ARIZONA DEPARTMENT OF TRANSPORTATION
BRIDGE GROUP
BRIDGE DESIGN SECTION A

DRAFT BRIDGE SELECTION REPORT

September 2024

TRACS No. 347 MA 184 F0476 01L

Federal Aid Project No. NFA

Riggs Road OP

New Structure #TBD

State Route 347 & Riggs Road

Prepared By:

Kimley»Horn

Date: September 2024

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1 INTRODUCTION

An Initial Design Concept Report (IDCR) Riggs Road Traffic Interchange (TI) at State Route (SR) 347 has been prepared which describes the recommendation for providing a grade separated interchange on Maricopa Road/State Route 347 (SR 347) at Riggs Road near Milepost 185.29.

1.1 Project Information

TRACS No.:	347 MA 184 F0476 01L
Federal Aid Project No.:	NFA
Name of Project:	Maricopa Road (State Route 347): Riggs Road Traffic Interchange
Project Milepost (MP):	SR 347 MP 185.29
Type of Project:	Grade Separated Crossing
Route Numbers:	SR 347
Structure Number:	As this is a new bridge structure, a structure number will not be assigned until the bridge type and geometry are determined. The Structure Number will be included in the Final Bridge Selection Report.

1.2 Project Location

The Maricopa Road (State Route 347): Riggs Road Traffic Interchange improvements project is located in the Arizona Department of Transportation's (ADOT) Central District and is within Maricopa County in south-central Arizona. The project location and project vicinity map are shown in **Figure 1.1** and **Figure 1.2**, respectively.

1.3 Current Project Programming Status

Construction for the project is not yet funded. Construction schedule is not determined and will be scheduled based on available funding.

1.4 Highway Classification

The SR 347 is classified as a principal arterial highway with partial control of access.

