

El Mirage Rd; 303L to Jomax Road

Initial Bridge Study Report El Mirage Rd over McMicken Dam Wash

Consultant: Burgess & Niple, Inc.
ADOT Project No: T0428 03D
Contract No: 2024-001



Prepared By:

Jacobs

1501 Fountainhead Parkway
Tempe, AZ 85282

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1.0 Project Introduction

1.1 Background

El Mirage Road: State Route 303L (SR 303L) to Jomax Road extension is a multi-agency project with the City of Peoria (COP), Maricopa Association of Governments (MAG), Arizona Department of Transportation (ADOT), Flood Control District of Maricopa County (FCDMC) and Maricopa County Department of Transportation (MCDOT). The purpose of the project is to identify gaps in the El Mirage Road alignment and recommend appropriate improvements to establish it as a key transportation facility and better connect the surrounding communities to the regional transportation system. Specifically, this project aims to establish a connection at the existing SR 303L traffic interchange (TI) between north Peoria and the rest of the City and region.

1.2 Initial Bridge Study Purpose

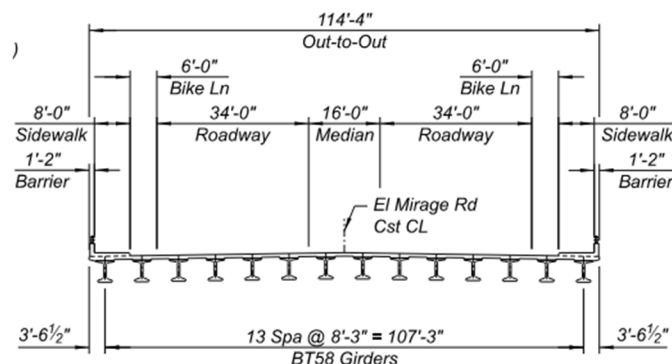
The purpose of the Initial Bridge Study Report is to identify feasible structure alternatives for the crossing of El Mirage Road over the McMicken Dam Wash (MDW), that meet the project objectives for roadway capacity, safety, and FCDMC requirements, and provide a cost effective, low maintenance structure.

2.0 McMicken Dam Wash Structure Alternatives

2.1 Alternative 1 – 3 - Span Precast Prestressed Concrete Bulb Tee Girder Bridge

2.1.1 Roadway Geometry

The bridge will carry vehicular, bicycle, and pedestrian traffic over the MDW. The roadway typical section at the structure will closely follow the COP Arterial section with slight variations. Although the roadway will likely be built to an interim width, the COP would like to construct the bridge to the ultimate width to avoid future widening of the structure. The bridge typical section will consist of a 16'-0" wide median, a 34'-0" clear roadway width, a 6'-0" wide bike lane, an eight feet wide sidewalk and 1'-2" wide concrete barriers with railing or fencing on each side, making the total structural width equal to 114'-4".



TYPICAL SECTION

2.1.2 Bridge Configuration

The bridge configuration will consist of a 3-span structure spanning the 339'-0" wide 100-year storm floodway and will utilize economical precast, prestressed BT58 bulb tee girders for the superstructure. The bridge is comprised of three 125'-0" spans for a total bridge length of 379'-6". The low bridge chord elevation of 1308.00 provides 2'-0" of freeboard above the 100-year water surface elevation of 1306.00.

The bridge substructure will include spill thru type abutments and multi-column bent style piers. Drilled shaft foundations are anticipated for all substructure units.

The existing Flood Control District maintenance road will need to be realigned to create an at grade intersection outside of the bridge limits.

Refer to Appendix A for Preliminary Bridge Plans.

2.1.3 Estimated Cost

Recent ADOT bid prices were investigated for similar precast prestressed concrete girder bridges to develop an estimated cost for this bridge. An average Unit Cost of \$325.00 per square foot was used to develop cost for this bridge. Total cost of the bridge is estimated to be approximately \$15,500,000.

