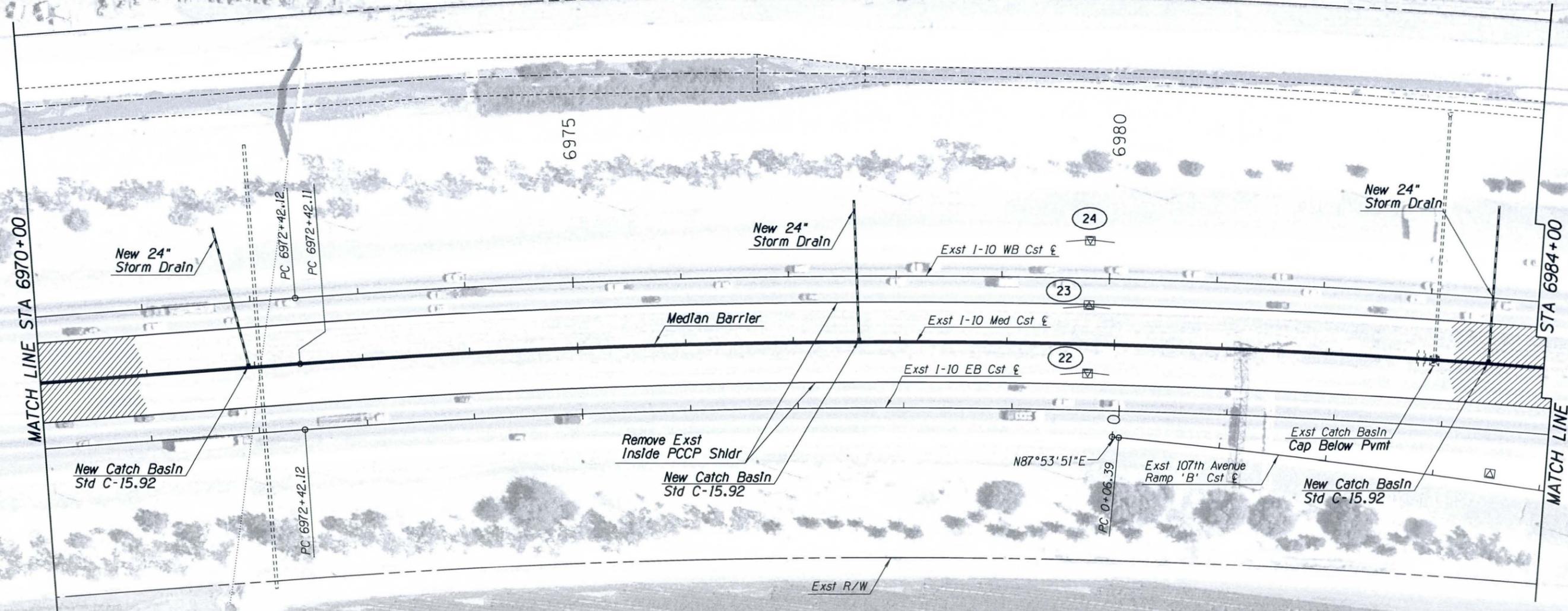
PI Sta 6979+71.84
 Main Curve
 $\Delta=11^{\circ}00'00''$ Right
 $D=0^{\circ}45'22''$
 $R=7578.44$
 $L=1454.96$
 $T=729.72$
 $Ext=35.05$
 $Super=0.029/fr$

23 CURVE DATA

PI Sta 6979+77.71
 Main Curve
 $\Delta=11^{\circ}00'00''$ Right
 $D=0^{\circ}45'00''$
 $R=7639.44$
 $L=1466.67$
 $T=735.60$
 $Ext=35.33$

24 CURVE DATA

PI Sta 6979+83.58
 Main Curve
 $\Delta=11^{\circ}00'00''$ Right
 $D=9^{\circ}44'39''$
 $R=7700.44$
 $L=1478.38$
 $T=741.47$
 $Ext=35.62$
 $Super=0.029/fr$



**ROADWAY SECTION
I-10 EB**

- 12' Inside Shldr
- 12' HOV Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.				I-10 MAINLINE PLAN SHEET Sta 6970+00 to 6984+00	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	DWG NO	
TRACS NO.	H6879 OIL				43 OF 66

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

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

010 MA 125

**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 12' HOV Lane
- 12' Inside Shldr

**ROADWAY SECTION
I-10 EB**

- 12' Inside Shldr
- 12' HOV Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

EQUATION
 Exst I-10 Med Cst & PT Sta 6987+08.78 E
 Exst I-10 EB Cst & PT Sta 6986+97.07 B
 Exst I-10 WB Cst & PT Sta 6787+20.50 B
 Exst I-10 Med, EB & WB & PT Sta 6987+03.56 Ahd

PT 6+98.69

Exst R/W

Exst 107th Avenue Ramp 'A' Cst &

N85°56'40"E

Exst I-10 WB Cst &

Median Barrier

Exst I-10 Med Cst &

Exst I-10 EB Cst &

Remove Exst Inside PCCP Shldr

Exst 107th Avenue Ramp 'B' Cst &

S86°54'37"E

Exst R/W

STA 6984+00
POB 0+00.00

MATCH LINE

MATCH LINE STA 6997+00

6985

6990

6995

5

5

10

10

15



DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6984+00 to 6997+00			DWG NO
ROUTE	I-10	LOCATION	SR 303L TO SR 101L		44 OF 66
TRACS NO.	H6879 OIL				

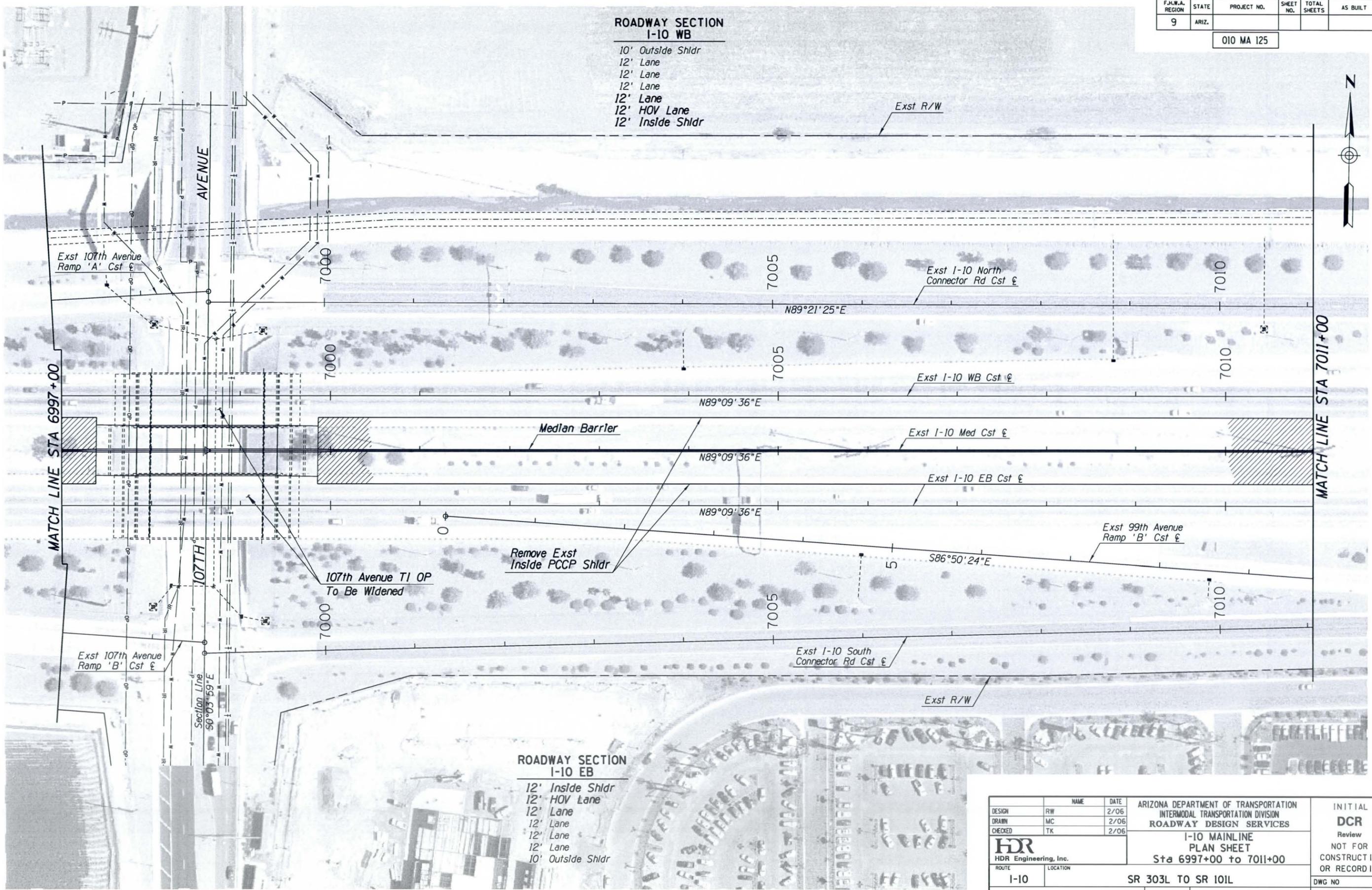
SURVEY NO. FINISHED PLANS DATE LOCATION REVISIONS FINISHED PLANS DATE LOCATION REVISIONS FINISHED PLANS DATE LOCATION REVISIONS

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

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**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 12' HOV Lane
- 12' Inside Shldr



**ROADWAY SECTION
I-10 EB**

- 12' Inside Shldr
- 12' HOV Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr



MATCH LINE STA 6997+00

MATCH LINE STA 7011+00

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 6997+00 to 7011+00			
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	DWG NO	
TRACS NO.	H6879 OIL				45 OF 66