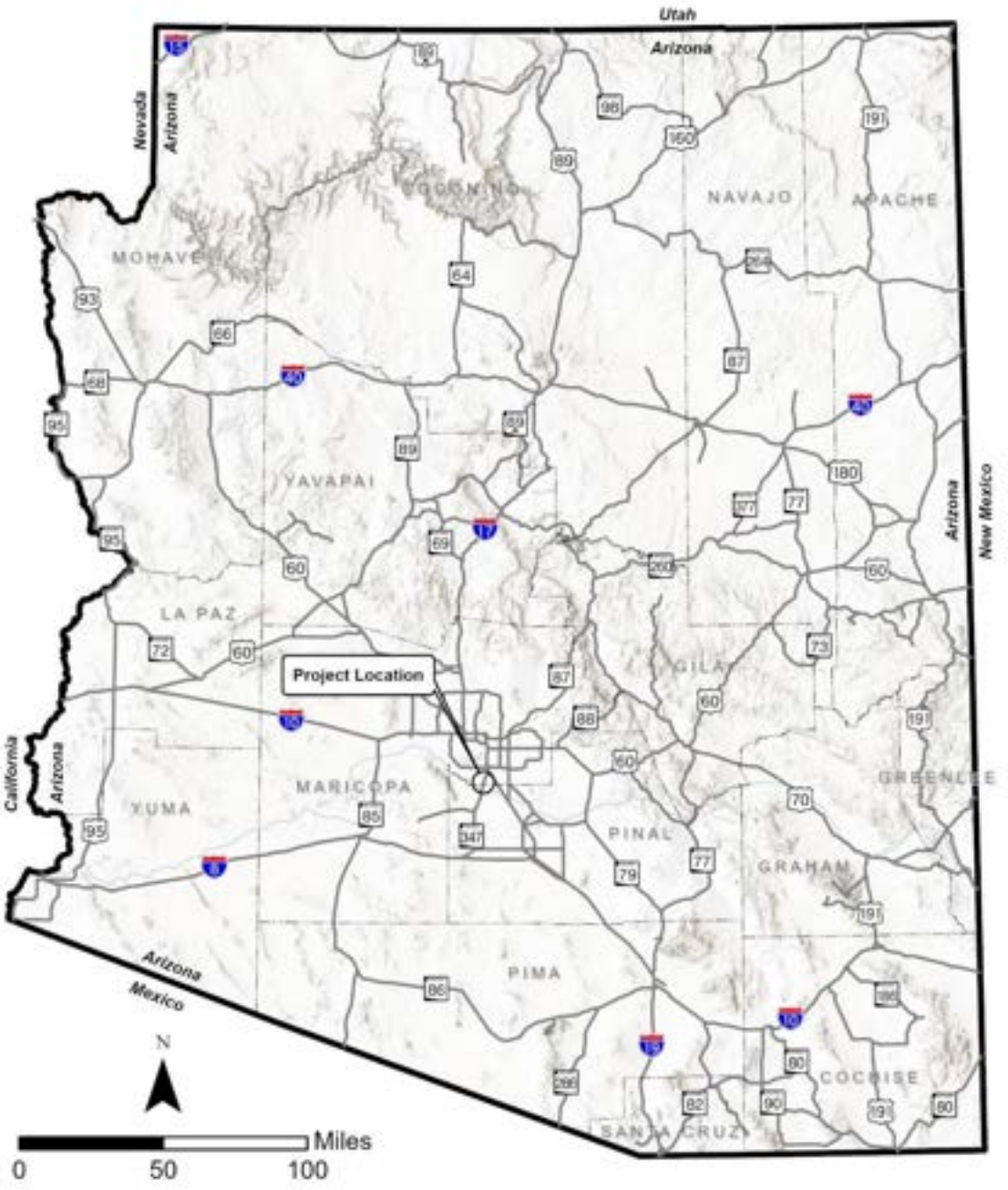


Figure 1.1 – Project Location

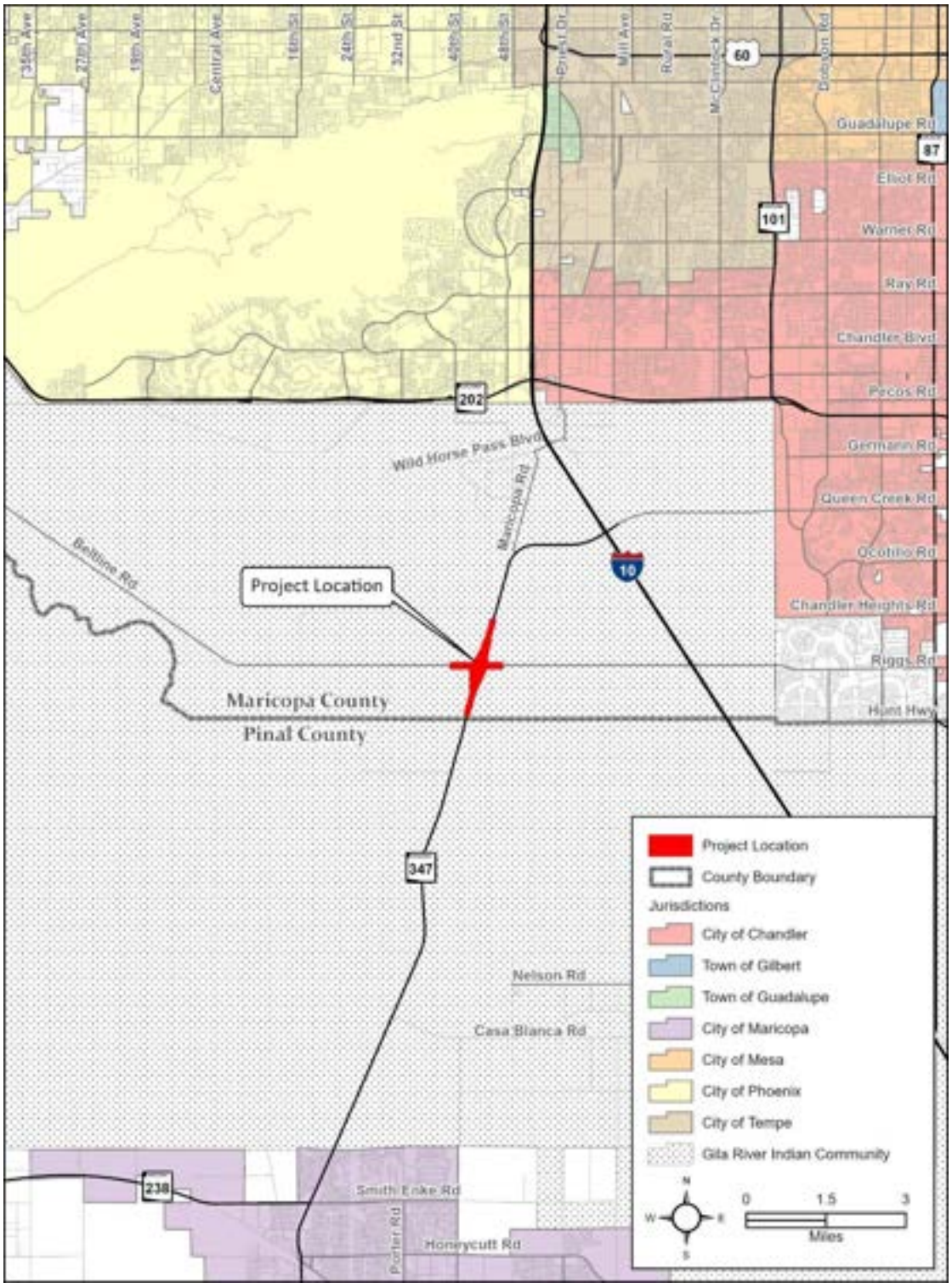


Figure 1.2 – Bridge Location

2 EXISTING ROADWAY GEOMETRY AND CONDITION

The existing SR 347 northbound (NB) and southbound (SB) roadway sections include two general purpose lanes (GPL) in each direction that are each 12 feet wide. Approaching the Riggs Road intersection, the SR 347 NB and SB roadway sections include one left turn auxiliary lane and one right turn auxiliary lane in each direction that are each 12 feet wide. The SR 347 NB and SB lanes are separated by a 38-foot unpaved median. Inside paved shoulders are 4 feet wide or less for both NB and SB travel lanes and outside paved shoulders are 10 feet wide both directions as well. Along SR 347, standard 2.0% cross slopes are maintained consistently. The horizontal alignment of SR 347 is tangential throughout the project. The terrain throughout the corridor is level, with maximum grades along the SR 347 mainline at 0.7% in both directions of travel.

Riggs Road eastbound (EB) and westbound (WB) roadway sections include one general purpose lane (GPL) in each direction that are each 12 feet wide. Approaching the SR 347 intersection, the Riggs Road EB and WB roadway sections include one left turn auxiliary lane in each direction that are each 12 feet wide. Riggs Road does not currently have a median nor inside shoulders, and the outside paved shoulders are 5 feet wide generally for both EB and WB directions. It is currently owned and maintained by Maricopa County Department of Transportation. The terrain throughout the intersection and neighboring areas is level, with grades meeting current standards and the curves meeting vertical stopping sight distance criteria. Superelevation is not used along Riggs Road in this area.

3 EXISTING BRIDGE GEOMETRY AND CONDITION

The existing intersection is an at grade, four-way signalized intersection without a bridge.

4 EXISTING BRIDGE HYDRAULICS

There is no existing bridge at this intersection. See the ADOT 2024 IDCR Riggs Rd TI at SR 347 for discussion on the existing roadway drainage patterns at the intersection.

5 EXISTING UTILITIES

Existing utilities have been identified crossing or adjacent to SR 347 including culverts, electric, fiber optics, gas irrigation, sewer, storm drains, telephone, traffic signals, and water.

See the ADOT 2024 IDCR Riggs Rd TI at SR 347 for additional existing utility information.

6 EXISTING RIGHT-OF-WAY

See the ADOT 2024 IDCR Riggs Rd TI at SR 347 for existing right-of-way information.

7 PROPOSED ROADWAY GEOMETRY

The preferred alternative in the ADOT 2024 IDCR Riggs Rd TI at SR 347 is the shifted diamond alternative with a new bridge for SR 347 over Riggs Road. With this alternative, the existing SR 347 alignment will be shifted to the east of the current location utilizing

large radii reverse curves along the SR 347 centerline. A tight diamond interchange at Riggs Road will be constructed. The SR 347 Northbound and Southbound lanes will each have a total clear roadway width of 60'-0". This will provide 12'-0" outside shoulders, three 12'-0" lanes, and 12'-0" inside shoulders. The interim roadway configuration will carry only 2 lanes on SR 347 until the future corridor widening project comes through to restripe for 3 lanes.

Riggs Road will remain at grade and SR 347 will be elevated to cross Riggs Road with a bridge. No retaining walls will be required. The vertical alignment of SR 347 will be designed to provide the required minimum vertical clearance of 16'-6" beneath the bridge structure. In each direction, Riggs Road will provide a 5'-0" bike lane, two 12'-0" lanes, and one 12'-0" shoulder. There will be an 8'-0" median separating the two directions at the center of Riggs Road.

8 PROPOSED BRIDGE GEOMETRY

The existing SR 347 alignment will be shifted to the east of the current location and cross over Riggs Road with a bridge. The new bridge will be a two-span structure with a pier in the median of Riggs Road. The span lengths vary depending on the bridge alternative and will be discussed further in Section 18 of the report. The bridge will be two separate structures with a 4" open joint between the two decks and will share an abutment cap. Each structure will accommodate a 12'-0" inside shoulder, three 12'-0" lanes, and a 12'-0" outside shoulder to provide 60'-0" clear roadway width.

Each bridge structure will have a total out-to-out width of 63'-0". The bridge abutments will have a joint at the center of the abutment between the two bridges. The pier caps will be separate caps and columns for each bridge. All bridge alternatives will have drilled shaft foundations under the abutments and pier. The inside barrier for both structures will be a 42-inch single-slope concrete barrier; the outside barrier will be a 38-inch single-slope concrete barrier.

9 DESIGN SPECIFICATIONS AND LOADINGS

The technical design specifications and guidelines followed in the development of this initial bridge selection report are:

- *AASHTO LRFD Bridge Design Specifications, 8th Edition 2017, except as modified by the ADOT Bridge Group – "Bridge Design Guidelines".*
- *Loading Class HL93.*
- *Dead Load – Includes allowance for 25 psf for future wearing surface.*

10 BRIDGE FOUNDATION INVESTIGATION

There is not an existing bridge at this location, therefore there is limited information about the subsurface soils. A geotechnical report will be required for this project. Based on other structures along the corridor, it is assumed that drilled shafts will be the best foundation type for this bridge.

11 BRIDGE HYDRAULICS

The drainage of the new bridge deck will collect at the outside gutter lines and will be conveyed to the north and south ends of the bridge. The runoff will be collected in the roadway drainage system.

12 UTILITIES

See Section 5 “Existing Utilities” for the identified utilities in the vicinity of the bridge. Utilities will need to be confirmed and identified through ADOT Utilities and Railroad Engineering as part of final design. No new utilities are proposed to be located within or supported on the bridge structure.

13 RIGHT-OF-WAY

See the ADOT 2024 IDCR Riggs Rd TI at SR 347 for right-of-way information.

14 ENVIRONMENTAL

See the ADOT 2024 IDCR Riggs Rd TI at SR 347 for environmental concerns and required clearances.

15 AESTHETICS

The overall bridge layout and configuration should produce the appearance of openness and freedom to the driver. It is important to neither distract nor distress the driver passing beneath bridges. Gentle open slopes with short stub type abutments convey an unrestricted visual range to the driver and maximize the driver’s site distance and perspective. In addition, long multi-span bridges with stub abutments are generally thought to be more attractive than short tunnel-like bridges with full-height abutments. When feasible, long span and multi-span bridges with stub abutments are preferred.

Piers, wingwalls, abutment faces, and outer faces of the barriers will be designed to accommodate integral artwork designs and rustication patterns. All exposed bridge surfaces, with the exception of the roadway surface and inside face of barriers, will be painted. Bridge Aesthetics and painting will be coordinated during final design.