2.2 Alternative 2 – Reinforced Concrete Box Culvert (RCBC)

2.2.1 Roadway Geometry

The RCBC structure crossing will carry vehicular, bicycle, and pedestrian traffic over the MDW. The typical section is as shown in Appendix B. The main difference between the City's typical section and the section shown in Appendix B is that the sidewalks will be supported on combination pedestrian traffic barrier moment slabs as the roadway crosses the structure.

2.2.2 RCBC Geometry

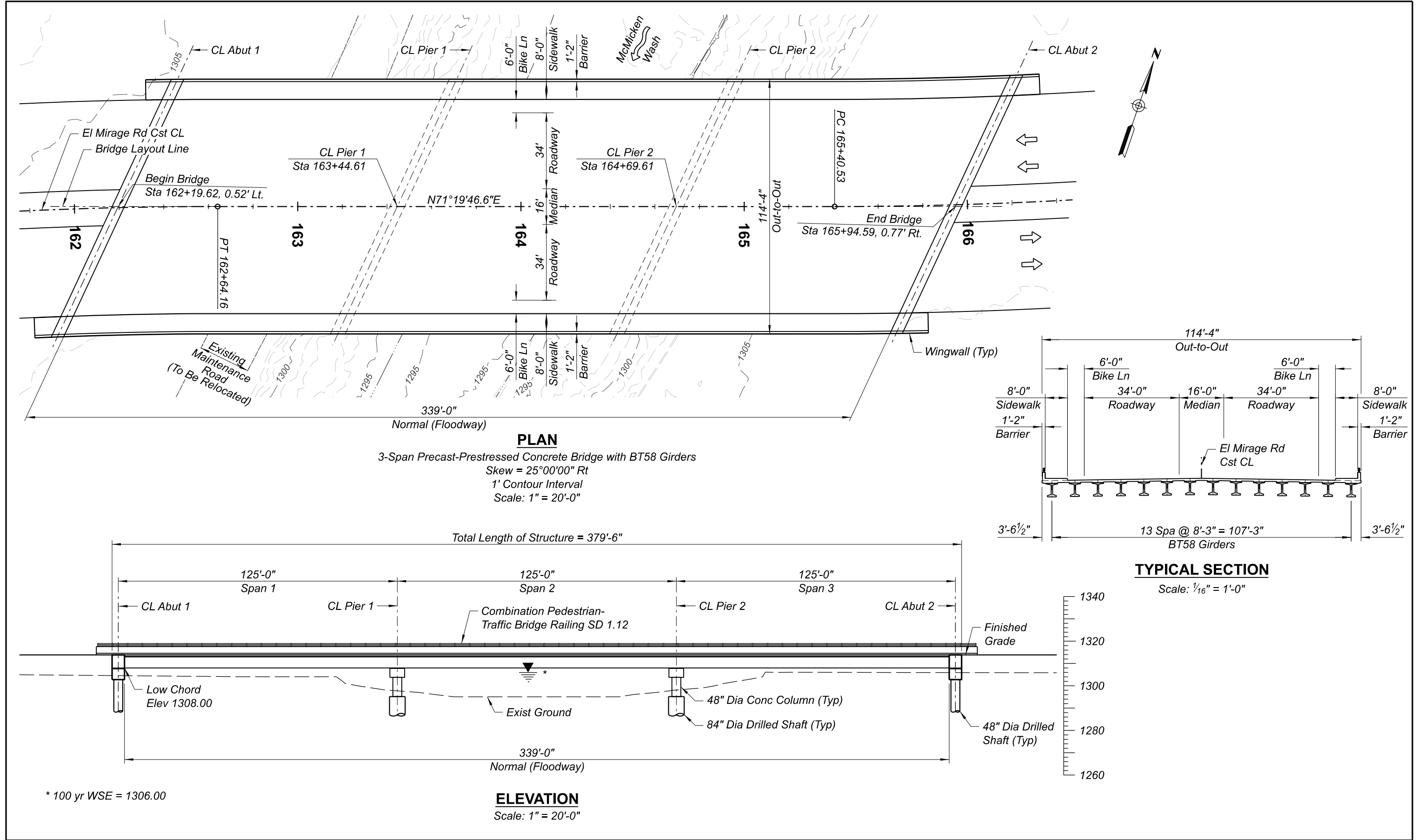
The 10-cell RCBC will pass the 100-year design storm and provide approximately one-foot of freeboard. ADOT Standard ten cell 12' x 12' RCBC is proposed for this alternative.