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

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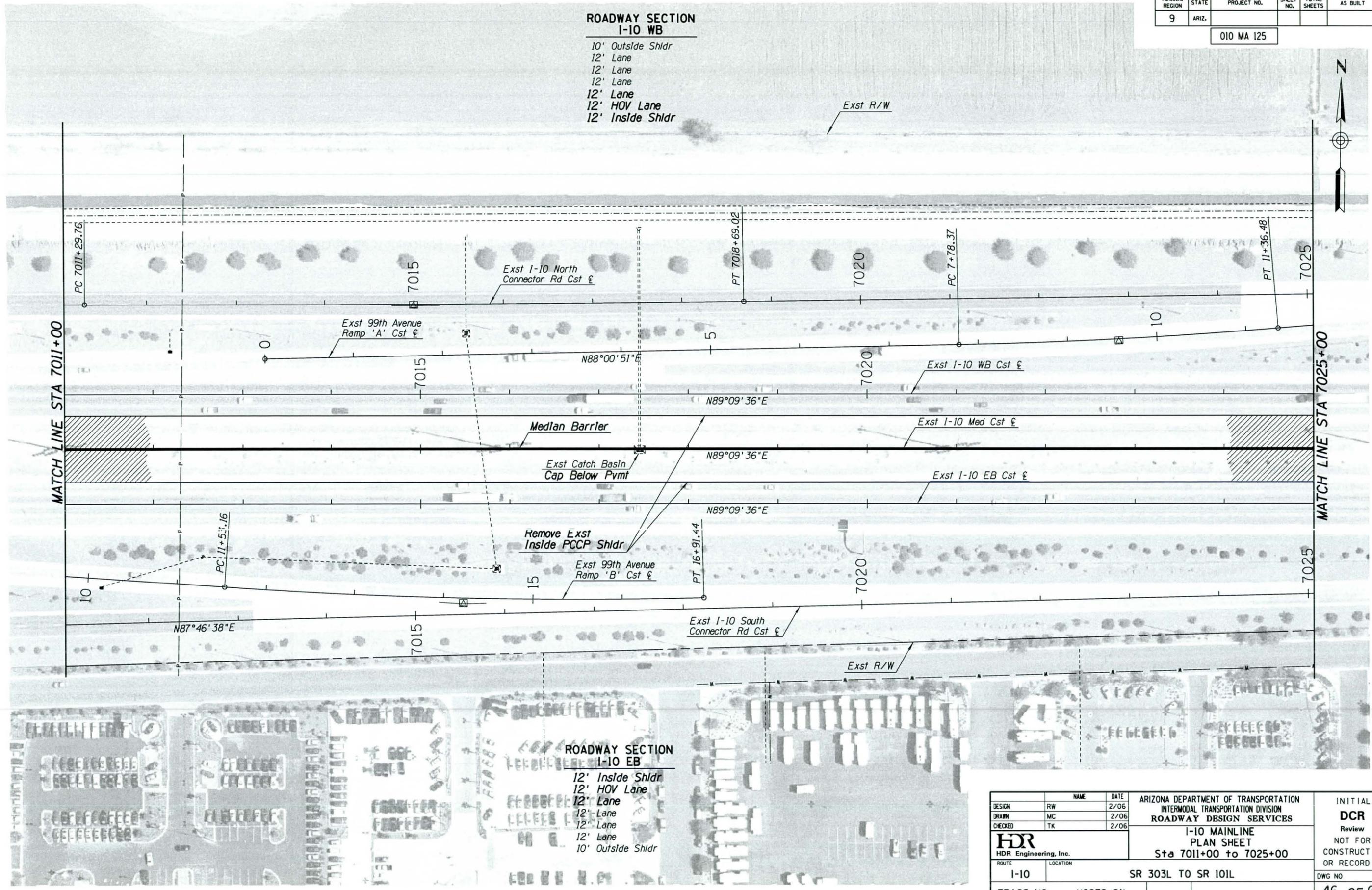
**ROADWAY SECTION
I-10 WB**

- 10' Outside Shldr
- 12' Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 12' HOV Lane
- 12' Inside Shldr



MATCH LINE STA 7011+00

MATCH LINE STA 7025+00



**ROADWAY SECTION
I-10 EB**

- 12' Inside Shldr
- 12' HOV Lane
- 12' Lane
- 12' Lane
- 12' Lane
- 10' Outside Shldr

DESIGN	RW	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	2/06		
CHECKED	TK	2/06		
 HDR Engineering, Inc.			I-10 MAINLINE PLAN SHEET Sta 7011+00 to 7025+00	
ROUTE	LOCATION	SR 303L TO SR 101L		DWG NO
I-10				46 OF 66
TRACS NO.	H6879 OIL			

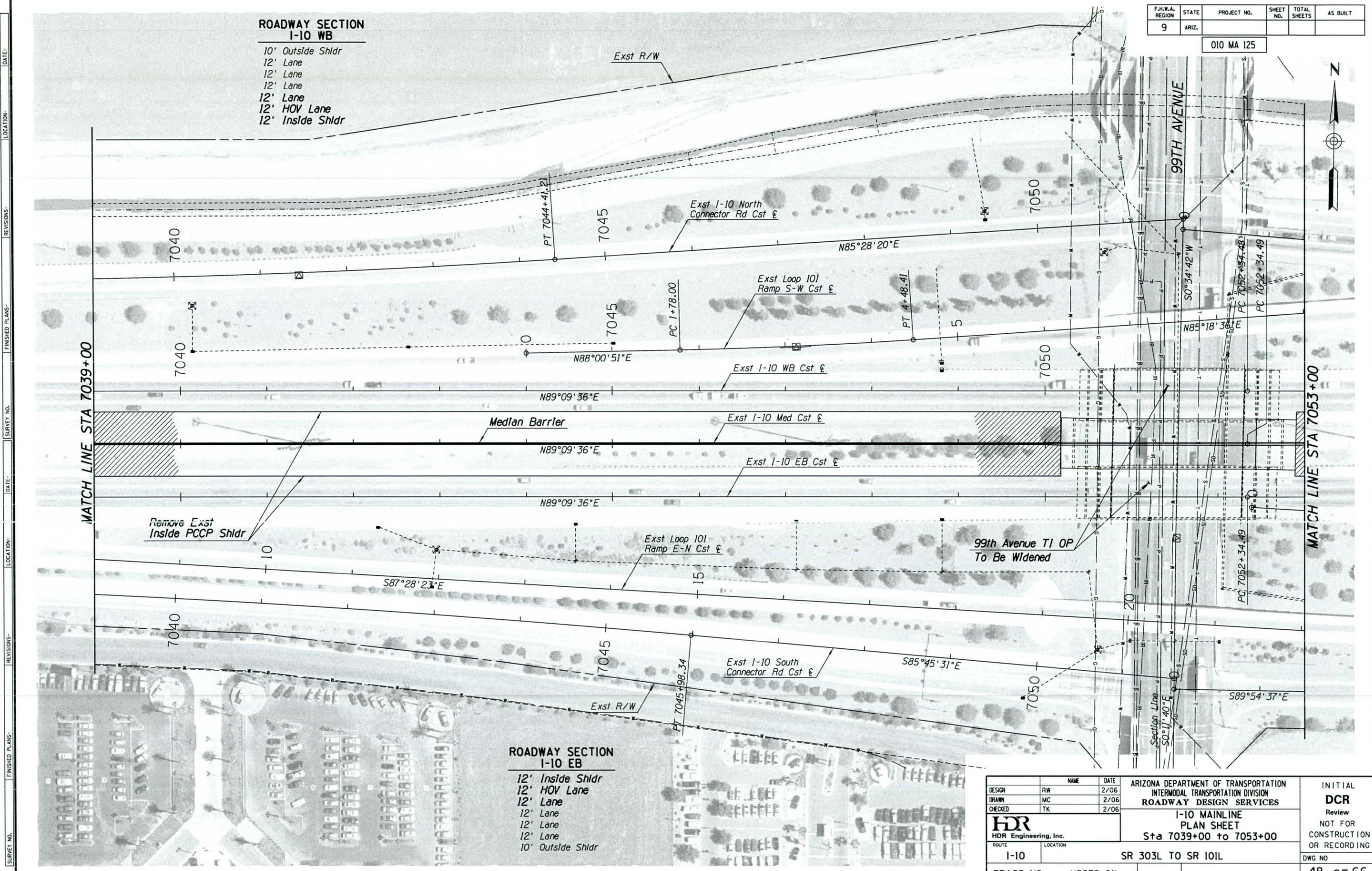
DATE: LOCATION: REVISIONS: FINISHED PLANS: SURVEY NO. DATE: LOCATION: REVISIONS: FINISHED PLANS: SURVEY NO.

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

010 MA 125

**ROADWAY SECTION
I-10 WB**
 10' Outside Shldr
 12' Lane
 12' Lane
 12' Lane
 12' HOV Lane
 12' Inside Shldr

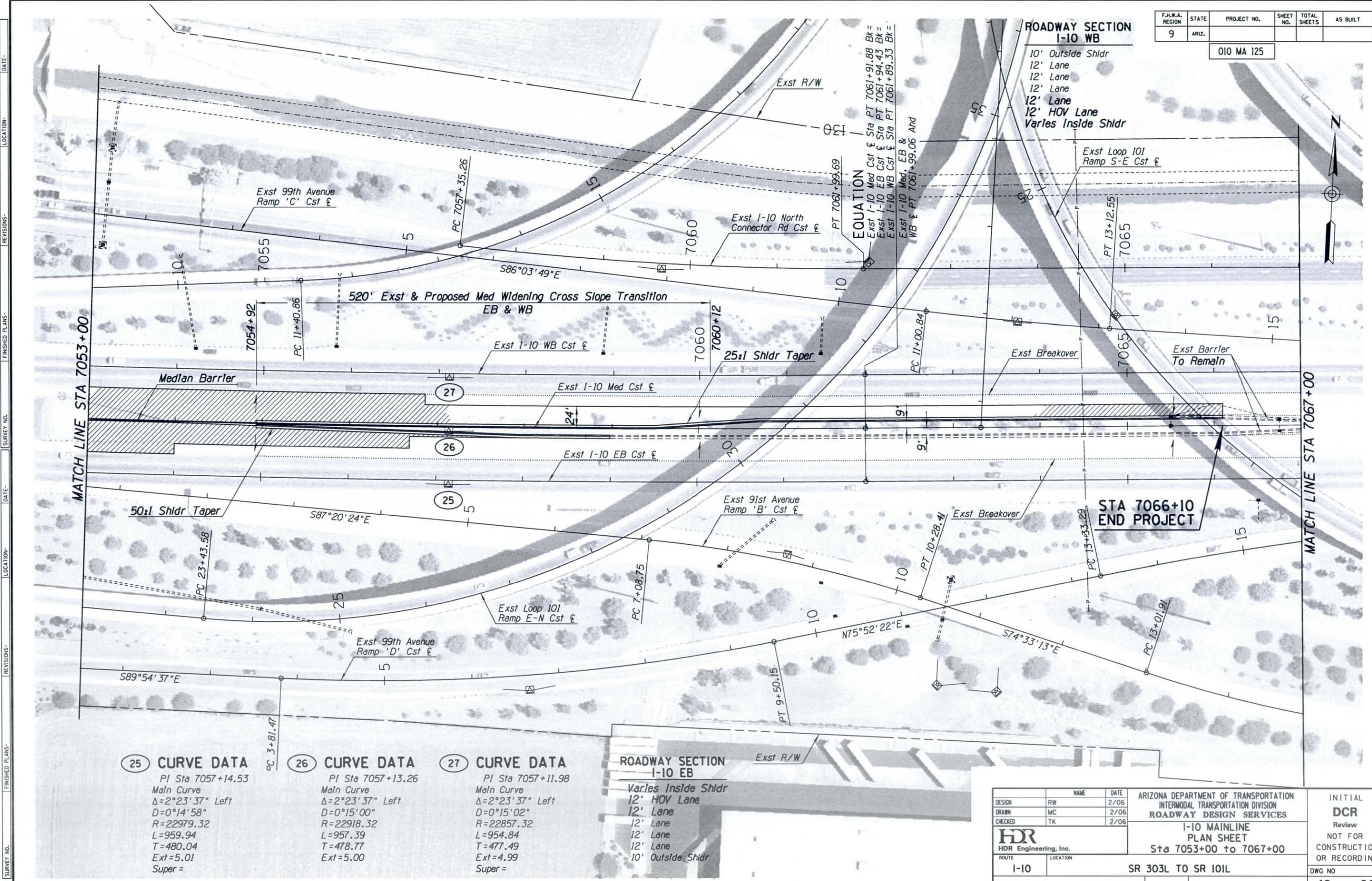
**ROADWAY SECTION
I-10 EB**
 12' Inside Shldr
 12' HOV Lane
 12' Lane
 12' Lane
 12' Lane
 10' Outside Shldr