16 CONSTRUCTABILITY AND CONSTRUCTION PHASING & TRAFFIC CONTROL

The construction of the new bridge must be accomplished while maintaining traffic on both the SR 347 and Riggs Road during construction. The bridge will be constructed to the east of the current alignment of SR 347. On the SR 347, two lanes for both NB and SB must remain open. The new bridge will not need to have phased construction since the existing roadway can be maintained while the bridge is constructed to the east of the SR 347. The northbound lanes will be detoured onto the new ramps during bridge construction because of the close proximity of the bridge as well as the roadway embankment extending over the existing lanes. The northbound off and on ramps will be constructed to accommodate the current traffic lanes to maintain the existing traffic flow.

It is likely that there will be restrictions to Riggs Road during construction of the overpass. Short-term lane closures on Riggs Road during overhead bridge construction activities are required in accordance with accepted ADOT practices and should be anticipated. This can be accomplished during off-peak hours and in coordination with the construction efforts on adjacent crossroads.

17 ACCELERATED BRIDGE CONSTRUCTION METHODS

The ADOT Accelerated Bridge Construction Guidelines state “ADOT Bridge Group encourages the exploration and use of Accelerated Bridge Construction (ABC) methods in delivering bridge design and construction projects…”. “During the development of all scoping documents involving bridge construction projects, ABC methods shall be evaluated for solutions to lesson impacts to stakeholders such as the travelling public, railroad, businesses and other entities. Improve the safety of the travelling public and contractor’s personnel in the work zone, mitigate environmental impacts and shorten construction duration.”

ABC methods were considered on this project to reduce the construction impact, project duration and safety to the travelling public. An ABC meeting has not been held with ADOT staff at this point in the project but will be scheduled before the 30% submittal. The preliminary ABC scoring matrix scored this bridge at a 31, which requires consideration of ABC methods if it creates an advantage for the project. Using the ABC Decision Flowchart, it was determined that the benefits of ABC do not outweigh additional costs of using ABC methods. It was determined that ABC methods are not a viable option for this location and conventional bridge construction methods will be used. See Appendix C for the ABC Decision Making Matrix and ABC flowchart.

18 BRIDGE ALTERNATIVES

Two bridge types were considered for the Shifted Diamond TI (SHDI) preferred alternative from the DCR (Alternative B1). The first bridge type uses precast, prestressed bulb tee girders on stub abutments supported on drilled shafts. The second bridge type uses precast, prestressed bulb tee girders with pier-style abutments and MSE walls.

Other superstructure types were also considered for this location. Steel girders were considered, but because of higher steel costs in Arizona they are not as cost effective as precast concrete girders for the short spans of this bridge. Precast, prestressed bulb tee girders on full-height abutments were also considered, but because of the large amount of concrete used at the abutment, the cost was higher than other abutment styles. AASHTO I-Girders were considered as well, however they are deeper than the Wide Flange girders and would require greater increase of the SR 347 profile with no reduction in bridge costs.

18.1 Alternative B1-1 – Two-Span, Precast, Prestressed 50-Inch Bulb Tee Girder Bridge with Stub Abutments at the Shifted Diamond Interchange (SHDI)

18.1.1 Superstructure Type

The superstructure type for Alternative B1-1 is a two-span, precast, prestressed 50-inch Bulb Tee Girder (BT50) bridge. The bridge will have 7 lines of girders in each bound spaced at 9’-3” with 3’-9” overhangs. The bridge will have an 8-inch-thick reinforced concrete deck. The total superstructure depth will be 5’-2”.

18.1.2 Bridge Configurations and Span Arrangement

The span lengths are both 107’-0” yielding a total bridge length of 218’-2”. This span configuration will provide a clear Riggs Road roadway width of 41’-0” in each travel direction with variable fill slopes (2:1 maximum). This will allow three 12’-0” lanes and a 5’-0” bike lane in each direction with the ability to utilize a retaining wall in the fill slopes for a future widening of Riggs Road.

18.1.3 Substructure and Foundation Types

The abutments and pier are parallel to the Riggs Road construction centerline. Both abutments utilize stub-type abutments supported on a single row of four 48-inch diameter drilled shafts and will have conventional cantilever wingwalls.

The pier for both bounds consists of a standard pier cap supported on five 54-inch diameter circular columns bearing on 72-inch diameter drilled shafts.

18.1.4 Cost Estimate

The unit costs used in estimating the construction cost are based on the ADOT Estimated Engineering Construction Cost E2C2 program. See Appendix B for estimated item quantities and costs.

2-Span, Precast, Prestressed 50-inch Bulb Tee Girder Superstructure
Stub Abutments on Drilled Shafts
Pier Cap supported on Circular Columns on Drilled Shafts
Total Structure Cost: $10,668,720
Unit Structure Cost per SF: $388.09

18.1.5 Advantages and Disadvantages

Precast, prestressed concrete girder bridges are very common in Arizona. The bulb tee girder has become a very common girder type in Arizona and has been shown to be very efficient. The bulb tee girders provide a shorter superstructure depth to limit the SR 347 profile. The precast, prestressed girder bridges can be erected without the negative risk associated with falsework. They are also simple to construct.

The stub abutment alternative will help the bridge have the appearance of openness and is generally thought to be more attractive than tunnel-like bridges with full-height abutments or pier-style abutments and an MSE wall. The stub abutment alternative allows for a future widening of Riggs Road utilizing a retaining wall where the slope paving is located.

18.2 Alternative B1-2 - Two-Span, Precast, Prestressed 42-Inch Bulb Tee Girder Bridge with Exposed Pier-Style Abutments and MSE Walls at the Shifted Diamond Interchange (SHDI)

18.2.1 Superstructure Type

The superstructure type for Alternative B1-2 is a two-span, precast, prestressed 42-inch Bulb Tee Girder bridge. The bridge will have 5 lines of girders in each bound spaced at 11’-1” with 3’-9½” overhangs. The bridge will have a 9-inch-thick reinforced concrete deck. The total superstructure depth will be 4’-5”.

18.2.2 Bridge Configurations and Span Arrangement

The span lengths are both 70’-0” yielding a total bridge length of 143’-2”. This span configuration will provide a clear Riggs Road roadway width of 41’-0”. This will allow three 12’-0” lanes and a 5’-0” bike lane in each direction on Riggs Road.

18.2.3 Substructure and Foundation Types

The abutments and pier are parallel to the Riggs Road construction centerline. Both abutments utilize pier-style abutments with each cap consisting of five 54-inch diameter circular columns each supported on a single 72-inch diameter drilled shaft. Behind each abutment is an MSE wall. A “jump-span” on the approach slab is required to span the gap between the abutments and MSE walls.

The pier for both bounds consists of a standard pier cap supported on five 54-inch diameter circular columns bearing on 72-inch diameter drilled shafts.

18.2.4 Cost Estimate

The unit costs used in estimating the construction cost are based on the ADOT Estimated Engineering Construction Cost E2C2 program. See Appendix B for estimated item quantities and costs.

2-Span, Precast, Prestressed 42-inch Bulb Tee Girder Superstructure
Pier-Style Abutments on Circular Columns on Drilled Shafts
Pier Cap supported on Circular Columns on Drilled Shafts
Total Structure Cost: $7,492,260
Unit Structure Cost per SF: $415.31
Total MSE Wall Cost: $2,810,898
Total Cost: $10,303,158

18.2.5 Advantages and Disadvantages

As stated in Alternative B1-1, the bulb tee girders provide a shorter superstructure depth to limit the SR 347 profile. The precast, prestressed girder bridges can be erected without the negative risk associated with falsework. They are also simple to construct.

The superstructure depth of this structure will be more shallow than Alternative B1-1. The span lengths are shorter and there are also fewer girder lines than Alternative B1-1. Both of these factors create a lower superstructure cost.

The pier-style abutments with MSE walls alternative will give the appearance of a tunnel-like bridge. The stub abutment alternative allows for a future widening of Riggs Road utilizing a retaining wall where the slope paving is located.

