PROJECT ASSESSMENT

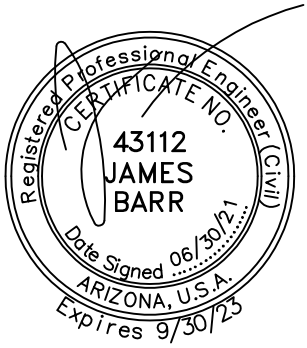
FOR

NORTH VALLEY PARKWAY & SKUNK CREEK BRIDGE

City of Phoenix Project Number: ST85110173-1

JUNE 2021

Prepared for and Approved By:



Prepared By:

T·Y·LIN INTERNATIONAL

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1.0 INTRODUCTION

1.1 Overview

The primary purpose of this Project Assessment (PA) is to establish a preferred alternative for an all-weather crossing over Skunk Creek Wash for the extension of North Valley Parkway from approximately 30th Avenue to Carefree Highway. In total, the length of the project along the existing North Valley Parkway alignment is approximately 4,000 feet. In general, this PA was written with the assumption that local funds will be used for design and construction of this project.

1.2 Alternatives

The project alternatives considered as part of this PA include an all-weather crossing over Skunk Creek Wash. Alternative 1 is a short bridge option over the floodway and alternative 2 is a long bridge option over the floodplain. A concrete 'super-box' culvert option was also briefly considered for the Skunk Creek Wash crossing however was quickly dismissed as discussed later in this report.

2.0 PROJECT INFORMATION

2.1 Location

The project is located along the extended alignment of North Valley Parkway and is approximately 4,000 feet in length between the intersection of 30th Ave and North Valley Parkway north to the intersection of Carefree Highway and North Valley Parkway, east of I-17. The project's southern boundary is the intersection of 30th Avenue and North Valley Parkway. The northern boundary is the intersection of North Valley Parkway and Carefree Highway. Figure 1 – Location Map provides an aerial depiction of the project location.

Currently there aren't any surface improvements within the project limits but there is utility infrastructure in place along the proposed roadway alignment.

Figure 1 – Project Location

2.2 Existing Utilities

The following table is a list of existing utility companies with facilities located within the project area.

Utility Company	Type	Description	Conflict
APS	Electric	Underground & OH 69kV near Carefree Highway	Yes$_2$ (Underground)
CenturyLink	Fiber Optic	UG Conduits	Yes$_2$
City of Phoenix	Communications	Fiber	Yes$_2$
City of Phoenix	Water	8", 12", 72" Pipe	Yes$_2$
City of Phoenix	Sewer	8", 18", 24" Pipe	Yes$_1$
City of Phoenix	Storm Drain	15" & 48" RCP	Yes$_2$
Cox	Fiber Optic	UG Conduits	Yes$_2$
MCI	Telecommunications	Fiber Optics	Unknown
Southwest Gas	Gas	2" PE, 3" Steel, 4" PE	Yes$_2$

1 – Potential conflict with bridge foundation, 2 – Potential conflict with drainage improvements

2.3 Existing Right-of-Way

The project is located along the extended alignment of North Valley Parkway between the intersection of 30th Avenue and Carefree Highway. The current 5-lane section of North Valley Parkway is located within 140' of existing right-of-way at the southern boundary of the project adjacent to the Stoneledge community. This existing right-of-way terminates approximately 620' north of the 30th Avenue intersection. Between this location and Carefree Highway, there is no City owned existing right-of-way for North Valley Parkway along the alignment. However, there is an existing 50'-wide roadway and underground utility easement grant that the City owns from the Arizona State Land Department (ASLD). This 50'-wide easement is located along the southbound portion of the proposed North Valley Parkway alignment. The primary purpose of the easement is to provide a corridor for the City's 24" transmission sewer line.

2.4 Existing Drainage Conditions

The offsite watershed for Skunk Creek extends to the north into the New River Mountains. The contributing watershed at the North Valley Parkway crossing is approximately 40 square miles. The watershed was originally studied and a Letter of Map Revision produced by the Flood Control District of Maricopa County (FCD 95-16). The effective hydrologic models identify the 100-year discharge as 27,300 cubic feet per second (cfs) at Carefree Highway and one mile to the south, at Dove Valley Road, the discharge is identified as 26,700 cfs per a completed Letter of Map Revision (LOMR) prepared in December 2011 as part of the '*North Black Canyon Crossing Drainage Evaluation*'.