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

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 7039+00 to 7053+00		SR 303L TO SR 101L DWG NO 48 OF 66	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L		
TRACS NO.	H6879 OIL				

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	010 MA 125			



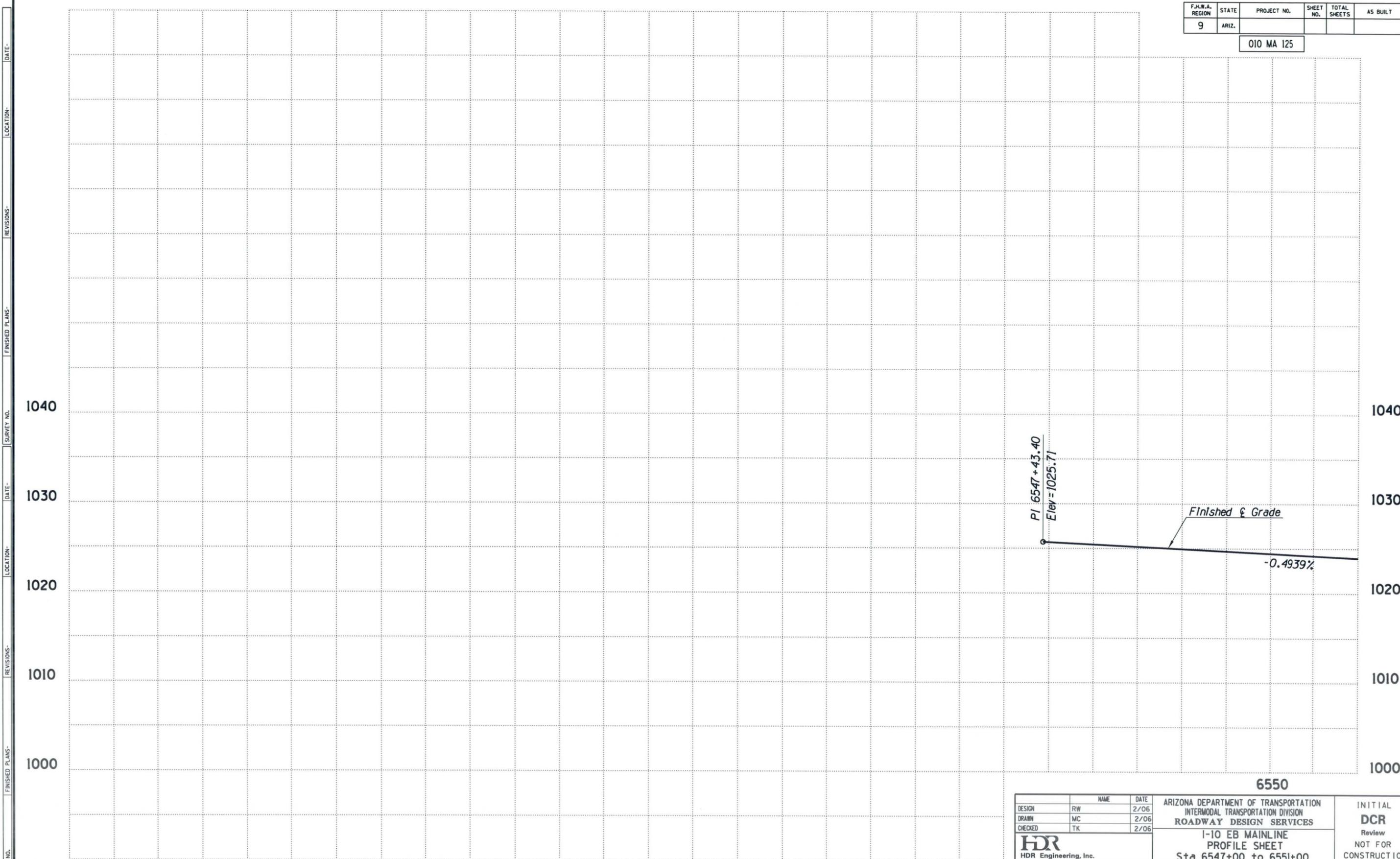
25 CURVE DATA PI Sta 7057+14.53 Main Curve Δ=2°23'37" Left D=0°14'58" R=22979.32 L=959.94 T=480.04 Ext=5.01 Super =	26 CURVE DATA PI Sta 7057+13.26 Main Curve Δ=2°23'37" Left D=0°15'00" R=22918.32 L=957.39 T=478.77 Ext=5.00	27 CURVE DATA PI Sta 7057+11.98 Main Curve Δ=2°23'37" Left D=0°15'02" R=22857.32 L=954.84 T=477.49 Ext=4.99 Super =
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ROADWAY SECTION I-10 EB
Varies Inside Shldr
12' HOV Lane
12' Lane
12' Lane
10' Outside Shldr

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 MAINLINE PLAN SHEET Sta 7053+00 to 7067+00		DWG NO	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	49 OF 66	
TRACS NO.	H6879 OIL				

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

010 MA 125



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

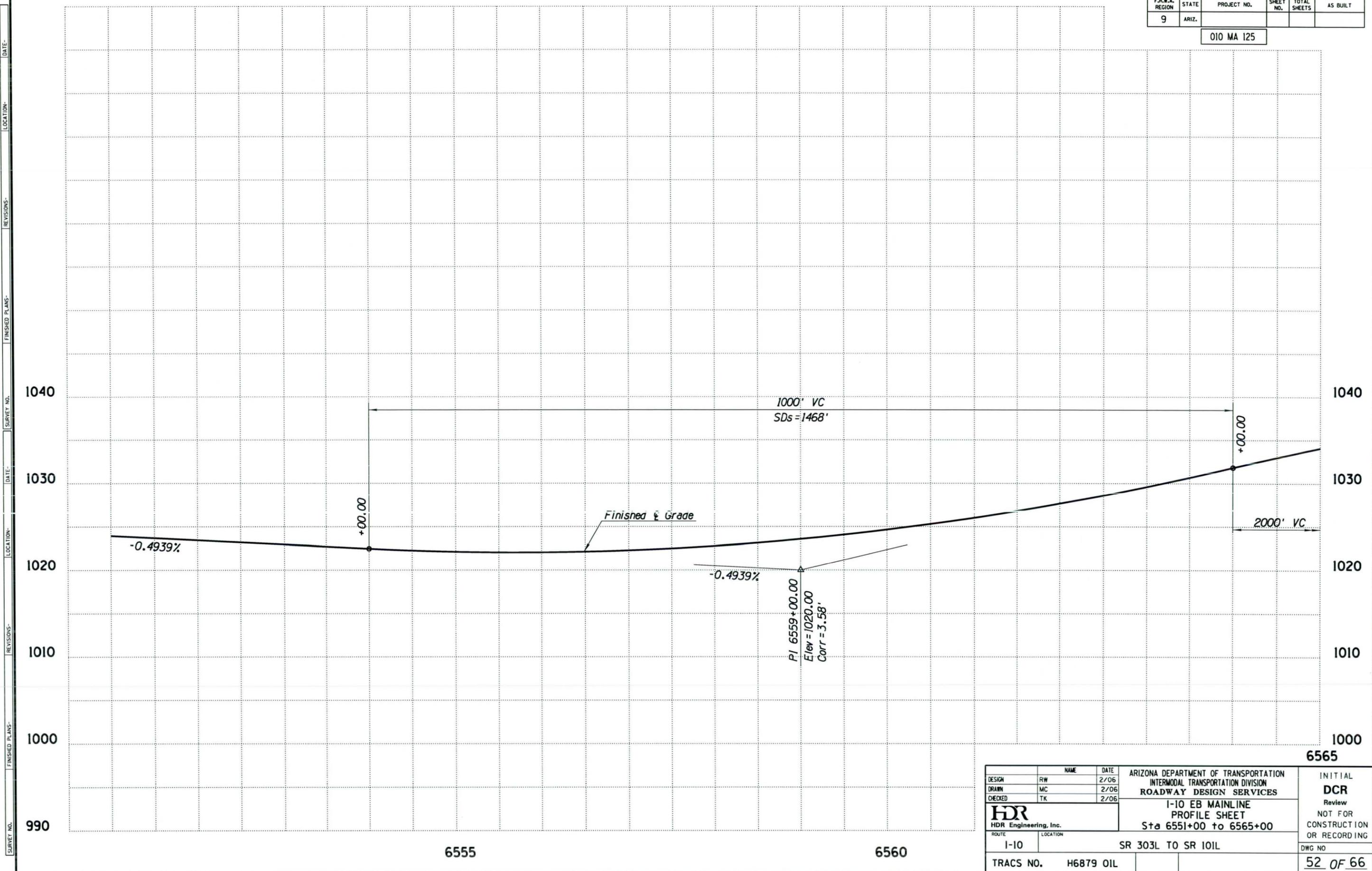
6545

6550

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		I-10 EB MAINLINE PROFILE SHEET Sta 6547+00 to 6551+00		DWG NO	
ROUTE	LOCATION		SR 303L TO SR 101L		
TRACS NO.	H6879 OIL				51 OF 66