19 RECOMMENDED ALTERNATIVE

SUMMARY OF ALTERNATIVES TABLE				
Alt. No.	**Description**	**Advantages**	**Disadvantages**	**Cost**
B1-1	Two-Span, Precast, Prestressed 50-Inch Bulb Tee Girder Bridge with Stub Abutments at the Shifted Diamond Interchange	-Future widening potential -Easily constructed -Longer spans -Open bridge concept	-Deeper superstructure -More girders	$10,668,720
B1-2	Two-Span, Precast, Prestressed 42-Inch Bulb Tee Girder Bridge with Exposed Pier-Style Abutments and MSE Walls at the Shifted Diamond Interchange	-Fewer girders -Easily constructed -More-shallow superstructure	-No future widening -Tunnel-like bridge	$10,303,158

Alterative B1-1, a two-span, precast, prestressed 50-inch Bulb Tee girder bridge with stub abutments supported on a single row of 48-inch diameter drilled shafts and a standard pier cap on circular columns supported on 72-inch drilled shafts is the recommended bridge type and configuration for this location for the shifted diamond interchange (SDI). This alternative allows for a future widening to Riggs Road and prevents the bridge from appearing tunnel-like. It also provides minimal maintenance, greater sight distance for motorists, and local contractors have a high familiarity with the construction of this kind of bridge.

Appendix A: Estimated Quantities and Cost

CONSTRUCTION COST ESTIMATE
SR 347 Riggs Rd TI OP - Alternative B1-1

Structure Name:	**SR 347 Riggs Rd TI OP - Alternative B1-1**	**No. Spans:**	**2**	
Superstructure Type:	**BT50 Prestressed Girders**	**Span Length:**	**107.00**	ft
Substructure Type:	**Stub Abut & Multi-Column Pier**	**Skew:**	**15.563**	Rt
		Total Bridge Length:	**218.17**	ft
Foundation Type:	**Drilled Shafts**	**Bridge Width (out to out):**	**63.000**	ft
		Bridge Area:	**27,490**	ft²

Bridge Items

ITEM No.	Item Description	Unit	Quantity	Unit Cost	Cost
2030501 A	STRUCTURAL EXCAVATION	CU.YD.	170	$100	$ 17,000
2030506 A	STRUCTURE BACKFILL	CU.YD.	846	$200	$ 169,200
6010003 A	STRUCTURAL CONCRETE (CLASS S) (F'C = 3,500)	CU.YD.	798	$1,200	$ 957,600
6010005 A	STRUCTURAL CONCRETE (CLASS S) (F'C = 4,500)	CU.YD.	934	$1,800	$ 1,681,200
6010835 A	BRIDGE DECK TEXTURING (SAWED GROOVES)	SQ.YD.	3,310	$25	$ 82,750
6011150 A	SINGLE SLOPE BRIDGE CONCRETE BARRIER AND TRANSITION (38")	L.FT.	498	$250	$ 124,500
6011151 A	SINGLE SLOPE BRIDGE CONCRETE BARRIER AND TRANSITION (42")	L.FT.	498	$250	$ 124,500
6011343 A	DECK JOINT ASSEMBLY (FLANGELESS STRIP SEAL)	L.FT.	252	$600	$ 151,200
6011371 A	APPROACH SLAB (SD 2.01)	SQ.FT.	3,780	$60	$ 226,800
6014974 A	PRECAST, P/S MEMBER (BT58 GIRDER)	L.FT.	3,004	$650	$ 1,952,600
6015101 A	RESTRAINERS, VERTICAL EARTHQUAKE (FIXED)	EACH	12	$600	$ 7,200
6015102 A	RESTRAINERS, VERTICAL EARTHQUAKE (EXPANSION)	EACH	24	$800	$ 19,200
6050002 A	REINFORCING STEEL	LB.	410,740	$2.50	$ 1,026,850
9999903 A	LUMP SUM STRUCTURE (TOTAL OF PRECEEDING STRUCTURE ITEMS)	L.SUM	1	$6,540,600	$ 6,540,600
				SUBTOTAL:	**$ 6,540,600**

Other Items

ITEM No.	Item Description	Unit	Quantity	Unit Cost	Cost
6090048 B	DRILLED SHAFT FOUNDATION (48")	L.FT.	1,500	$900	$ 1,350,000
6090072 B	DRILLED SHAFT FOUNDATION (72")	L.FT.	376	$1,300	$ 488,800
9240038 B	MISCELLANEOUS WORK (SLOPE PAVING)	SQ.FT.	2556	$200	$ 511,200
				SUBTOTAL:	**$ 2,350,000**
				TOTAL:	**$ 8,890,600**
			20%	**CONTINGENCY:**	**$ 1,778,120**
				GRAND TOTAL COST:	**$ 10,668,720**
				TOTAL COST / SF :	**$ 388.09**

CONSTRUCTION COST ESTIMATE
SR 347 Riggs Rd TI OP - Alternative B1-2

Structure Name:	**SR 347 Riggs Rd TI OP - Alternative B1-2**	**No. Spans:**	**2**	
Superstructure Type:	**BT42 Prestressed Girders**	**Span Length:**	**70-0**	ft
Substructure Type:	**Pier-Style Abut & Multi-Column Pier**	**Skew:**	**15.563**	Rt
		Total Bridge Length:	**143.17**	ft
Foundation Type:	**Drilled Shafts**	**Bridge Width (out to out):**	**63.000**	ft
		Bridge Area:	**18,040**	ft²

Bridge Items

ITEM No.	Item Description	Unit	Quantity	Unit Cost	Cost
2030501 A	STRUCTURAL EXCAVATION	CU.YD.	54	$100	$ 5,400
2030506 A	STRUCTURE BACKFILL	CU.YD.	64	$200	$ 12,800
6010003 A	STRUCTURAL CONCRETE (CLASS S) (F'C = 3,500)	CU.YD.	858	$1,200	$ 1,029,600
6010005 A	STRUCTURAL CONCRETE (CLASS S) (F'C = 4,500)	CU.YD.	616	$1,800	$ 1,108,800
6010835 A	BRIDGE DECK TEXTURING (SAWED GROOVES)	SQ.YD.	2,310	$25	$ 57,750
6011150 A	SINGLE SLOPE BRIDGE CONCRETE BARRIER AND TRANSITION (38")	L.FT.	348	$250	$ 87,000
6011151 A	SINGLE SLOPE BRIDGE CONCRETE BARRIER AND TRANSITION (42")	L.FT.	348	$250	$ 87,000
6011343 A	DECK JOINT ASSEMBLY (FLANGELESS STRIP SEAL)	L.FT.	252	$600	$ 151,200
6011371 A	APPROACH SLAB (SD 2.01)	SQ.FT.	3,780	$60	$ 226,800
6014974 A	PRECAST, P/S MEMBER (BT42 GIRDER)	L.FT.	1,686	$650	$ 1,095,900
6015101 A	RESTRAINERS, VERTICAL EARTHQUAKE (FIXED)	EACH	10	$600	$ 6,000
6015102 A	RESTRAINERS, VERTICAL EARTHQUAKE (EXPANSION)	EACH	20	$800	$ 16,000
6050002 A	REINFORCING STEEL	LB.	357,160	$2.50	$ 892,900
9999903 A	LUMP SUM STRUCTURE (TOTAL OF PRECEEDING STRUCTURE ITEMS)	L.SUM	1	$4,777,150	$ 4,777,150
				SUBTOTAL:	**$ 4,777,150**