3. PROJECT ALTERNATIVES

Given the significance of flows in Skunk Creek at this crossing location, an overall drainage evaluation effort was completed by the Consultant to assess the impacts to the physical wash crossing and associated flows for each of the proposed alternatives. The general approach to that modeling effort is described below prior to the discussion of each alternative for the wash crossing.

3.1 Hydrologic Modeling Procedure for Sonoran Wash

To model the impacts of the different crossing alternatives it was first necessary to rerun the effective hydraulic models as described below.

- Effective Model - This is the model in which the effective floodplain and floodway are based upon. The Effective Model was created in HEC-RAS version 2.2 (from the LOMR - post project).
- Duplicate Effective Model - This is the effective model run with an updated version of HEC-RAS (Version 5.0.7), and then inspected for errors. No errors found.
- Corrected Effective Model - This model is usually created if there is new topography or survey resulting in modified cross sections of the effective model. No new topography exists, therefore, the only difference between Duplicate and Corrected Effective model is the addition of new cross sections located up and downstream of the proposed bridge.
- Proposed Project Model - Using the Duplicate effective model as a base, this model was developed for two bridge alternatives ("Short" and "Long"). New cross-sections were added up and downstream of the proposed roadway/bridge alignment and each bridge was modeled. Additionally, each alternative required unique training dikes to channelize flow to the bridge crossings. The table below provides the Water Surface Elevation Result comparison between the Effective and Duplicate Effective models.

Bounding Cross Sections	100-year Discharge	Water Surface Elevation (Floodplain) Effective Model	Duplicate Effective
	[cfs]	[elev.]	[elev.]
16.47	26,700	1662.04	1662.04
16.25	26,700	1652.76	1652.76
16.17	26,700	1649.18	1649.18
16.05	26,700	1643.75	1643.75
15.87	26,700	1635.96	1635.96
15.84	26,700	1634.79	1634.79
15.77	26,700	1631.05	1631.05
15.76	26,700	1631.87	1631.92
15.75 Culvert (existing)	26,700	-	-
15.74	26,700	1631.73	1631.73
15.73	26,700	1630.92	1630.92
15.53	26,700	1623.1	1623.1

3.2 Alternative A – Structure to Span the Floodway (short bridge)

For this alternative, the roadway profile can meet the clearance requirements over Skunk Creek and tie into the existing roadway at the 30th Ave & North Valley Parkway intersection to the south. To the north, the proposed profile would be close to matching the existing grade near the future intersection of 32nd Avenue, before then proceeding further to the north to the Carefree Highway intersection. The

alignment of Alternative A follows the previously established North Valley Parkway roadway alignment and right-of-way/ASLD easement for the extension of North Valley Parkway from the current terminus at 30th Ave to the intersection with Carefree Highway. Detailed 15% project plans to graphically depict this proposed alignment are included in Appendix A for this alternative.

The proposed structure consists of 4 equal 99'-0" spans resulting in an overall bridge length of 403'-5⅜". Based on the expansion joint movement rating of 4 inches for a strip seal joint, expansion joints have been located at abutment 1 and abutment 2. The typical section is symmetric about the construction centerline. The typical section at the bridge consists of a 1'-2" outside pedestrian rail, an 8'-6" sidewalk, a 6'-0" bike lane, two 11'-0" lanes, one 12'-0" lane and 24'-0" raised median centered about the construction centerline. The resulting overall bridge width is 123'-4". The 24'-0" raised median width was not reduced for the bridge crossing as part of this Scoping Effort given the proximity of the bridge crossing to both the 30th Avenue and future 32nd Avenue intersections. During the final design stage of the project, the designer should determine the exact location of the future 32nd Avenue intersection with North Valley Parkway to determine if the median width can be reduced across the bridge structure to potentially reduce the overall bridge width. The deck slab thickness is 8 inches except at the edges where 9 inches is required. For the required spans and geometry, 14 UBT50 precast prestressed I-girder are equally spaced along the bearings. Because of the curved geometry, the overhang, spacing and skew are varied with a maximum perpendicular spacing of 9.13' and a maximum perpendicular overhang of 3.40'.