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

010 MA 125

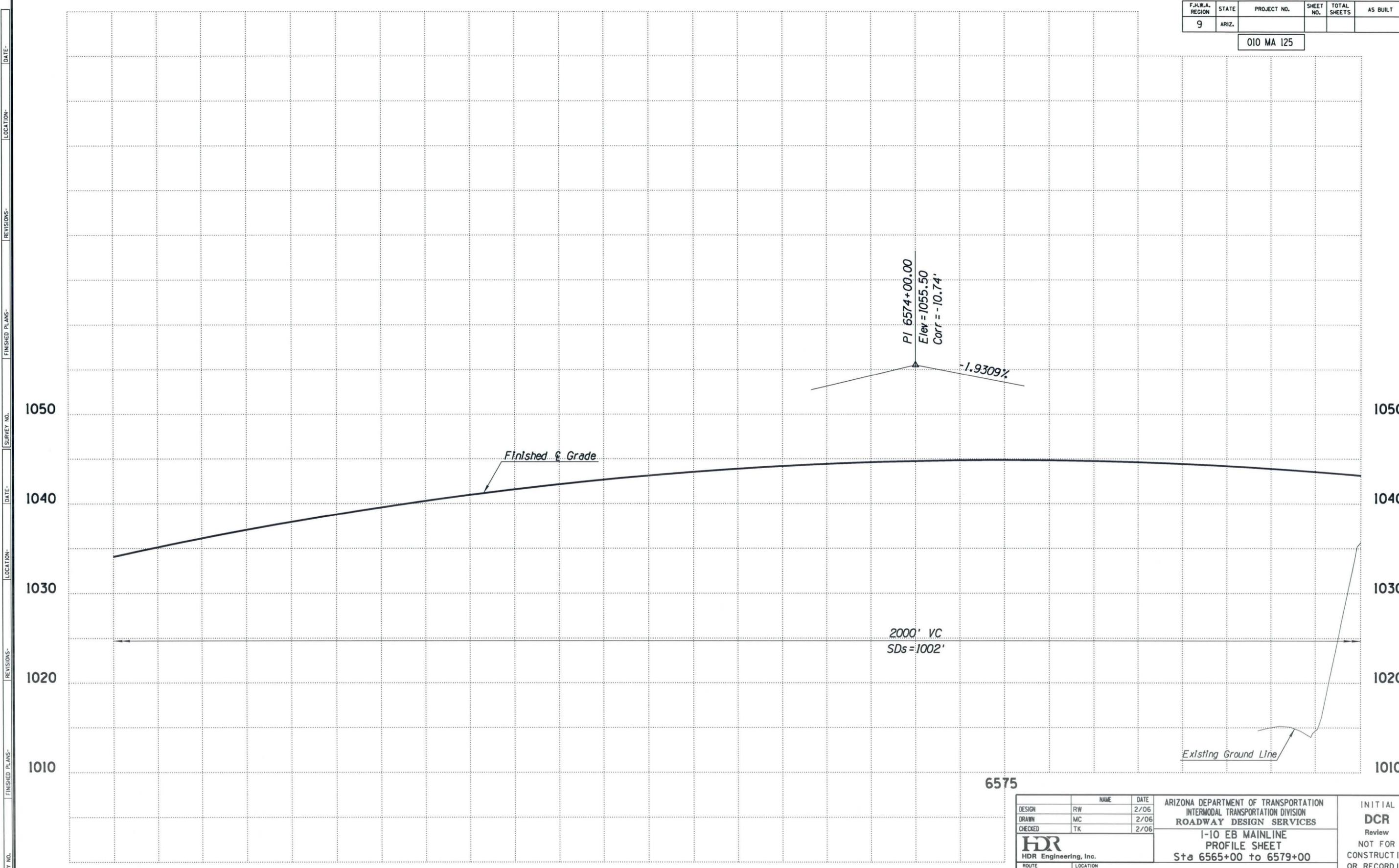


DATE: LOCATION: REVISIONS: SURVEY NO. DATE: LOCATION: REVISIONS: SURVEY NO.

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.				I-10 EB MAINLINE PROFILE SHEET Sta 6551+00 to 6565+00	
ROUTE		LOCATION		SR 303L TO SR 101L	
I-10		SR 303L TO SR 101L		DWG NO	
TRACS NO.		H6879 OIL		52 OF 66	

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

010 MA 125



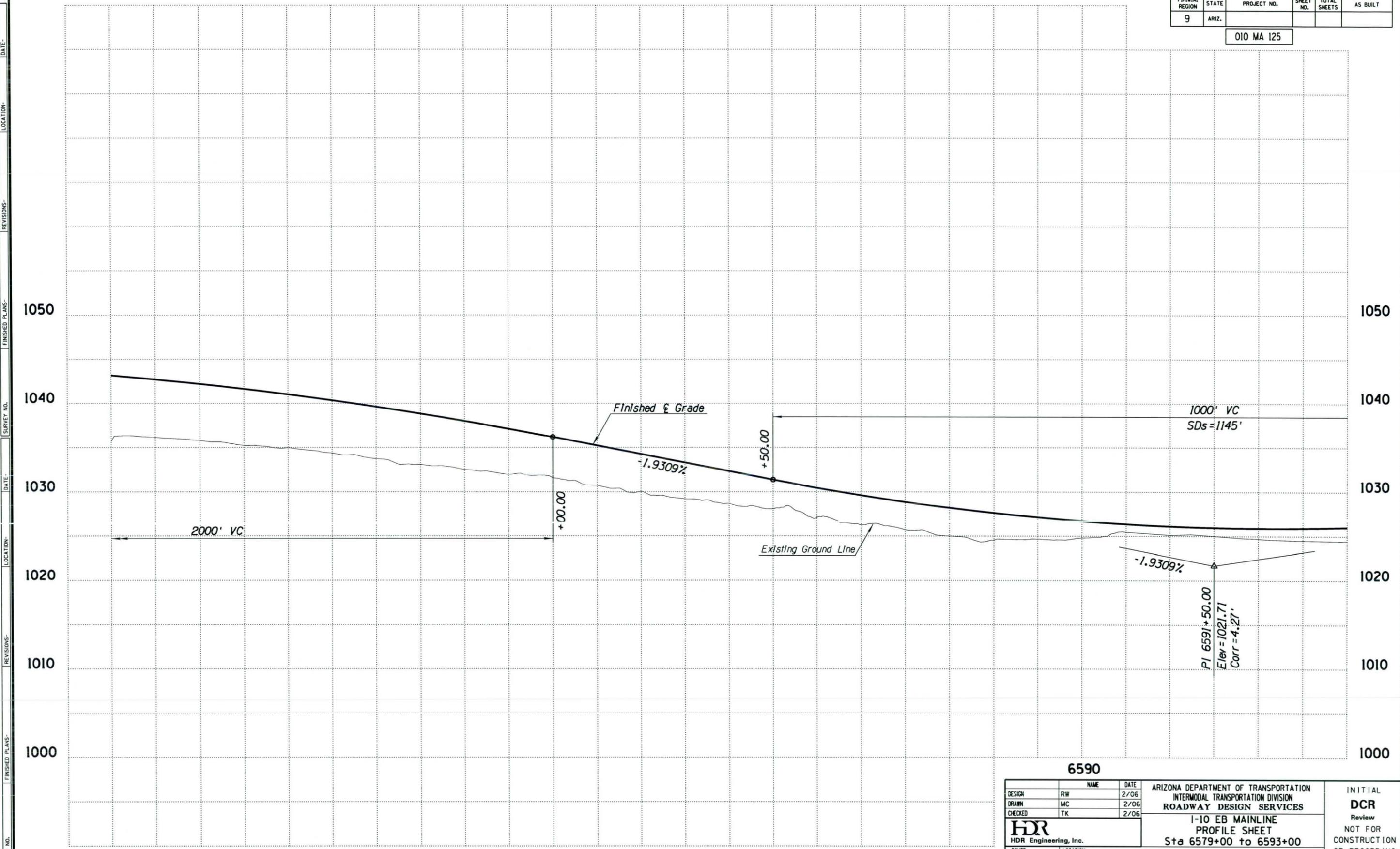
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6575

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
				I-10 EB MAINLINE PROFILE SHEET Sta 6565+00 to 6579+00	
ROUTE	I-10			LOCATION	SR 303L TO SR 101L
TRACS NO.	H6879 OIL			DWG NO	53 OF 66

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

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

6580

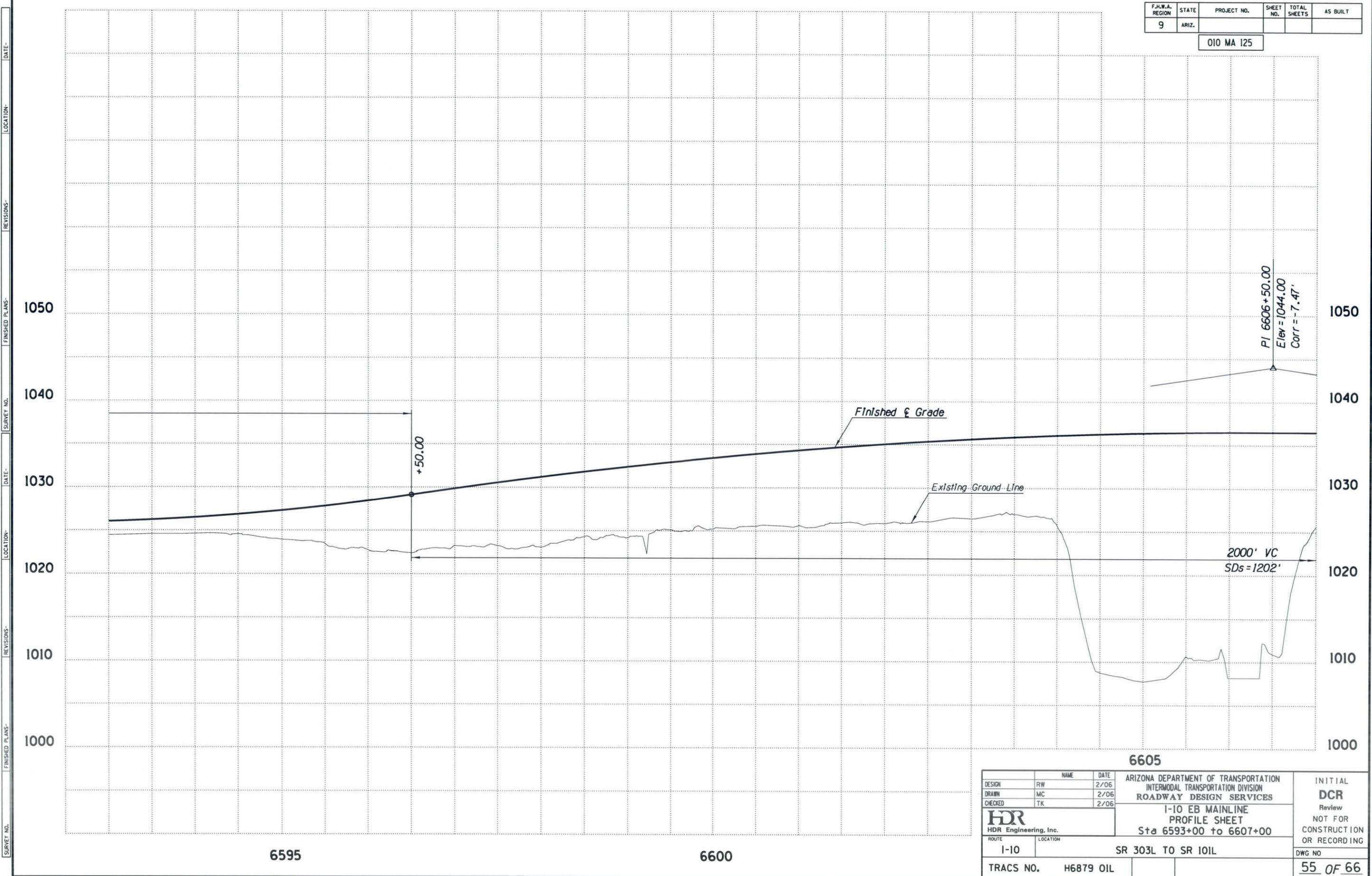
6585

6590

DESIGN	RW	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC		2/06		
CHECKED	TK		2/06		
				I-10 EB MAINLINE PROFILE SHEET Sta 6579+00 to 6593+00	
ROUTE	LOCATION		SR 303L TO SR 101L DWG NO.		
TRACS NO.		H6879 OIL		54 OF 66	