The roadway alignment and roadway profile of the existing Flood Control District maintenance access road, located adjacent to the MDW, will be reconfigured and result in an at-grade intersection with proposed El Mirage Road.

2.2.3 Estimated Cost

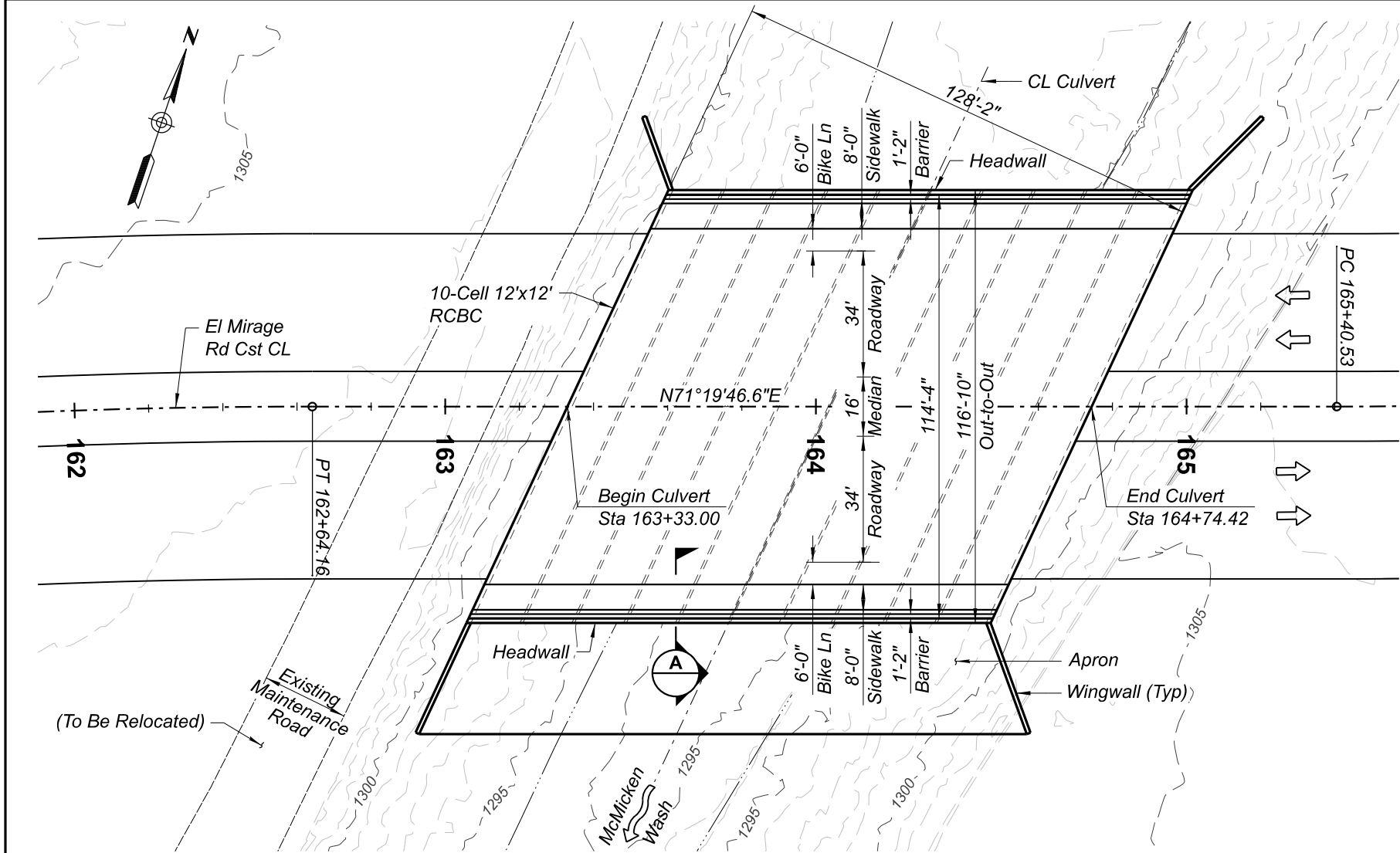
Recent ADOT bid prices were investigated for structural backfill, structural concrete, combination pedestrian traffic bridge railing, reinforcing steel, and erosion control to develop an estimated cost for this option. The estimated cost also includes a 30% contingency cost to compensate for potential unidentified construction items. The cost of the RCBC is estimated to be approximately \$4,600,000.