Each of the 3 piers consists of a 6'-0" wide by 6'-0" deep cap supported by five (5) 4'-0" diameter columns each on an individual 7'-0" diameter drilled shaft. These piers have been designed for 18.3 feet of scour for the 100-year design event.

Each abutment consists of a 1'-0" thick backwall with an approach slab seat and a 6'-0" wide stem supported by a single row of seven (7) 5'-0" diameter drilled shafts. These abutments have been designed for 23.3 feet of scour for the 500-year design event. A short 5'-0" long wingwall extends beyond the stem so the required retaining walls do not conflict or undermine the abutment. A stacked gabion basket retaining wall is proposed in front of the abutments to protect them from the 100-year flood event.

The proposed roadway alignment along North Valley Parkway would consist of a 40'-wide pavement section in each direction providing for 3 lanes and a bicycle lane. Throughout the alignment, a 24'-wide curbed median would be provided. For the southernmost 300' and northernmost 2,100' of this alternative, the typical section will include a detached 5' sidewalk separated by an 8' landscape buffer to minimize impacts to existing infrastructure. From approximately Station 23+50 to Station 35+00 for 1,150 feet however, the typical section will transition to provide for an attached sidewalk with retaining wall located behind the sidewalk to minimize right-of-way acquisition across the State Trust Land associated with extensive grading in the transitionary locations to the bridge structure. Left turn lanes along North Valley Parkway would be added at existing intersections.

Improvements along Carefree Highway would include widening for an eastbound right turn lane, the addition of a westbound left turn lane(s) and replacement of the existing traffic signal. Improvements to

ADA facilities within the project limits would be reviewed during final design. Striping limits would be determined during final design but would extend beyond the construction limits.

The following table compares the Duplicate Effective and Proposed Conditions hydraulic models.

Bounding Cross Sections	100-year Discharge	Water Surface Elevation (Floodplain) Corrected Effective[1]	Water Surface Elevation (Floodplain) Proposed Conditions[2]	Elevation Change
	[cfs]	[elev.]	[elev.]	[ft]
16.66	26,700	1669.46	1669.46	0
16.47	26,700	1660.74	1660.74	0
16.345	26,700	1655.92	1657.01	1.09
16.33 Bridge (U/S)	26,700	-	1556.43	-
16.33 Bridge (D/S)	26,700	-	1655.18	-
16.29	26,700	1655.12	1654.23	-0.89
16.25	26,700	1652.76	1652.76	0
16.17	26,700	1649.18	1649.18	0

Notes: 1) Model includes new x-sections 16.345 and 16.29 to determine a base flow without bridge
2) Model includes new x-sections 16.345 and 16.29, upstream x-section 16.66 and new 4-span bridge

The Work Map in Appendix C provide a graphical depiction of the upstream and downstream impacts to the proposed flows and water surface elevations in Skunk Creek for Alternative A.

Based upon the results of this alternative a bridge soffit of 1660.5 will provide 4-feet of freeboard to meet City of Phoenix Requirements for conveyance of a 100-year storm. The maximum flow depth in Skunk Creek under the bridge is 16.1 feet and the maximum flow velocity beneath the bridge is 9.4 feet per second. Final design of the proposed crossing should include the preparation of a Conditional Letter of Map Revision (CLOMR) for review by City of Phoenix and submittal to FEMA. The CLOMR will need to include detailed discussion of proposed maintenance provisions for the proposed channelization structures upstream and downstream of the bridge crossing in Skunk Creek.

In addition to the bridge crossing of Skunk Creek, this alternative also includes a new culvert located adjacent to the east end of the bridge to convey flow from a trapped area in the northeast quadrant, under North Valley Parkway, discharging to Skunk Creek on the south side of the roadway.

A culvert extension, matching the size and slope of the existing culvert, is also included to continue conveyance of the cross culvert at the intersection of Carefree Highway and North Valley Parkway. The culvert extension will continue to discharge into Cap Wash East as identified in FEMA Flood Insurance Rate Map 04013C0845L. The effective limit of this Zone A floodplain will need to be slightly modified via LOMR to reflect the proposed conditions.

The CLOMR/LOMR prepared as part of final design and post construction will need to discuss any impacts to the identified FEMA floodplains for all project bridge and culvert crossings.