F.A.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

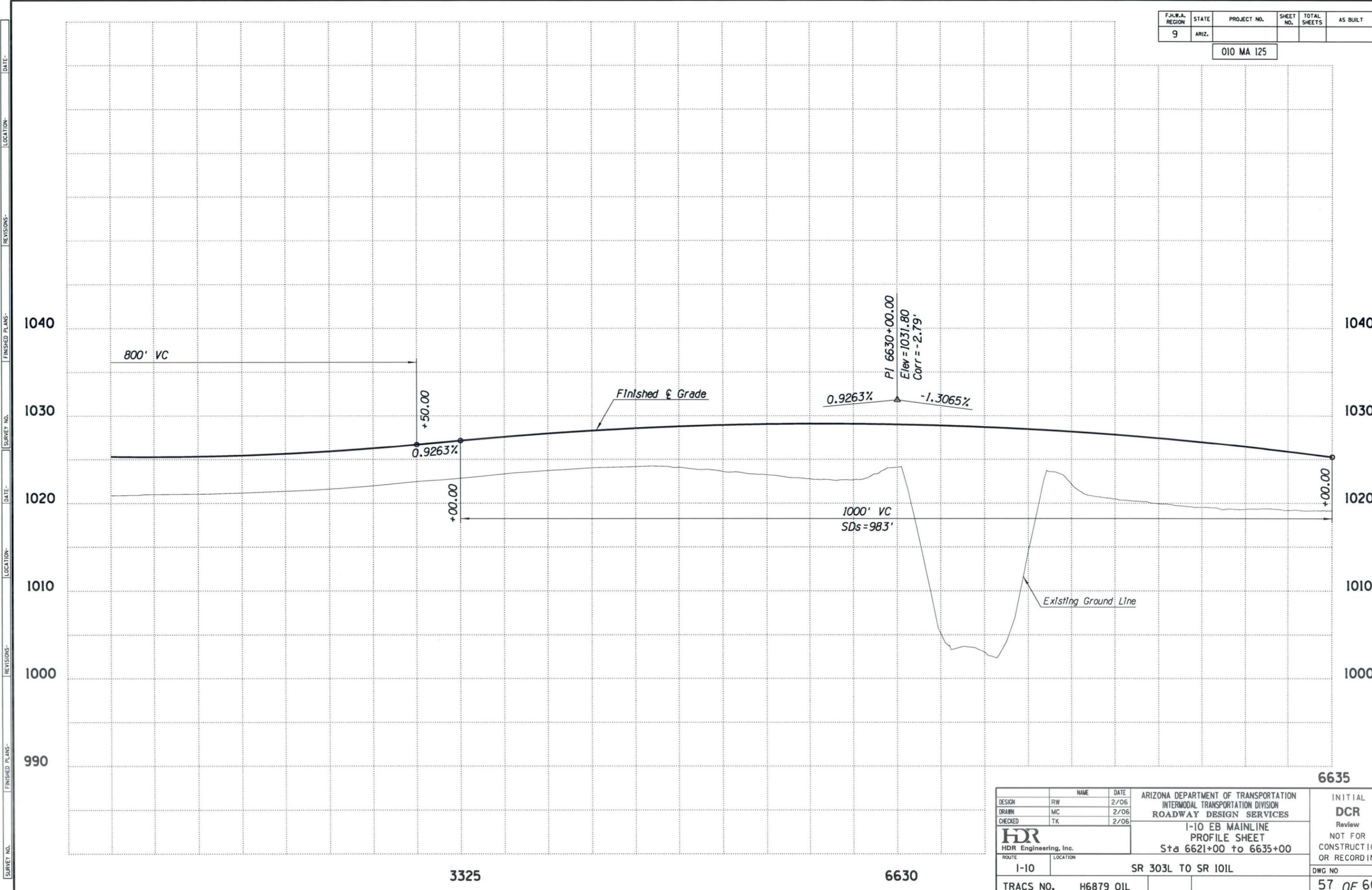
010 MA 125



DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES I-10 EB MAINLINE PROFILE SHEET Sta 6593+00 to 6607+00	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR Engineering, Inc.					
ROUTE	LOCATION		I-10 SR 303L TO SR 101L		DWG NO
TRACS NO.	H6879 OIL				55 OF 66

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

010 MA 125



3325

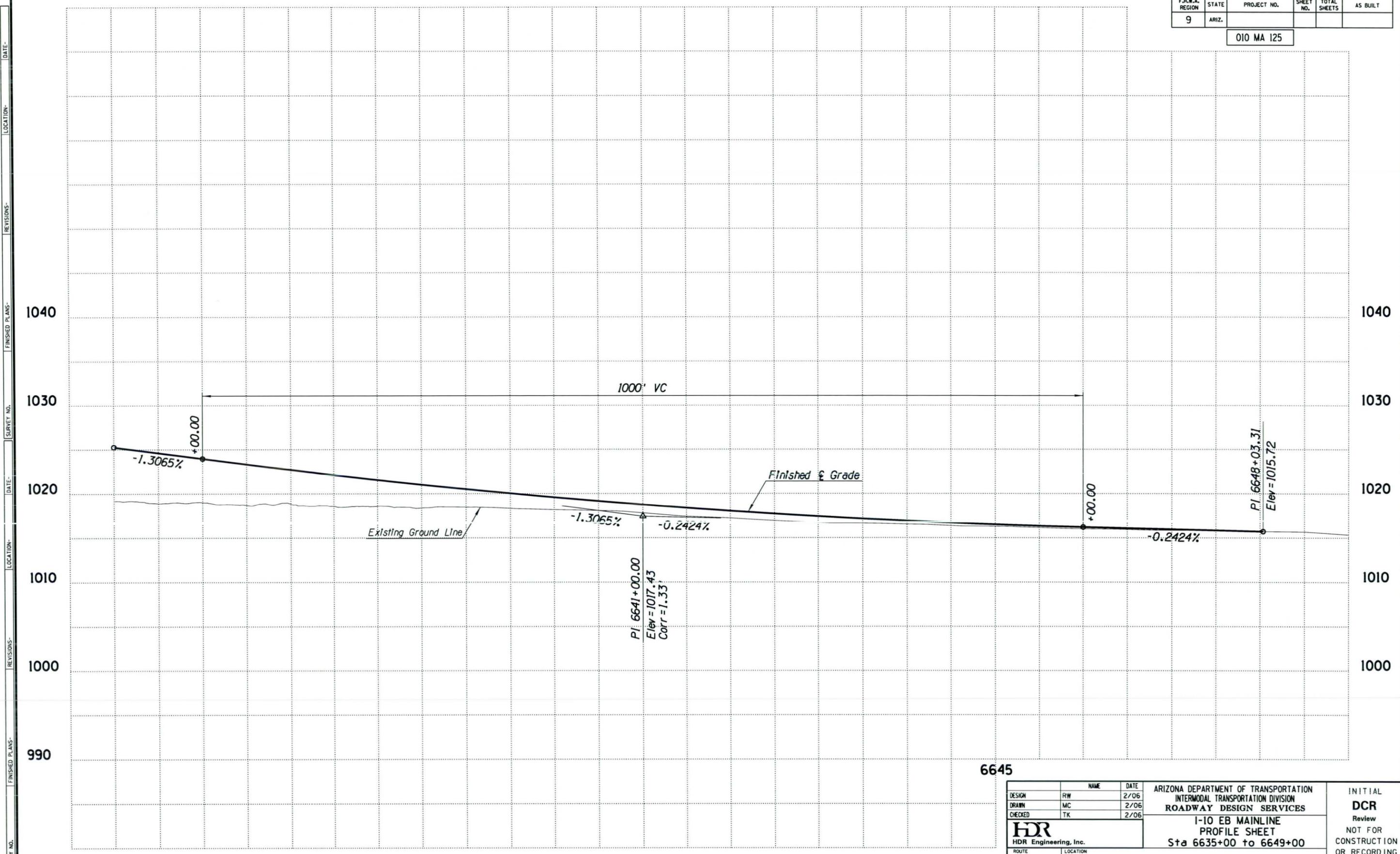
6630

6635

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
				I-10 EB MAINLINE PROFILE SHEET Sta 6621+00 to 6635+00	
ROUTE	LOCATION		SR 303L TO SR 101L DWG NO		
I-10	SR 303L TO SR 101L		TRACS NO. H6879 OIL 57 OF 66		

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

010 MA 125



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

6635

6640

6645

NAME	DATE
DESIGN RW	2/06
DRAWN MC	2/06
CHECKED TK	2/06

ARIZONA DEPARTMENT OF TRANSPORTATION
 INTERMODAL TRANSPORTATION DIVISION
 ROADWAY DESIGN SERVICES
 I-10 EB MAINLINE
 PROFILE SHEET
 Sta 6635+00 to 6649+00