Appendix A
Preliminary Plans
3-Span Precast Prestressed Concrete Bulb Tee Girder Bridge Alternative

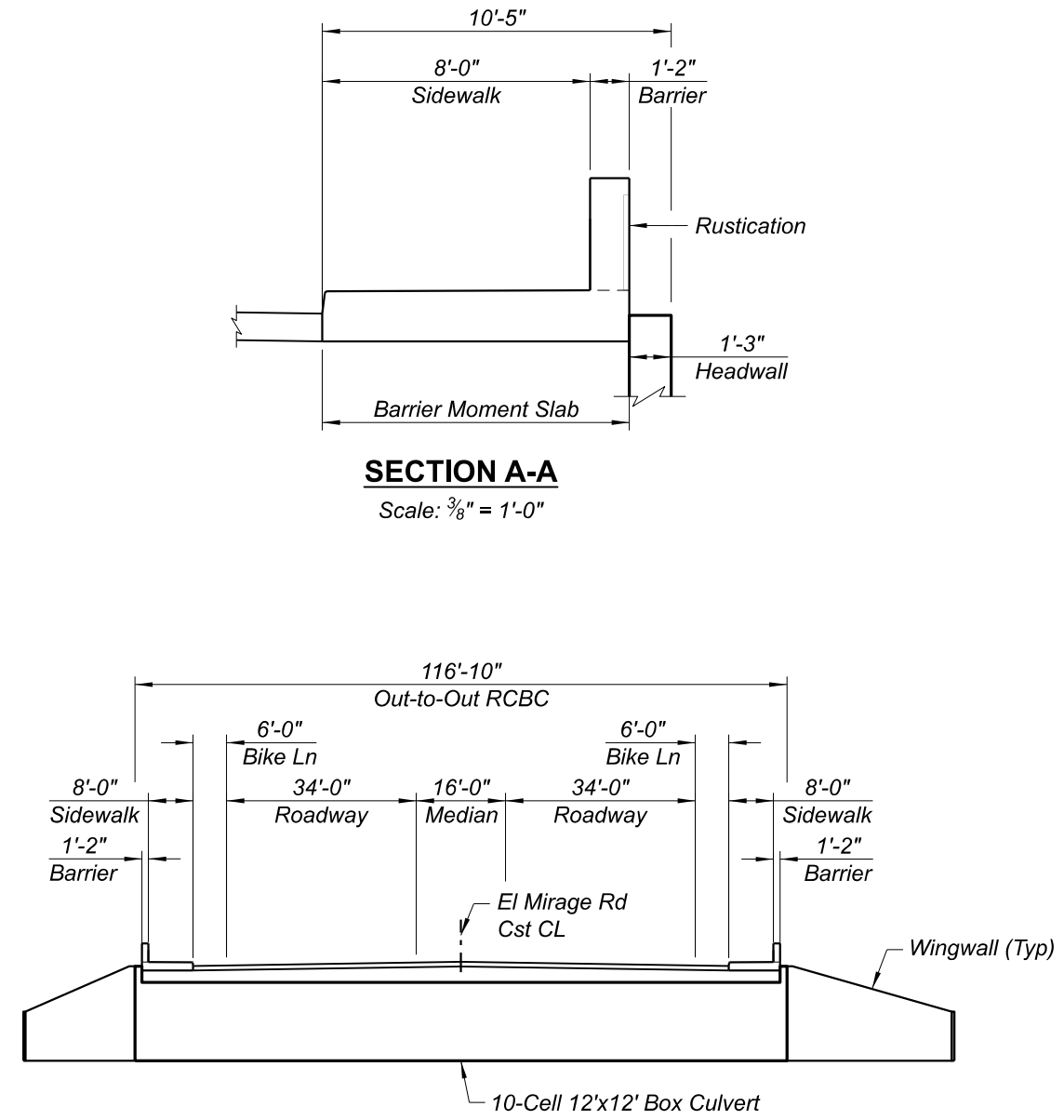


DESIGN CONCEPT Review NOT FOR CONSTRUCTION OR RECORDING	NAME		DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP	ROUTE N/A	F.H.W.A. Arizona Division	STATE ARIZ.	PROJECT NO.	FEDERAL AID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	DESIGN	GTK	11/24		MILEPOST N/A			xxxx	xxxx			
	DRAWN	JKP	11/24		JACOBS WWW.JACOBS.COM	EL MIRAGE RD - SR303L TO JOMAX RD McMICKEN DAM WASH BRIDGE ALTERNATIVE GENERAL PLAN, ELEVATION, TYPICAL SECTION	STRUCTURE NO. N/A	LOCATION				DWG NO.
	CHECKED	GTK	11/24	TRACS NO. xxxx				ADOT		____ OF ____		

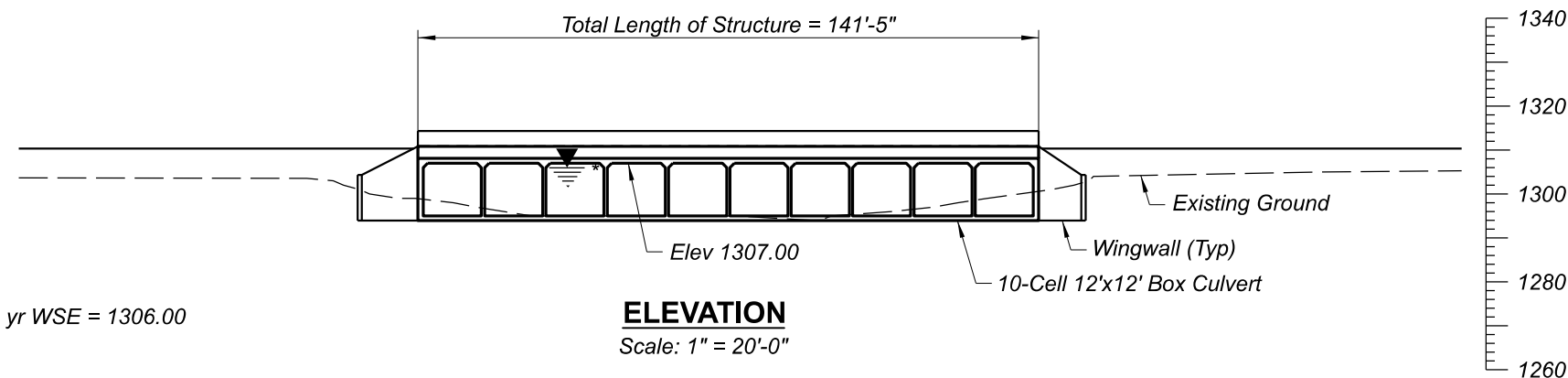
Appendix B
Preliminary Plans
Reinforced Concrete Box Culvert Alternative



PLAN
Concrete Box Culvert
Skew = 25°00'00" Rt
1' Contour Interval
Scale: 1" = 20'-0"



TYPICAL SECTION
Scale: 3/8" = 1'-0"



ELEVATION
Scale: 1" = 20'-0"

DESIGN CONCEPT Review NOT FOR CONSTRUCTION OR RECORDING				ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP	ROUTE N/A	F.H.W.A. Arizona Division	STATE ARIZ.	PROJECT NO.	FEDERAL AID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING	
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	Jacobs WWW.JACOBS.COM			EL MIRAGE RD - SR303L TO JOMAX RD McMICKEN DAM WASH CULVERT ALTERNATIVE GENERAL PLAN, ELEVATION, TYPICAL SECTION		STRUCTURE NO. N/A							