Guide Banks/Training Dikes

Due to the width of the effective floodplain, new guide banks will be required upstream of the new bridge to cause a constriction and force storm water runoff to concentrate in the main wash to pass through the short bridge opening. The contraction of flow approaching the bridge should not exceed a 3:1 ratio and the guide bank should provide a minimum of 3-feet of freeboard and be continuous beyond the edge of the effective floodplain.

On the downstream side, an additional length of guide bank is required to control the expansion of flow back to the nominal wash width. This embankment should specifically protect the bridge and roadway embankment from backwater effects that could impact the North Valley Parkway.

Given the requirements in the North Black Canyon Specific Plan, any proposed wash armoring including guide banks are required to be natural in look. Therefore, gabion gravity walls are proposed for the Skunk Creek Wash crossing upstream and downstream of the bridge crossing to meet this requirement. The proposed wall will be laid back at a 1:2/1 side slope along the west bank and 1:1 side slope along the east bank to mirror existing natural conditions for how Skunk Creek has been excised over time by the flows. Gravity gabion retaining walls will provide the necessary stabilization of the banks. Behind the gravity gabion retaining walls, earthen embankment material will be necessary to create the channelization immediately upstream and downstream of the bridge structure. It may be necessary to utilize riprap on top of the earthen embankment material once geotechnical evaluation is completed and exact material characteristics, specifically the likelihood of erosion, of Skunk Creek are determined. In the case of dumped/placed riprap the following table applies to rock size and layer thickness.

Scenario	100-year Discharge	Maximum Channel Velocity	Riprap D50	Layer Thickness
	[cfs]	[fps]	[ft]	[ft]
Short Bridge - Upstream	26,700	9.4	1.3	2.5
Short Bridge - Downstream	26,700	13.1	2.5	4.9

Note: Riprap sizing calculations from DDMSW V. 5.6.0 (FCDMC)

Bridge Scour

Given the lack of available geotechnical information for Skunk Creek, two different approaches to estimating the proposed bridge scour were performed for this study.

The first approach to estimating total scour was prepared using Arizona Department of Water Resources State Standard 5-96 (Level 1 Analysis). This method estimates total scour from generalized equations derived from empirical data combining general and long-term scour based solely upon the 100-year peak discharge. For Skunk Creek, at the location of interest, the total scour depth is calculated as 18.3 feet using this approach.

The second approach utilizes a June 2001 study prepared by JE Fuller Hydrology & Geomorphology, Inc. as part of the *Skunk Creek Watercourse Master Plan* which calculated potential scour at specific locations within the Skunk Creek and Sonoran Wash watersheds. This report acknowledges that no geotechnical

data was available for the study area except for limited boring details provided on as-built construction plans for the drainage structures along Carefree Highway and New River Road.

Chapter 5 of the 2001 report addresses general scour among other topics. General Scour (Zgs) is a component of Total Scour (Zt). Specifically, the scour equation is:

$$Zt = 1.3*(Zgs + 0.5*Za + Zls + Zlt + Zbs + Zlft)$$

where:

Zt = Design scour depth, excluding long-term degradation or aggradation (ft)

Zgs = General scour depth (ft)

Za = Anti-dune trough depth (ft)

Zls = Local scour depth (ft)

Zlt = Long Term scour depth (ft)

Zbs = Bend scour depth (ft)

Zlft = Low-flow thalweg depth (ft)

1.3 = Safety factor to account for nonuniform flow distribution

For Skunk Creek, scour estimates are shown in the following table.

Reach	Total Zt [ft]	General Zgs [ft]	Antidune Za [ft]	Bend Angle	Bend Zbs [ft]	Local Zls [ft]	Long-Term Zlt [ft]	Thalweg Zlft [ft]
CFR	4.2	-0.7	4.3	11.4	0.0	0.0	0.0	1.0
2	3.8	-0.3	3.8	15.9	0.0	0.0	0.0	1.0
1	4.7	-0.2	2.8	20.5	0.6	0.0	0.0	1.0

Notes: CFR is Carefree Highway; the project site falls between Reach 2 and CFR

Long-Term and Local Scour not included in estimate of total scour

Given the lack of available geotechnical data, the more conservative results from Approach 1 of a total scour depth of 18.3-feet are what the design team has utilized as part of this analysis for total scour.