Other Items

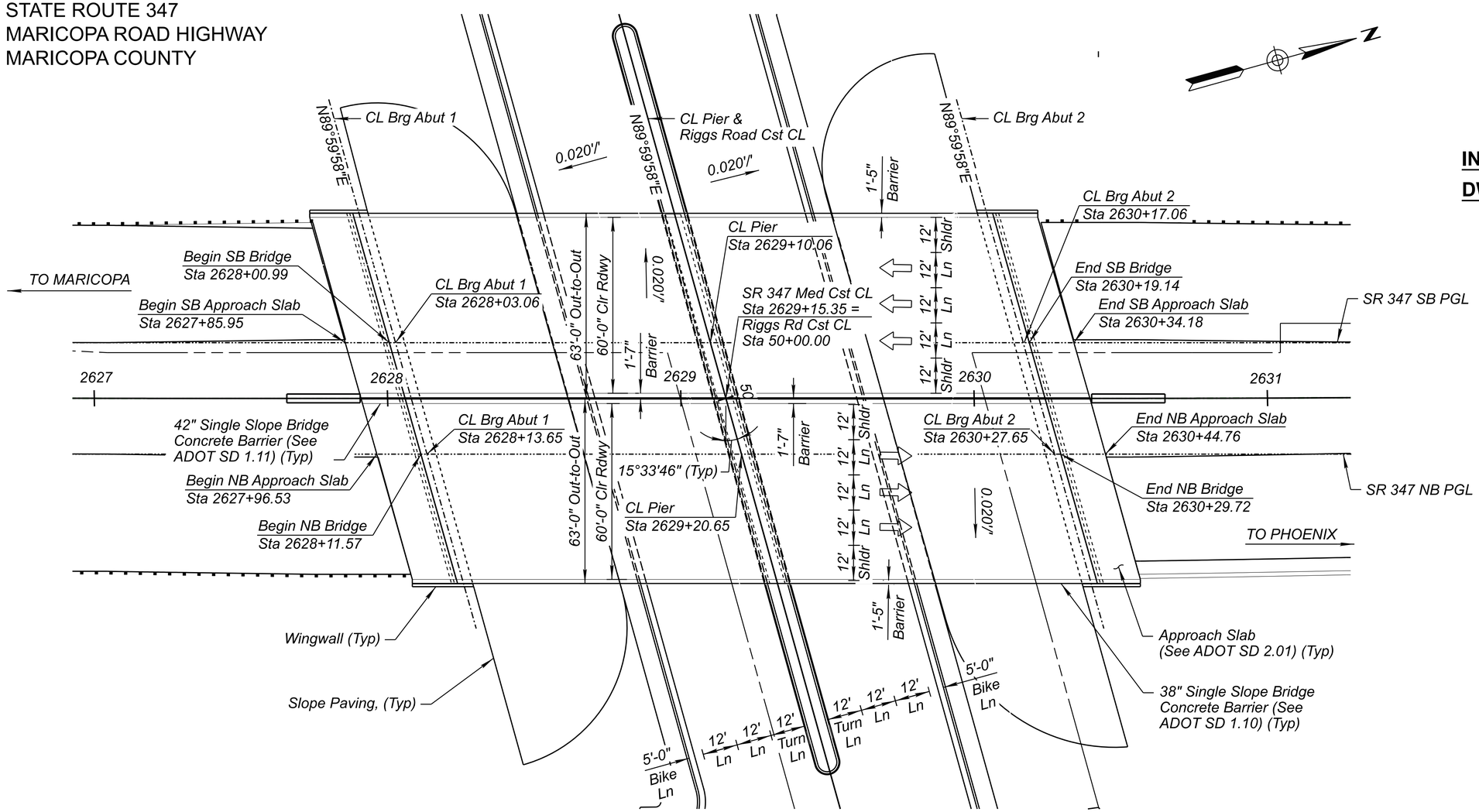
ITEM No.	Item Description	Unit	Quantity	Unit Cost	Cost
6090072 B	DRILLED SHAFT FOUNDATION (72")	L.FT.	1128	$1,300	$ 1,466,400
				SUBTOTAL:	**$ 1,466,400**
				TOTAL:	**$ 6,243,550**
			20%	**CONTINGENCY:**	**$ 1,248,710**
				GRAND TOTAL COST:	**$ 7,492,260**
				TOTAL COST / SF :	**$ 415.31**

Other Items

ITEM No.	Item Description	Unit	Quantity	Unit Cost	Cost
9290001 B	MECHANICALLY STABILIZED EARTH RETAINING WALLS	SQ.FT.	11,710	$200	$ 2,342,000
				SUBTOTAL:	**$ 2,342,000**
				TOTAL:	**$ 2,342,415**
			20%	**CONTINGENCY:**	**$ 468,483**
				GRAND TOTAL COST:	**$ 2,810,898**

Appendix B: Bridge Plans, Elevations, Typical Sections and Construction Phasing

STATE ROUTE 347
MARICOPA ROAD HIGHWAY
MARICOPA COUNTY



INDEX OF DRAWINGS

DWG NO	TITLE
S-1.01	GENERAL PLAN
S-1.02	ELEVATION
S-1.03	TYPICAL SECTION

PLAN

New 2-Span Precast Prestressed BT50 Girder Bridge
Stations are along SR 347 Med Cst CL
All Dimensions are normal to respective Cst CL
Skew = 15°33'46"
Contour Interval = 1'-0"
Scale: 1"=20'-0"

LEGEND

⇨ *Indicates Direction of Traffic*

PRELIMINARY
STAGE II
Review
NOT FOR CONSTRUCTION OR RECORDING

	NAME	DATE
DESIGN	DgnBy	8/24
DRAWN	DrnBy	8/24
CHECKED	ChkBy	8/24

Kimley»Horn

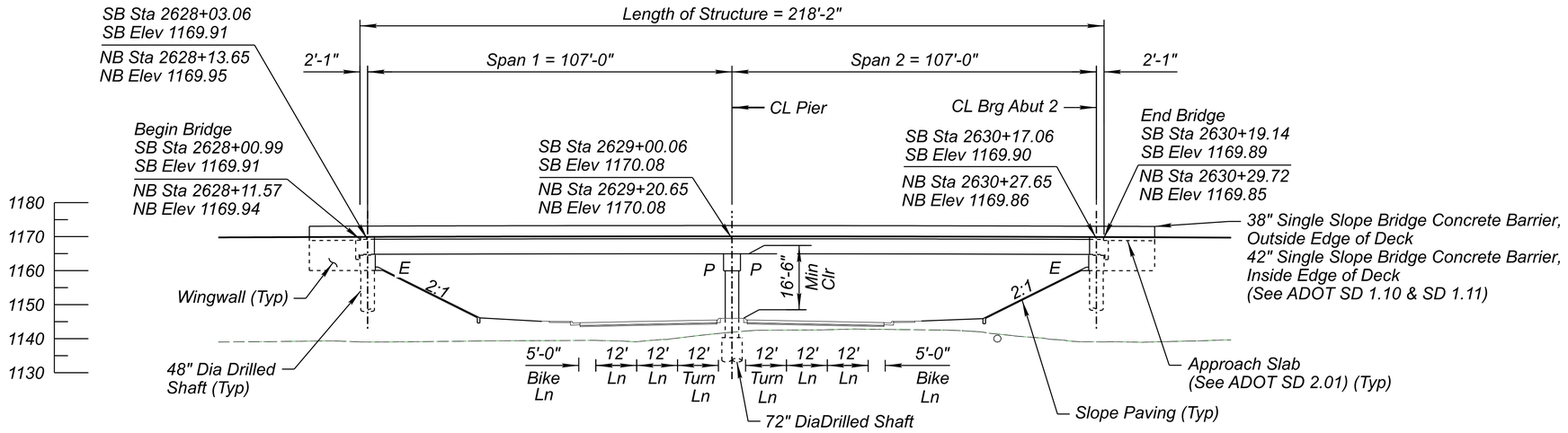
ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
BRIDGE GROUP

STA 2628+00
RIGGS RD TI OP
GENERAL PLAN - ALTERNATIVE B1-1

ROUTE: SR 347
MILEPOST: XXX.XX
STRUCTURE NO.: TBD

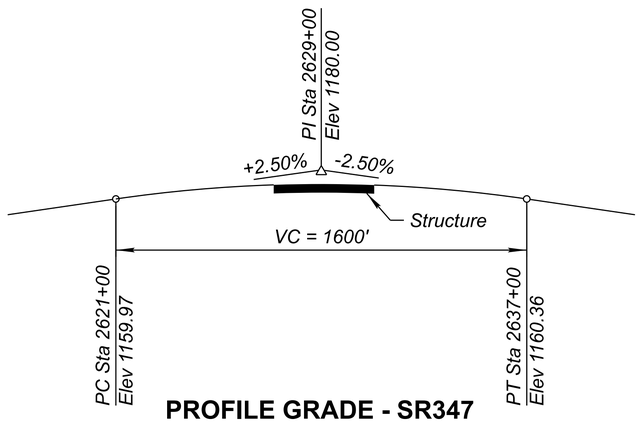
F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.	347 MA 184	NFA	1	3	