INITIAL
DCR
 Review
 NOT FOR
 CONSTRUCTION
 OR RECORDING

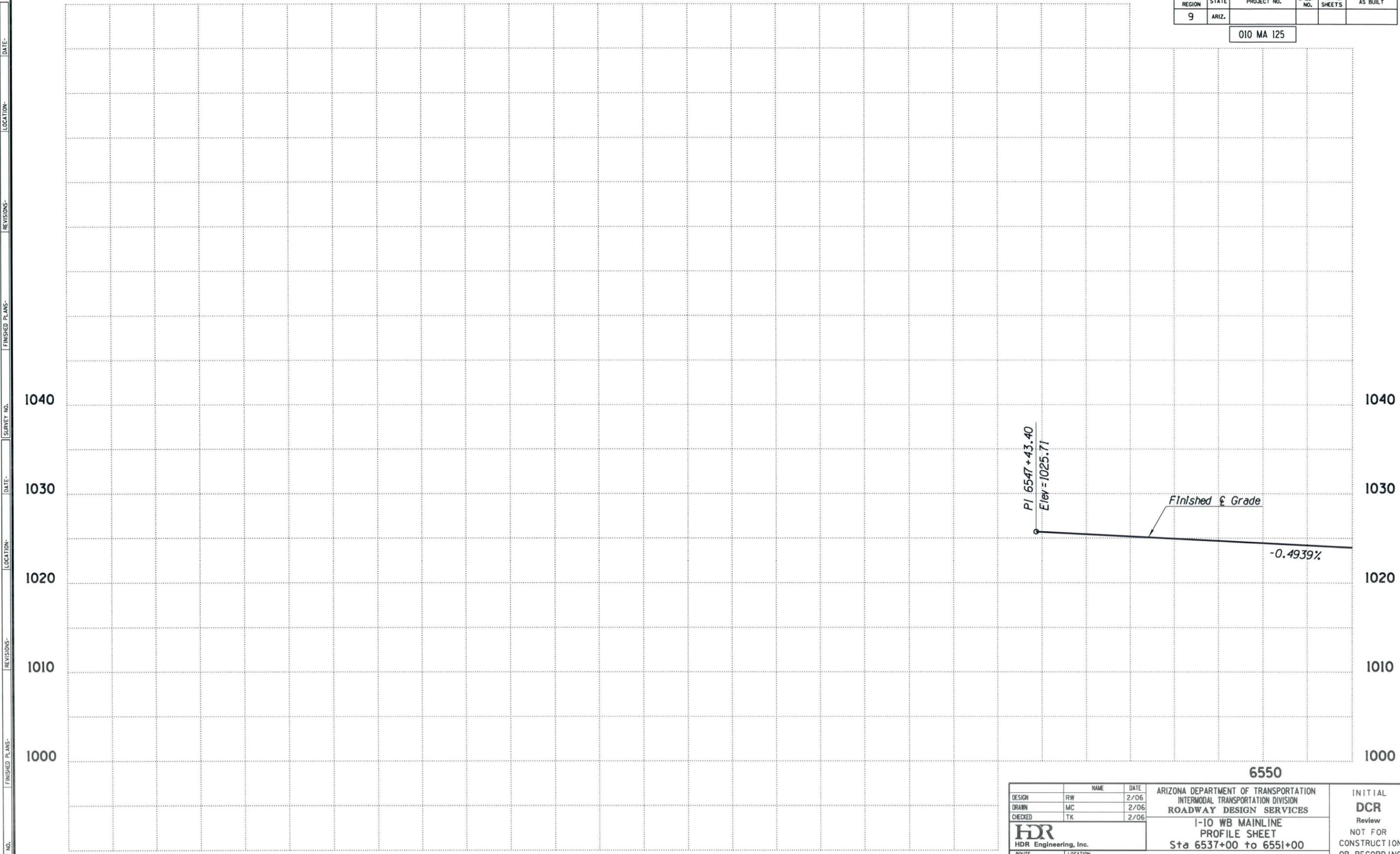
HDR
 HDR Engineering, Inc.
 ROUTE I-10 LOCATION SR 303L TO SR 101L

TRACS NO. H6879 OIL

DWG NO
 58 OF 66

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

010 MA 125

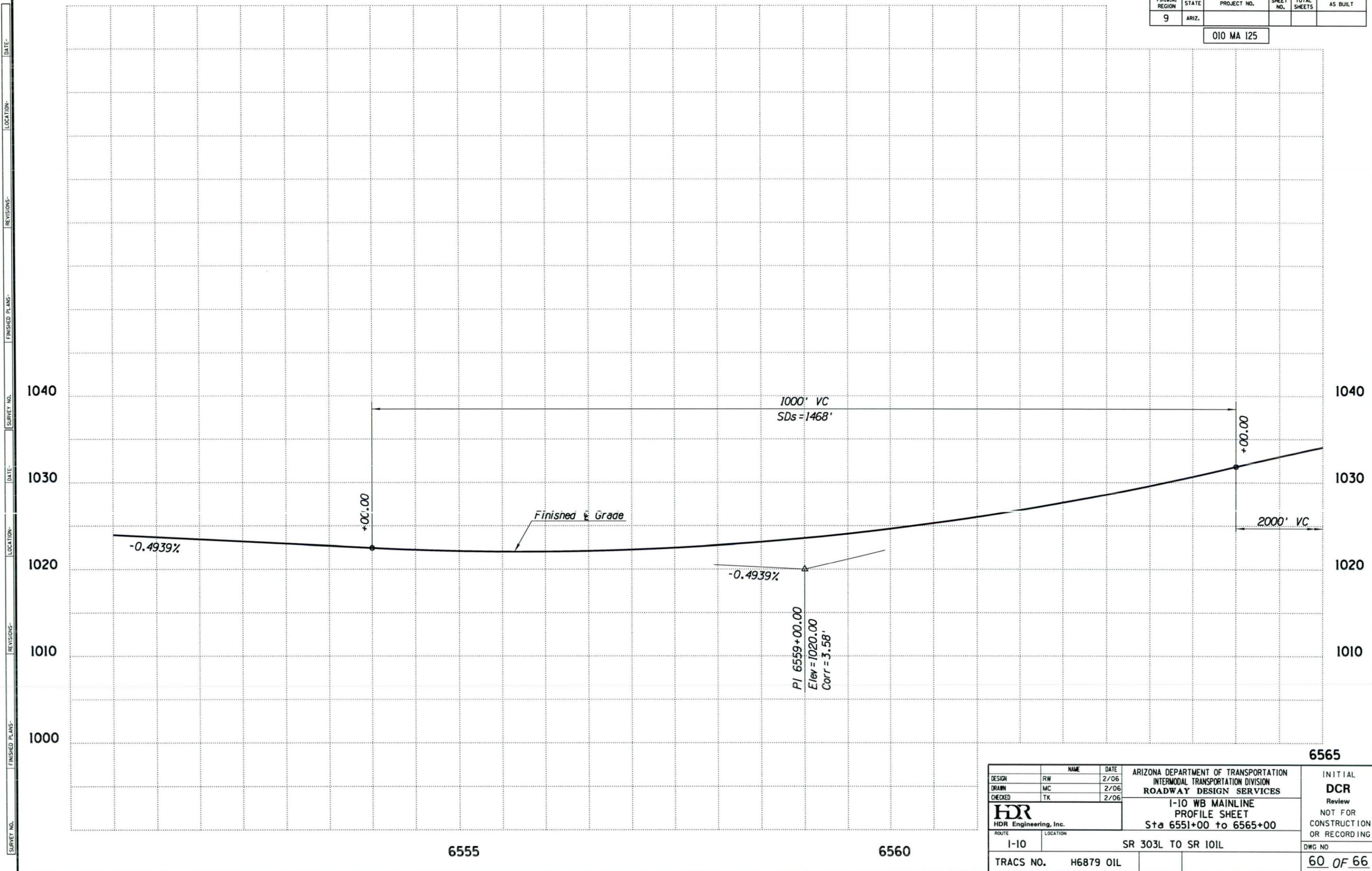


SURVEY NO. FINISHED PLANS REVISIONS LOCATION DATE SURVEY NO. FINISHED PLANS REVISIONS LOCATION DATE

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
 HDR Engineering, Inc.				I-10 WB MAINLINE PROFILE SHEET Sta 6537+00 to 6551+00	
ROUTE		LOCATION		DWG NO	
I-10		SR 303L TO SR 101L		59 OF 66	
TRACS NO.			H6879 OIL		

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

010 MA 125

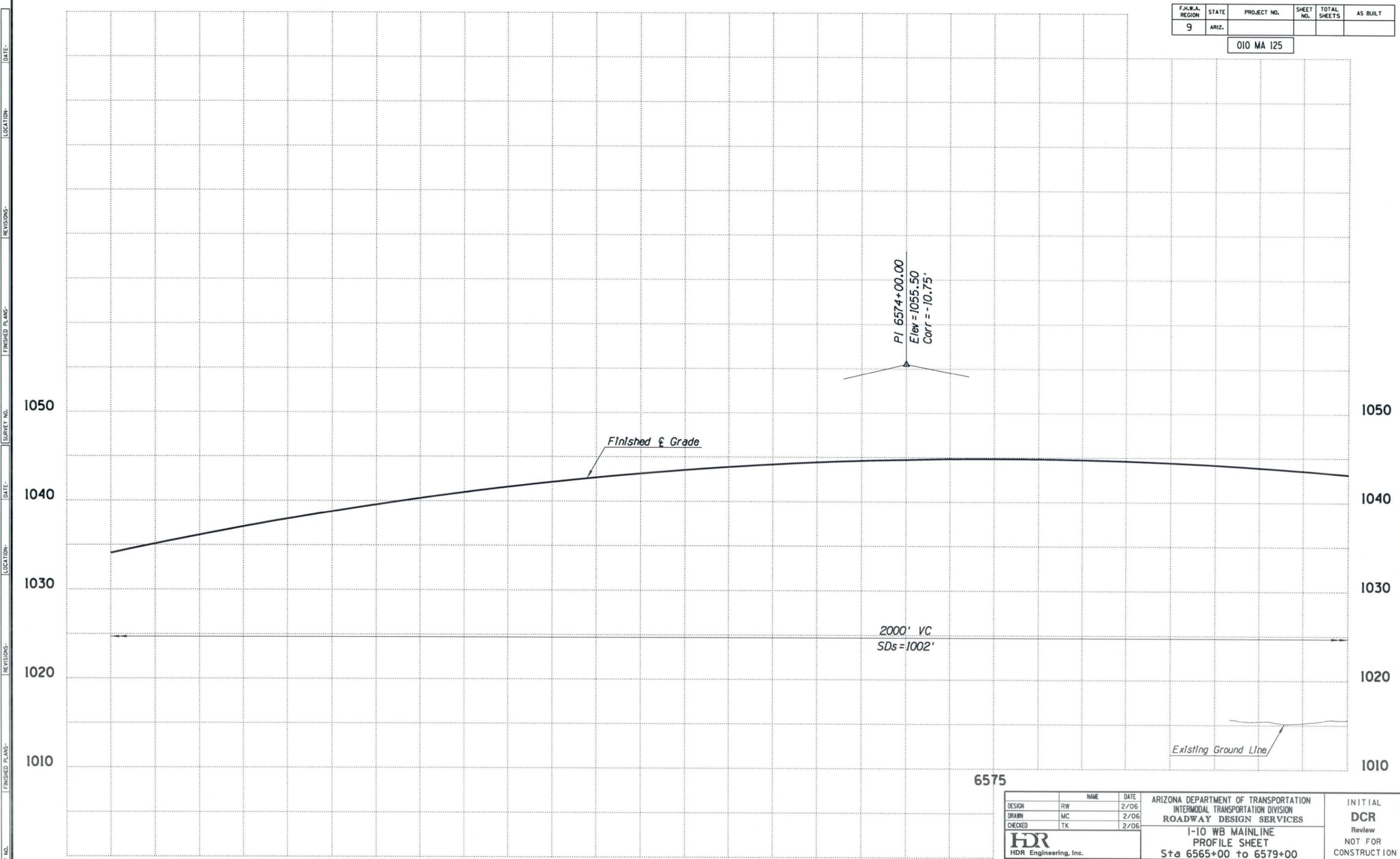


DATE: _____ LOCATION: _____ REVISIONS: _____ FINISHED PLANS: _____ SURVEY NO.: _____

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES I-10 WB MAINLINE PROFILE SHEET Sta 6551+00 to 6565+00	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.		ROUTE: I-10 LOCATION: SR 303L TO SR 101L		DWG NO. 60 OF 66	
TRACS NO. H6879 OIL					