Bank Protection

Bank protection along Skunk Creek is a significant concern, especially on the west bank which is characterized as being on the outside of a long horizontal curve. Hydraulic forces, from past storm events, have incised the low flow channel at the toe of the western bank causing erosion of the bank slope. This bank must be stabilized both up and downstream to prevent future storm events from eroding the proposed bridge abutments. This study proposes a gabion basket gravity retaining wall along both the east and west banks of Skunk Creek between the abutment piers and the wash. The gabion gravity wall would be installed from the bridge soffit down to scour depth and extend both up and downstream of the bridge for the limits shown in the plans contained in Appendix A of this report. Final

design should include a geotechnical investigation of the bank soils and likelihood of erosion to determine the exact limits that the upstream and downstream bank protection should be continued.

Onsite Drainage

The short bridge is designed with a vertical curve at or near the bridge centerline such that onsite runoff will flow from the center to the bridge ends. Storm water runoff on the short bridge would likely reach the bridge ends prior to exceeding spread criteria.

In addition to the project plans included in Appendix A depicting the proposed roadway and bridge alignment for this alternative, Exhibit C includes the Drainage Work Maps for each of the alternatives considered as part of this analysis.

The total estimated construction cost for this alternative is $21,679,439.

3.3 Alternative B – Structure to Span the Floodplain (Long Bridge)

Due to the required length of the bridge to span the floodplain and the clearance requirements over Skunk Creek, the roadway profile would not be able to match at the existing profile near the 30th Avenue intersection if following the existing North Valley Parkway alignment for this alternative. The result would be a significantly higher roadway profile than the elevations of the adjacent residences located in the Stoneledge Development along the development's frontage.

To mitigate this fatal flaw associated with this geometry, a proposed realignment of North Valley Parkway to facilitate this alternative is shown in Figure 2 and presented in the 15% project plans contained in Appendix A of this analysis. The alignment of Alternative B would realign North Valley Parkway starting approximately 1,400' south of the existing 30th Ave intersection and match back into the existing alignment approximately 1,300' south of the Carefree Highway intersection. The southern limit of the proposed realignment of North Valley Parkway would not impact the existing 27th Avenue intersection, however modifications to both the 29th Drive and 30th Avenue intersections would be required to facilitate this alternative. The modifications to these existing intersections are included in the plan sheets in Appendix A of this report.

Figure 2 – North Valley Parkway Realignment for Structure Spanning Floodplain

The proposed structure consists of 8 equal 105'-0" spans resulting in an overall bridge length of 846'-4¼". Based on the expansion joint movement rating of 4 inches for a strip seal joint, expansion joints have been located at abutment 1, pier 3, pier 5, and abutment 2. The typical section is symmetric about the construction centerline. The typical section at the bridge consists of a 1'-2" outside pedestrian rail, an 8'-6" sidewalk, a 6'-0" bike lane, two 11'-0" lanes, one 12'-0" lane and 24'-0" raised median centered about the construction centerline. The resulting overall bridge width is 123'-4". The 24'-0" raised median width was not reduced for the bridge crossing as part of this Scoping Effort given the proximity of the bridge crossing to both the 30th Avenue and future 32nd Avenue intersections. During the final design stage of the project, the designer should determine the exact location of the future 32nd Avenue intersection with North Valley Parkway to determine if the median width can be reduced across the bridge structure to potentially reduce the overall bridge width. The deck slab thickness is 8 inches except at the edges where 9 inches is required. For the required spans and geometry, 14 UBT50 precast prestressed I-girder are equally spaced along the bearings. Because of the curved geometry, the overhang, spacing and skew are varied. The maximum perpendicular spacing is 8.98' and the maximum perpendicular overhang is 4.04'.

Each of the 7 piers consists of a 6'-0" wide by 6'-0" deep cap supported by five (5) 4'-0" diameter columns each on an individual 7'-0" diameter drilled shaft. These piers have been designed for 18.3 feet of scour for the 100-year design event.

Each abutment consists of a 1'-0" thick backwall with an approach slab seat and a 6'-0" wide stem. Abutment 1 is supported by a single row of five (5) 5'-0" diameter drilled shafts, and abutment 2 is supported by a single row of seven (7) 5'-0" diameter drilled shafts. These abutments have been

designed for 23.3 feet of scour for the 500-year design event. A short 5'-0" long wingwall extends beyond the stem so the required retaining walls do not conflict or undermine the abutment. Gabion gravity walls are proposed in front of the abutments to protect them from the 100-year flood event.