LOCATION: RIGGS ROAD TRAFFIC INTERCHANGE
DWG NO. S-1.01
TRACS NO.
ADOT
____ OF ____



ELEVATION

Stations are along SR 347 Cst CL
Elevations are along SR 347 SB/NB PGL
Scale: 1"=20'-0"



PROFILE GRADE - SR347

Scale: 3/16" = 1'-0"

PRELIMINARY
STAGE II
Review
NOT FOR CONSTRUCTION OR RECORDING

	NAME	DATE
DESIGN	DgnBy	8/24
DRAWN	DrnBy	8/24
CHECKED	ChkBy	8/24

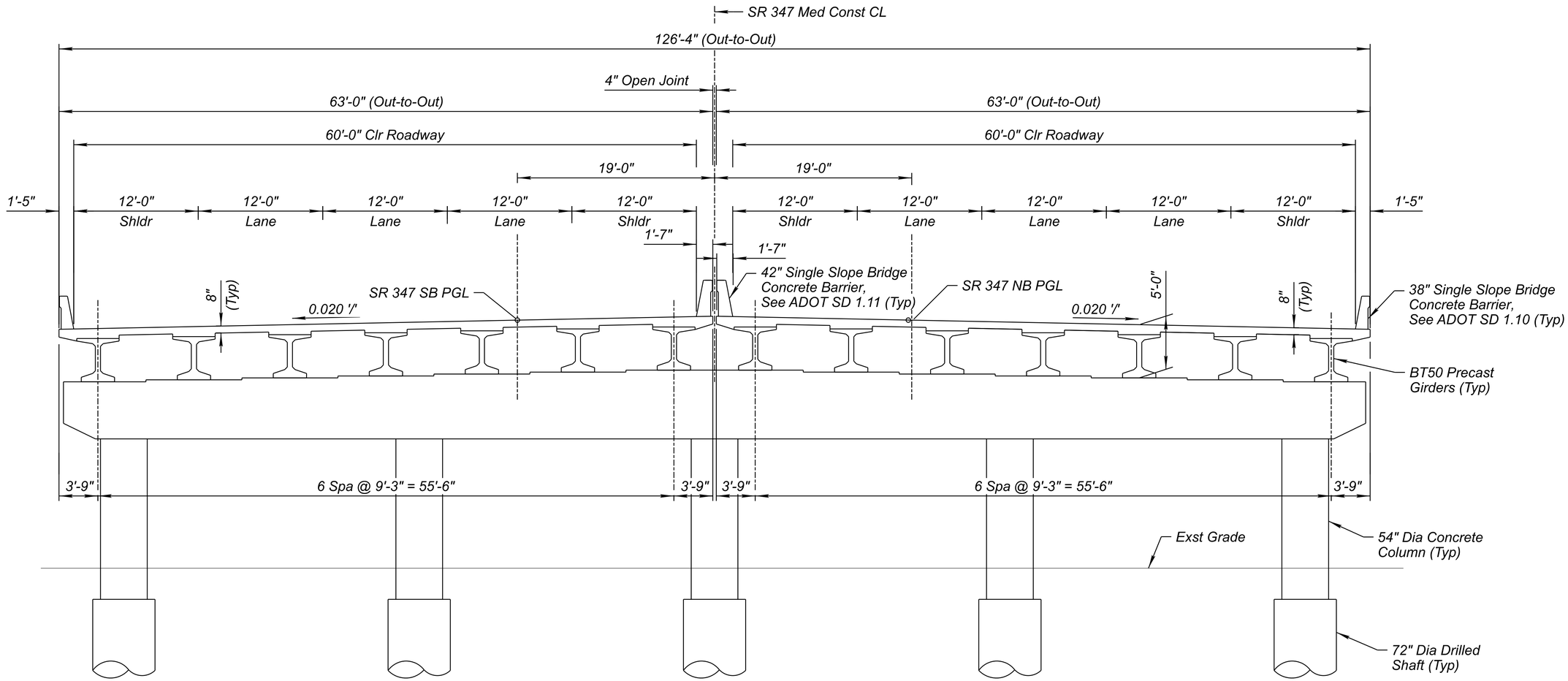
Kimley»Horn

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
BRIDGE GROUP

STA 2628+00
RIGGS RD TI OP
ELEVATION - ALTERNATIVE B1-1

ROUTE	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
SR 347	ARIZ.	347 MA 184	NFA	2	3	

MILEPOST XXX.XX
STRUCTURE NO. TBD
F.H.W.A. Arizona Division
LOCATION RIGGS ROAD TRAFFIC INTERCHANGE
TRACS NO.
ADOT
DWG NO. S-1.02
___ OF ___



TYPICAL SECTION - ALTERNATIVE B1-1

Scale: $\frac{3}{16}$" = 1'-0"

PRELIMINARY
STAGE II
Review
NOT FOR CONSTRUCTION OR RECORDING

	NAME	DATE
DESIGN	DgnBy	8/24
DRAWN	DrnBy	8/24
CHECKED	ChkBy	8/24

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INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
BRIDGE GROUP

STA 2628+00
RIGGS RD TI OP
TYPICAL SECTION ALTERNATIVE B1-1

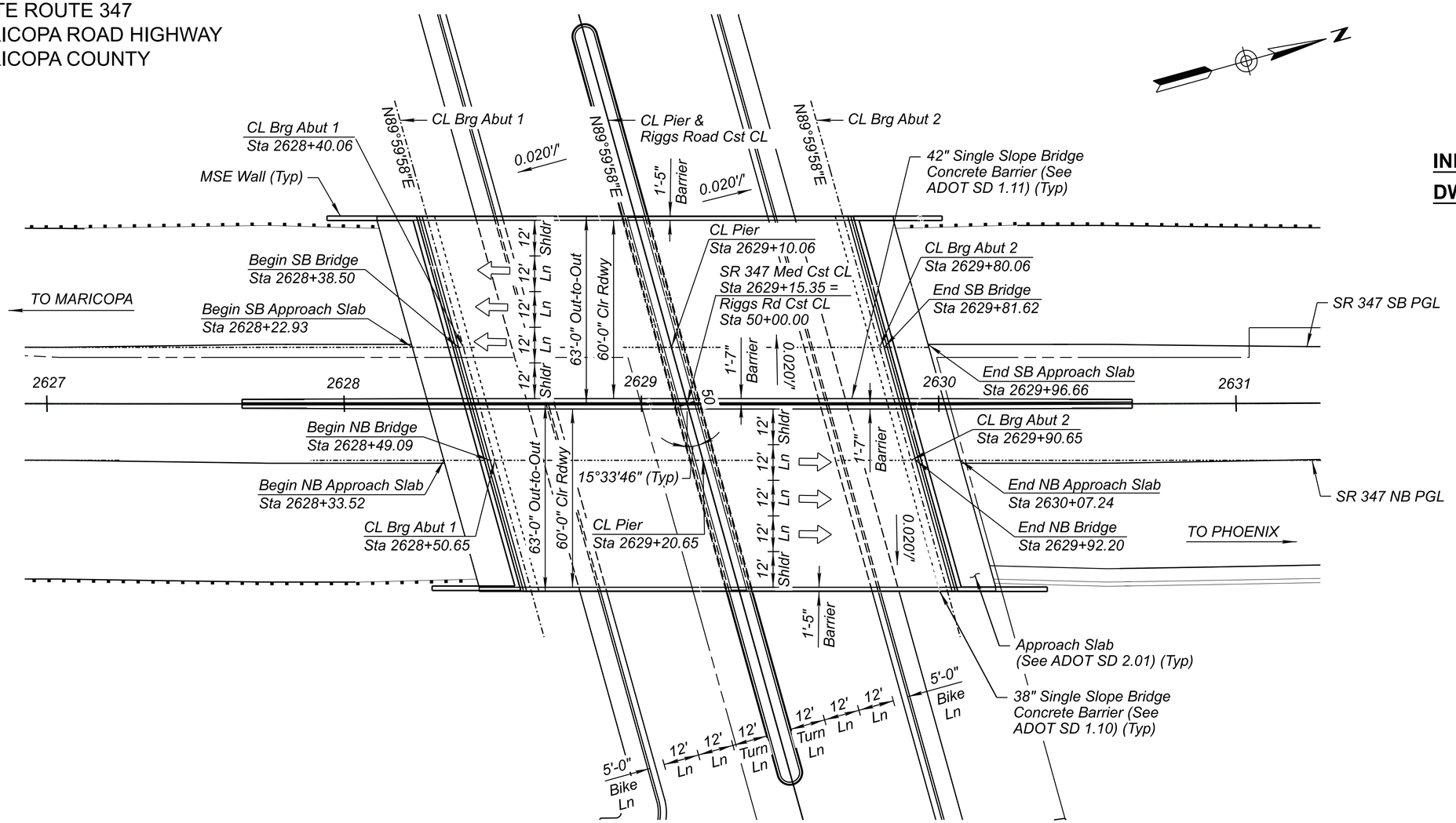
ROUTE SR 347
MILEPOST XXX.XX
STRUCTURE NO. TBD