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

010 MA 125



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

6565

6570

6575

Finished & Grade

PI 6574+00.00
Elev = 1055.50
Corr = -10.75'

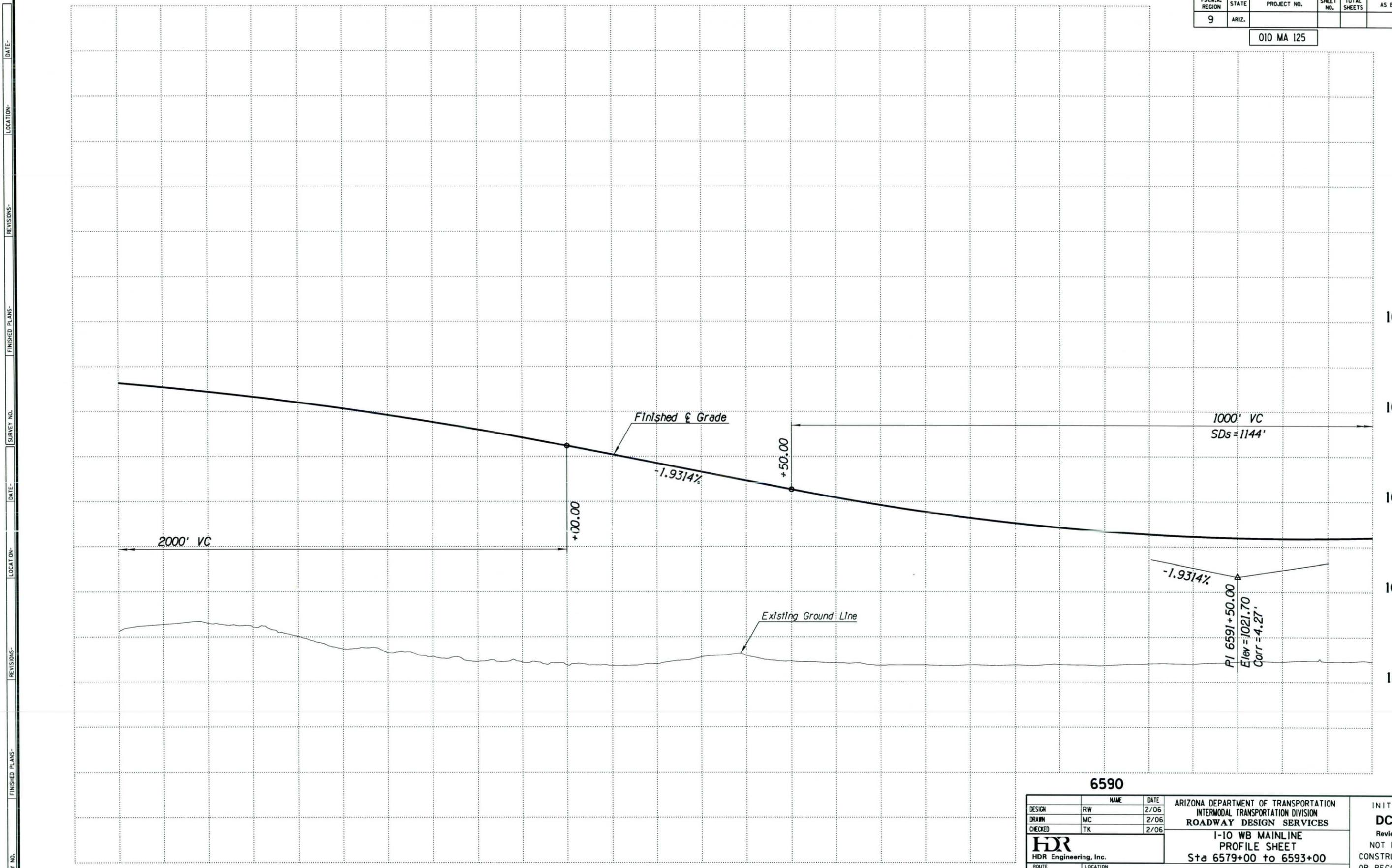
2000' VC
SDs = 1002'

Existing Ground Line

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
 HDR Engineering, Inc.				I-10 WB MAINLINE PROFILE SHEET Sta 6565+00 to 6579+00	
ROUTE		LOCATION		SR 303L TO SR 101L	
I-10				DWG NO	
TRACS NO.		H6879 OIL		61 OF 66	

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

010 MA 125



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

6580

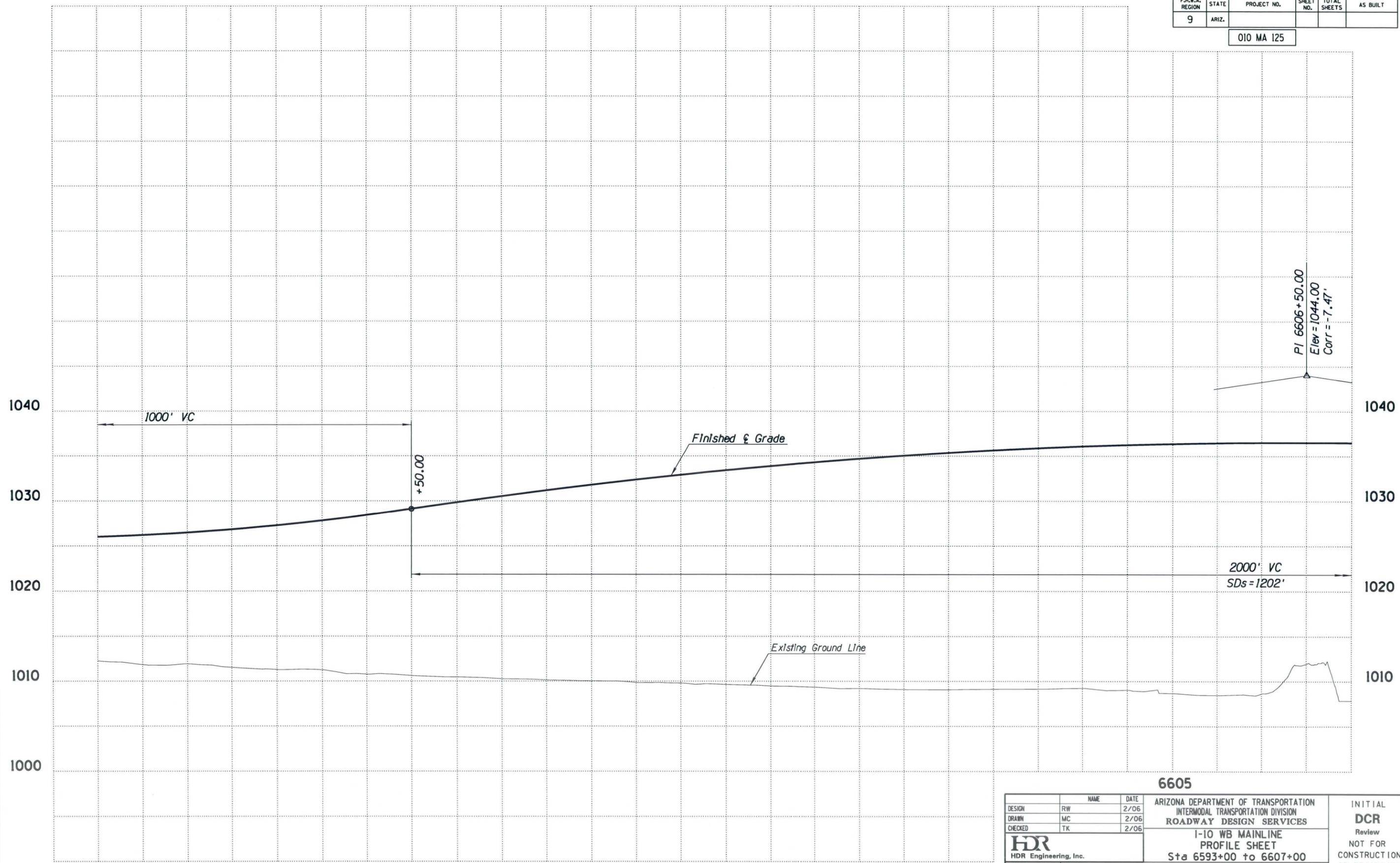
6585

6590

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.				I-10 WB MAINLINE PROFILE SHEET Sta 6579+00 to 6593+00	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	DWG NO	
TRACS NO.	H6879 OIL				62 OF 66