The proposed roadway alignment along North Valley Parkway would consist of a 40'-wide pavement section in each direction providing for 3 lanes and a bicycle lane. In addition, a continuous 24'-wide curbed median would be provided along the length of the project alignment. For the southernmost 900' and northernmost 2,450' of this alternative, the typical section will include a detached 5' sidewalk separated by an 8' landscape buffer to minimize impacts to existing infrastructure and provide for buffer between vehicular and pedestrian traffic. From approximately Station 25+50 to Station 46+00 for 2,050 feet however, the typical section will transition to provide for an attached sidewalk with retaining wall located behind the sidewalk to minimize right-of-way acquisition across the State Trust Land associated with extensive grading in the transitionary locations to the bridge structure. Left turn lanes along North Valley Parkway would be added at existing intersections.

Improvements along Carefree Highway would include widening for an eastbound right turn lane, the addition of a westbound left turn lane(s) and replacement of the existing traffic signal. Improvements to 30th Avenue and 29th Drive would be required to extend the roadway to access the realigned North Valley Parkway. Improvements to ADA facilities within the project limits would be reviewed during final design. Striping limits would be determined during final design but would extend beyond the construction limits.

The table below provides the Water Surface Elevation Result comparison between the Duplicate Effective and Proposed hydrologic models.

Bounding Cross Sections	**100-year Discharge**	**Water Surface Elevation (Floodplain)**		**Elevation Change**
		Corrected Effective	**Proposed Conditions[1]**	
	[cfs]	**[elev.]**	**[elev.]**	**[ft]**
16.66	26,700	1669.46	1669.35	-0.11
16.47	26,700	1660.74	1660.9	0.16
16.25	26,700	1652.76	1654.43	1.67
16.23 Bridge (U/S)	26,700	-	1652.84	-
16.23 Bridge (D/S)	26,700	-	1650.79	-
16.17	26,700	1649.18	1649.18	0
16.05	26,700	1643.75	1643.75	0

Notes: 1) Model includes new 7-span bridge

The Work Map in Appendix C provide a graphical depiction of the upstream and downstream impacts to the proposed flows and water surface elevations in Skunk Creek for Alternative B.

Based upon the results of this alternative a bridge soffit of 1657.0 will provide 4-feet of freeboard to meet City of Phoenix Requirements for conveyance of a 100-year storm. The maximum Skunk Creek flow depth under the bridge is 14.75 feet and the maximum flow velocity beneath the bridge is 9.1 feet per

second. Final design of the proposed crossing should include the preparation of a Conditional Letter of Map Revision (CLOMR) for review City of Phoenix and submittal to FEMA.

A new culvert extension is also included to continue conveyance of the cross culvert at the intersection of Carefree Highway and North Valley Parkway. The culvert extension will continue to discharge into Cap Wash East as identified in FEMA Flood Insurance Rate Map 04013C0845L. The effective limit of this Zone A floodplain will need to be slightly modified via LOMR to reflect the proposed conditions.

The CLOMR/LOMR prepared as part of final design and post construction will need to discuss any impacts to the identified FEMA floodplains for all project bridge and culvert crossings.

Guide Banks/Training Dikes

The long bridge covers the entire width of the floodplain, therefore, guide banks are not necessary.

Bridge Scour

Given the lack of available geotechnical information for Skunk Creek, two different approaches to estimating the proposed bridge scour were performed for this study.

The first approach was an estimation of total scour was prepared using Arizona Department of Water Resources State Standard 5-96 (Level 1 Analysis). This method estimates total scour from generalized equations derived from empirical data combining general and long-term scour based solely upon the 100-year peak discharge. For Skunk Creek, at the location of interest, the total scour depth is calculated as 18.3 feet using this approach.

The second approach utilizes a June 2001 study prepared by JE Fuller Hydrology & Geomorphology, Inc. as part of the *Skunk Creek Watercourse Master Plan* which calculated potential scour at specific locations within the Skunk Creek and Sonoran Wash watersheds. This report acknowledges that no geotechnical data was available for the study area except for limited boring details provided on as-built construction plans for the drainage structures along Carefree Highway and New River Road.