F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.	347 MA 184	NFA	3	3	

LOCATION RIGGS ROAD TRAFFIC INTERCHANGE
DWG NO. S-1.03
TRACS NO.
ADOT
___ OF___

STATE ROUTE 347
MARICOPA ROAD HIGHWAY
MARICOPA COUNTY



PLAN

New 2-Span Precast Prestressed BT42 Girder Bridge
Stations are along SR 347 Med Cst CL
All Dimensions are normal to respective Cst CL
Skew = 15°33'46"
Contour Interval = 1'-0"
Scale: 1"=20'-0"

INDEX OF DRAWINGS

DWG NO	TITLE
S-2.01	GENERAL PLAN
S-2.02	ELEVATION
S-2.03	TYPICAL SECTION

LEGEND

⇨ *Indicates Direction of Traffic*

PRELIMINARY
STAGE II
Review
NOT FOR CONSTRUCTION OR RECORDING

	NAME	DATE
DESIGN	DgnBy	8/24
DRAWN	DrnBy	8/24
CHECKED	ChkBy	8/24

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INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
BRIDGE GROUP

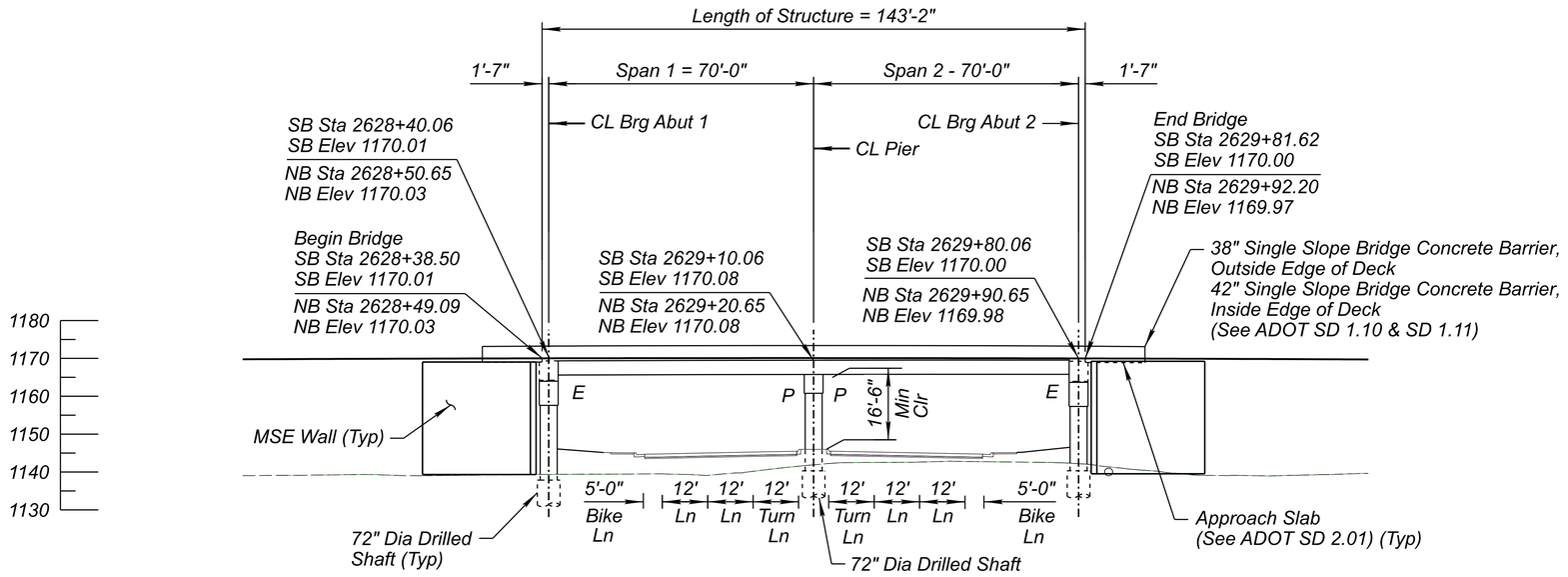
STA 2628+00
RIGGS RD TI OP
GENERAL PLAN - ALTERNATIVE B1-2

ROUTE: SR 347
MILEPOST: XXX.XX
STRUCTURE NO.: TBD

F.H.W.A. Arizona Division

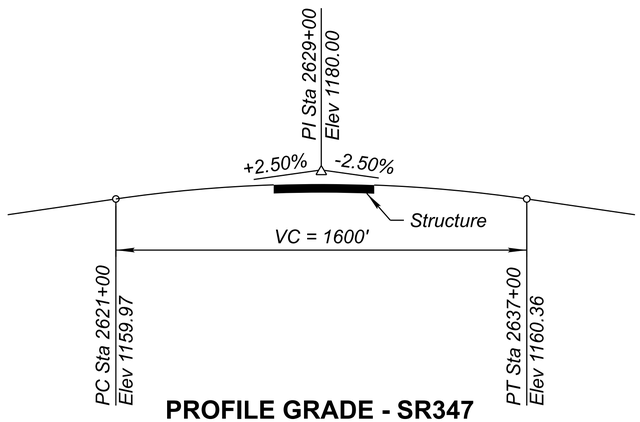
STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.	347 MA 184	NFA	1	3	

LOCATION: RIGGS ROAD TRAFFIC INTERCHANGE
DWG NO. S-2.01
TRACS NO.
ADOT
___ OF ___



ELEVATION

Stations are along SR 347 Cst CL
Elevations are along SR 347 SB/NB PGL
Scale: 1"=20'-0"



PROFILE GRADE - SR347

Scale: 3/16" = 1'-0"