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

010 MA 125



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

6595

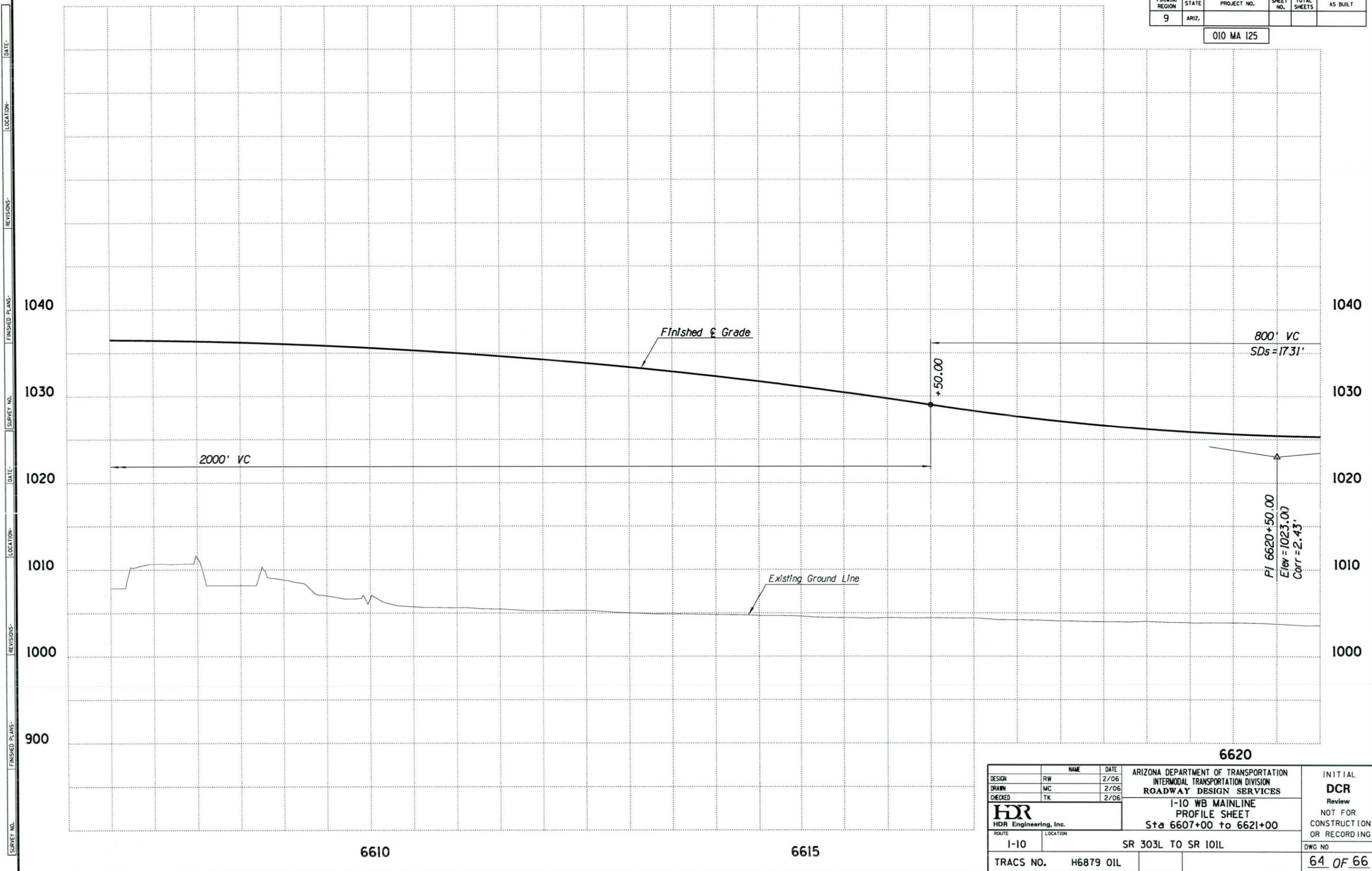
6600

6605

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
		HDR Engineering, Inc.		I-10 WB MAINLINE PROFILE SHEET Sta 6593+00 to 6607+00	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L	DWG NO	
TRACS NO.	H6879 OIL				63 OF 66

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

010 MA 125

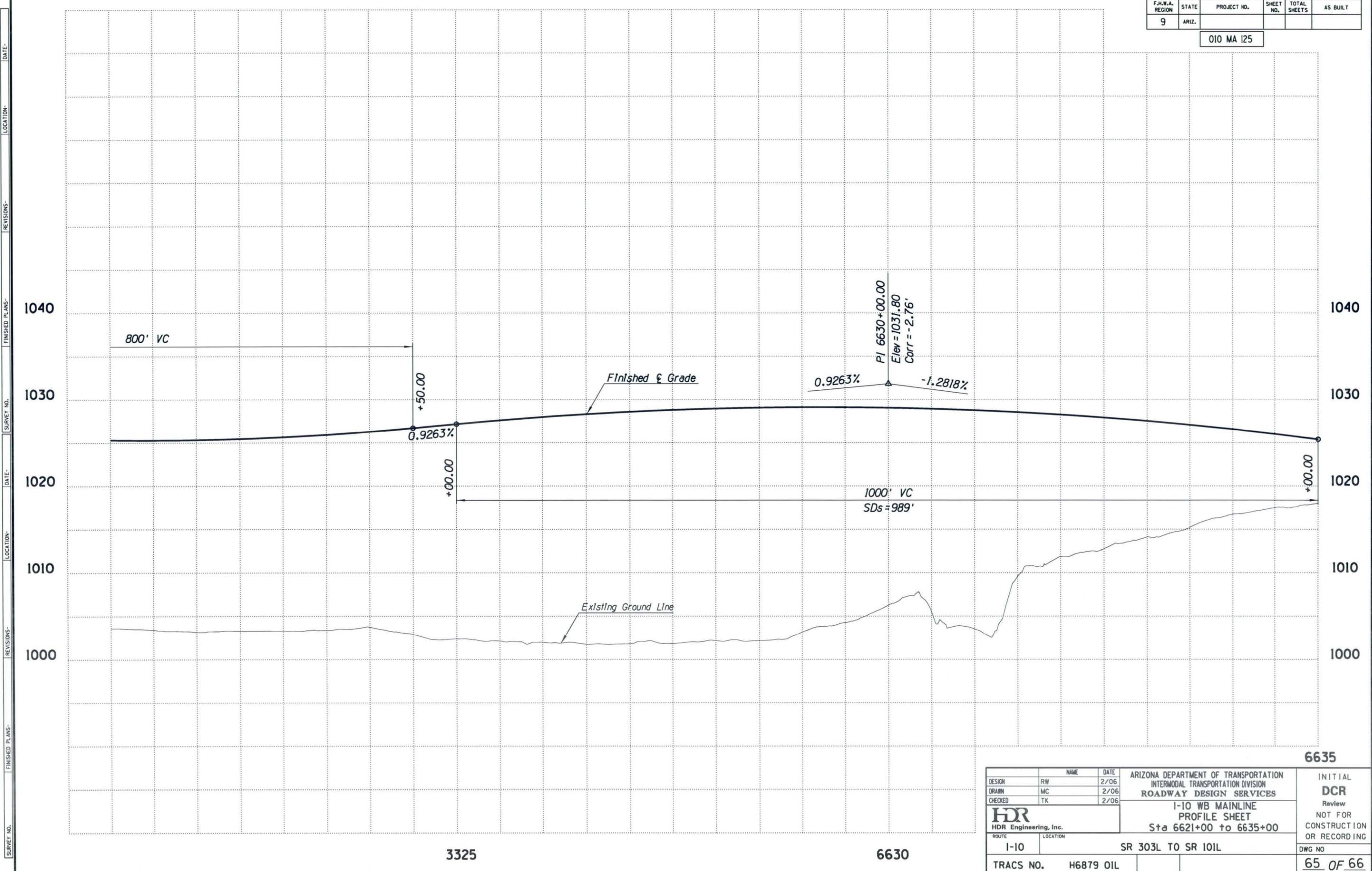


SURVEY NO. FINISHED PLANS REVISIONS LOCATION DATE SURVEY NO. FINISHED PLANS REVISIONS LOCATION DATE SURVEY NO. FINISHED PLANS REVISIONS LOCATION DATE

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
HDR HDR Engineering, Inc.				I-10 WB MAINLINE PROFILE SHEET Sta 6607+00 to 6621+00	
ROUTE	I-10	LOCATION	SR 303L TO SR 101L		DWG NO
TRACS NO.	H6879 OIL				64 OF 66

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

010 MA 125



3325

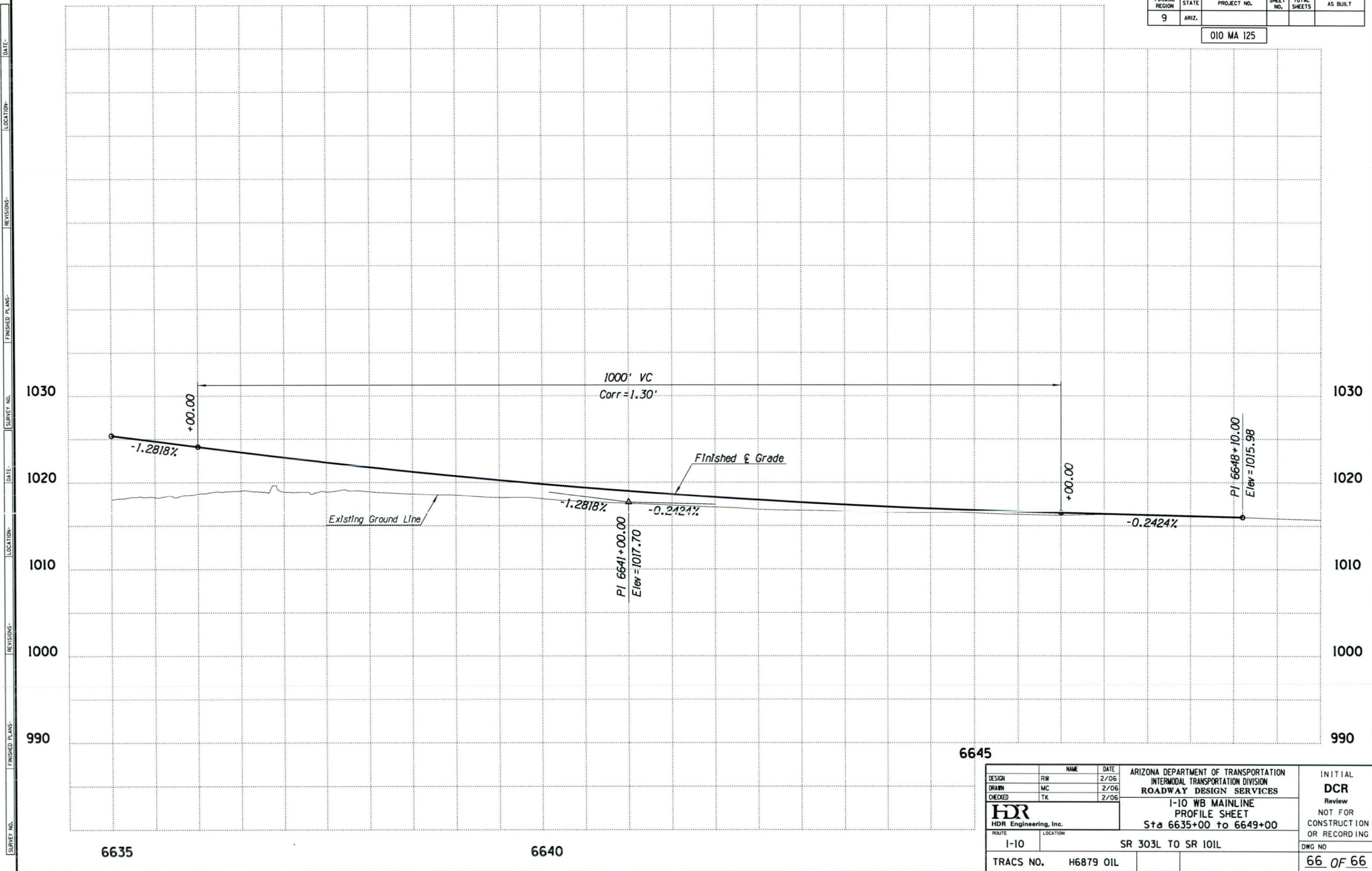
6630

6635

DESIGN	RW	DATE	2/06	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC	DATE	2/06		
CHECKED	TK	DATE	2/06		
				I-10 WB MAINLINE PROFILE SHEET Sta 6621+00 to 6635+00	
ROUTE	LOCATION		SR 303L TO SR 101L DWG NO		
I-10	SR 303L TO SR 101L		TRACS NO. H6879 OIL 65 OF 66		

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

010 MA 125



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

6645

DESIGN	RW	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION ROADWAY DESIGN SERVICES	INITIAL DCR Review NOT FOR CONSTRUCTION OR RECORDING
DRAWN	MC		2/06		
CHECKED	TK		2/06		
HDR HDR Engineering, Inc.				I-10 WB MAINLINE PROFILE SHEET Sta 6635+00 to 6649+00	
ROUTE		LOCATION		SR 303L TO SR 101L	
I-10		SR 303L TO SR 101L		DWG NO	
TRACS NO.		H6879 OIL		66 OF 66	