Chapter 5 of the 2001 report addresses general scour among other topics. General Scour (Zgs) is a component of Total Scour (Zt). Specifically, the scour equation is:

$$Zt = 1.3*(Zgs + 0.5*Za + Zls + Zlt + Zbs + Zlft)$$

where:

Zt = Design scour depth, excluding long-term degradation or aggradation (ft)

Zgs = General scour depth (ft)

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CFR	4.2	-0.7	4.3	11.4	0.0	0.0	0.0	1.0
2	3.8	-0.3	3.8	15.9	0.0	0.0	0.0	1.0
1	4.7	-0.2	2.8	20.5	0.6	0.0	0.0	1.0

Notes: CFR is Carefree Highway; the project site falls between Reach 2 and CFR
Long-Term and Local Scour not included in estimate of total scour

Given the lack of available geotechnical data, the more conservative results from Approach 1 of a total scour depth of 18.3-feet are what the design team has utilized as part of this analysis for total scour.

Bank Protection

Bank protection along Skunk Creek is a significant concern, especially on the west bank which is characterized as being on the outside of a long horizontal curve. Hydraulic forces, from past storm events, have incised the low flow channel at the toe of the western bank causing erosion of the bank slope. This bank must be stabilized both up and downstream to prevent future storm events from eroding the proposed bridge abutments. This study proposes a gabion basket gravity retaining wall along both the east and west banks of Skunk Creek between the abutment piers and the wash. The gabion gravity wall would be installed from the bridge soffit down to scour depth at 1:1 side slope and extend both up and downstream of the bridge for the limits shown in the plans contained in Appendix A of this report. Final design should include a geotechnical investigation of the bank soils and likelihood of erosion to determine the exact limits that the upstream and downstream bank protection should be continued.

Onsite Drainage

The long bridge is designed with a vertical curve at or near the bridge centerline such that onsite runoff will flow from the center to the bridge ends. Storm water runoff on the long bridge would likely require deck drains based on spread criteria analysis based on the length of the bridge structure.

In addition to the project plans included in Appendix A depicting the proposed roadway and bridge alignment for this alternative, Exhibit C includes the Drainage Work Maps for each of the alternatives considered as part of this analysis.

The total estimated construction cost for this alternative is $36,498,503.

3.4 Alternative C – Concrete ‘Super-Box’ Culvert Structure

A preliminary analysis was completed to size a concrete ‘super-box’ culvert structure that could pass the Skunk Creek flows discussed earlier in this report. The resultant ‘super-box’ structure would consist of a 12-barrel 30’x10’ concrete box culvert embedded to a depth of 12” in combination with a 3-barrel

30'x18' concrete box culvert embedded to a depth of approximately 19". The 'super-box' would be approximately 132' in total length along the Skunk Creek alignment and designed with a 0.6% bottom slope to pass flows beneath the roadway.

The advantages of the 'super-box' over a bridge crossing is the ability to lower the roadway profile approaching Skunk Creek from the north and south as well as minor savings in total construction cost (total cost would be between 75% and 90% of the Alternative A Short Bridge Alternative).

The disadvantages of the 'super-box' relative to a bridge crossing are they are very maintenance intensive as they have a propensity to plug frequently especially in waterways with flows on the magnitude of Skunk Creek (26,700 cfs for the 100-year event). They also result in significant impacts upstream and downstream of the roadway crossing to the water surface elevations in the floodplain which could adversely impact the ability for adjacent development (both existing and proposed) in the immediate vicinity of Skunk Creek. Furthermore, to protect the 'super-box' itself from erosion and scour impacts, either a grade control structure or the entirety of the upstream and downstream box culvert apron (along with each of the super-box inner walls) would have to be constructed to scour depth. In addition to having major permanent impacts to Skunk Creek (Section 404 Individual Permit will be required) these are significant increases to the project cost which heavily nullify the cost savings advantage the option would hope to present.

For the disadvantages of the 'super-box' cited above, this option was not carried forward for further evaluation.

4. SUMMARY

4.1 Alternative Comparison

The table below provides a side by side comparison of the Alternatives.