PRELIMINARY
STAGE II
Review
NOT FOR CONSTRUCTION OR RECORDING

	NAME	DATE
DESIGN	DgnBy	8/24
DRAWN	DrnBy	8/24
CHECKED	ChkBy	8/24

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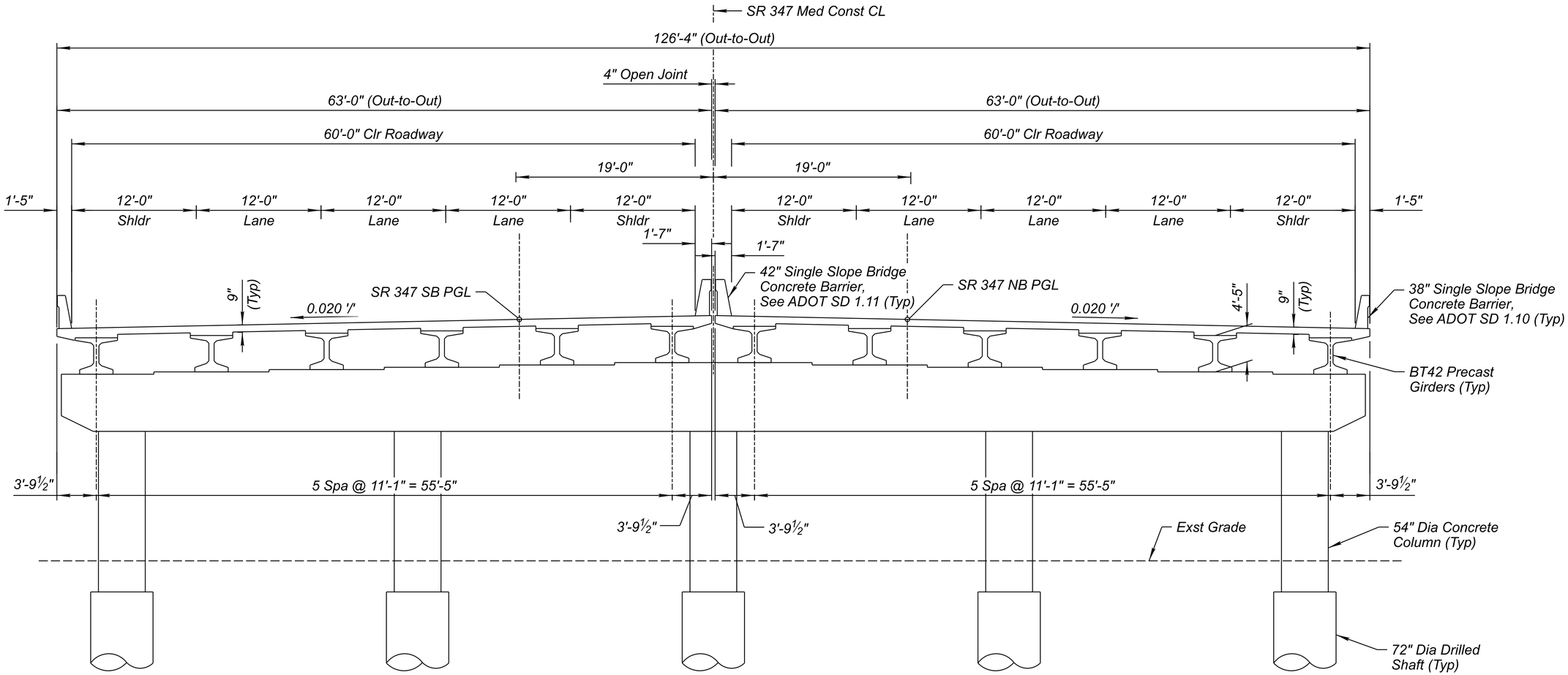
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
BRIDGE GROUP

STA 2628+00
RIGGS RD TI OP
ELEVATION - ALTERNATIVE B1-2

ROUTE	MILEPOST	STRUCTURE NO.
SR 347	XXX.XX	TBD

F.H.W.A. Arizona Division	STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
	ARIZ.	347 MA 184	NFA	2	3	

LOCATION: RIGGS ROAD TRAFFIC INTERCHANGE
DWG NO. S-2.02
TRACS NO.
ADOT
___ OF ___



TYPICAL SECTION - ALTERNATIVE B1-2

Scale: $\frac{3}{16}$" = 1'-0"

PRELIMINARY
STAGE II
Review
NOT FOR CONSTRUCTION OR RECORDING

	NAME	DATE
DESIGN	DgnBy	8/24
DRAWN	DrnBy	8/24
CHECKED	ChkBy	8/24

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BRIDGE GROUP

STA 2628+00
RIGGS RD TI OP
TYPICAL SECTION ALTERNATIVE B1-2

ROUTE: SR 347
MILEPOST: XXX.XX
STRUCTURE NO.: TBD

F.H.W.A. Arizona Division

STATE	PROJECT NO.	FEDERAL ID NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
ARIZ.	347 MA 184	NFA	3	3	

LOCATION: RIGGS ROAD TRAFFIC INTERCHANGE
DWG NO. S-2.03
TRACS NO.
ADOT
___ OF ___

11:50:51 AM 9/5/2024 mark.krzyzewski K:\PHX_Roadway\Worksets\ADOT_CONNECT_PROJECTS_10.10_291749000-F0476-SR_347_Riggs_Rd_TI\dgn\Bridge\Option 2 - Pier Style Abut with MSE Walls\Option 2-sxxxxxs01.dgn

Appendix C: ABC Decision Making Matrix and Flowchart

ADOT ABC Decision Making Matrix

Category	*Decision-Making Item*	*Possible Points*	*Points Allocated*	*Scoring Guidance*
Railroad	Railroad/ Rail Transit under Bridge?	*4*	*0*	*0 No track under bridge* *2 Minor track under bridge* *4 Major track(s) under bridge*
Construction Impacts	ADT (Combined ADT on and under bridge)	*10*	*6*	*1 ADT under 10,000* *3 ADT 10,000 to 25,000* *5 ADT 25,000 to 50,000* *6 ADT 50,000 to 75,000* *7 ADT 75,000 to 100,000* *10 ADT 100,000+*
	Allowable Lane Closure (Roadway on Bridge)	*4*	*4*	*0 Long Term Lane Reduction Allowed During Construction* *4 No Long Term Lane Reduction Allowed During Construction*
	Allowable Lane Closure (Roadway under Bridge)	*4*	*4*	*0 Long Term Lane Reduction Allowed During Construction* *4 No Long Term Lane Reduction Allowed During Construction*
	Allowable Bridge Closure (Roadway on Bridge)	*6*	*0*	*0 Bridge Can closed - Viable Detour Available* *6 Bridge Cannot be Closed*
	Allowable Roadway Closure (Roadway under bridge)	*4*	*4*	*0 Roadway under can be closed* *4 Roadway under cannot be closed*
	Permanent Align Shift w/ single phase an option	*3*	*0*	*0 A permanent alignment shift is achievable to facilitate construction* *3 A permanent alignment shift is achievable, but undesirable.*
	Is phased construction with widening an option?	*8*	*0*	*0 Widening will fit updated standards or future roadway improvements* *6 Widening achievable, but undesireable due to unused investment* *8 No alternatives available for widening*
	Impact to Local Access (Local business access, Local resident access etc.)	*6*	*0*	*0 Minor or no impact to access* *3 Moderate impact to access* *6 Major impact to access*
Project Duration	Impacts Critical Path of the Total Project?	*8*	*8*	*0 Minor or no impact to critical path of total project* *4 Moderate impact to critical path of the total project* *8 Major impact to critical path of the total project*
	Restricted Construction Time (Environmental schedules, Economic Impact-e.g. local business access, special events, etc.)	*10*	*0*	*0 No construction time restrictions* *3 Minor construction time restrictions* *6 Moderate construction time restrictions* *10 Major construction time restrictions*
	Seasonal Limitations for conventional construction?	*4*	*0*	*0 No seasonal limitations for conventional construction* *4 Seasonal limitations for conventional construction*
Environment	Does ABC mitigate a critical environmental impact or sensitive environmental issue?	*5*	*0*	*0 ABC does not mitigate an environmental issue* *2 ABC mitigates a minor environmental issue* *3 ABC mitigates several minor environmental issues* *4 ABC mitigates a major environmental issue* *5 ABC mitigates several major environmental issues*
Safety	Safety (Workers Concerns)	*8*	*0*	*0 Short duration impact* *4 Normal duration impact* *8 Extended duration impact*
	Safety (Traveling Public Concerns)	*8*	*4*	*0 Short duration impact* *4 Normal duration impact* *8 Extended duration impact*
Economy of Scale	Bridge Economy of Scale (repetition of components in a bridge or bridges in a project) (Total spans=sum of all spans on all bridges on the project)	*4*	*1*	*0 1 total span* *1 2 total spans* *2 3 total spans* *3 4 total spans* *4 5+ total spans*
Risk Management	Does ABC allow management of a particular risk?	*4*	0	*0-4 Use judgement to determine if risks can be managed through ABC that arent covered in other topics*
	Total Possible	100		
	Sum of Points:	*31*		

ABC Decision Flowchart