ALTERNATIVE COMPARISON		
	Alternative A – Short	Alternative B - Long
Bridge Spans	Flood Way	Flood Plain
Bridge Length/# Spans	403'/4	846'/8
Bridge Width	123'	123'
Cross Slope	Varies	Varies
New ROW Required	Yes - Minor	Yes - Major
TCE Required	Yes	Yes
Phased Construction Required	No	Yes – at 29th Drive & 30th Avenue
Construction Cost	$21,679,439	$36,498,503
Maintenance Cost	Comparable with Alt 2	Comparable with Alt 1
Advantages	• Lower Construction Costs • Less R/W Acquisition Required	• Less Skunk Creek Reconstruction Required

	• Lower Maintenance Costs associated with Concrete Bridge Deck Length • Maintains Current Roadway Alignment	• Lower Maintenance Costs associated due to no Skunk Creek Bank Protection • Greater Level of Flood Protection
Disadvantages	• More Extensive Skunk Creek Channelization Required • Level of Flood Protection provided less than Alternative 2 (meets City/FCD standard requirements)	• Higher Construction Costs • More R/W Acquisition Required • Alteration of Roadway Alignment – Likely not supported by ASLD

4.2 Preferred Alternative

Based on adequate drainage protection being provided, minimal modifications to the existing roadway alignment, less right-of-way acquisition required, likely more favorable ASLD project support and lower construction cost; **Alternative A short bridge crossing spanning the floodway is the recommended alternative for this project.** The freeboard provided to the Skunk Creek water surface is anticipated to meet the City's minimum requirement of 4' once bank protection and channelization of Skunk Creek upstream and downstream of the crossing is completed.

4.3 Development Requirements

Conflicts with utilities are anticipated; the City of Phoenix and final design Consultant will have to investigate further during final design once below ground information is obtained to confirm depth and exact locations. Based on a review of the existing as-built data and utility record maps, the utility facilities presented in Section 2.2 have an equal likelihood of impact associated with both alternatives so separate discussion per alternative is not provided relative to utilities.

The major potential impact relative to utility infrastructure are City of Phoenix owned water and sewer force main and transmission lines in this area of North Phoenix. Heavy coordination will need to occur with the City of Phoenix's Water Services Department during final design. Major consideration will have to be given to any required outage of any of these facilities and temporary bypass type of infrastructure will likely be required if relocations are determined to be necessary. Any major utility infrastructure will also need to have scour protection measures verified and potentially designed if not already in place at the Skunk Creek crossing.

The proposed vertical profile modification along North Valley Parkway is one of the controlling factors in the project's design. The profile and associated infrastructure have been designed in such a manner to minimize/eliminate any adverse impacts to the in-place residential parcels located along the alignment. Where the roadway profile begins to deviate from the existing roadway's vertical alignment, retaining wall facilities are proposed to minimize any grading impact and right-of-way acquisition.

Appropriate traffic rated barricade is also proposed along both sides of the roadway to mitigate against errant vehicles potentially going over the resultant drop-off in these portions of the alignment.

Based on survey data obtained during the scoping phase of the project, there does not appear to be any ADA issues associated with the roadway and sidewalk grades. Where sidewalk is proposed for replacement, grades will be confirmed during final design to ensure full compliance with ADA standards. Driveways will also be designed in a manner that an accessible ADA compliant route is provided along the back of the driveway in accordance with City standard driveway details.

Public notification will be required in advance of any work being done. Emergency services and the media will be notified of the construction schedule.

The construction season is anticipated to be year-round.

The City's North Black Canyon Specific Plan will also have to be adhered to during final design related to design of the channelization materials for the upstream and downstream impacts to Skunk Creek.

The estimated design duration is 24 months (inclusive of the USACE Section 404 permitting process as well as the acquisition process from ASLD) and the estimated construction duration is 300 calendar days.

Given the project is not federally funded, a NEPA level environmental clearance is not anticipated to be required. However, because the project will require acquisition of State Trust Land from ASLD, extensive environmental analysis will likely be required associated with the acquisition process. The area of disturbance includes a significant amount of undisturbed land and therefore, detailed cultural resources and hazardous materials analyses should be completed as part of the final design phase of the project. This includes monitoring of any drill holes during design (Geotech/Potholing) as well as potential monitoring of drilled shaft work during construction. It is anticipated that City of Phoenix staff will lead these efforts.

Due to the nature of the project area and proximity to the Sonoran Preserve, a biological investigation to ensure no impact to existing endangered species or known wildlife should also be completed.

The final design of the project will have to include Section 404 permitting with the USACE for the impacts to Sonoran Wash. It is not anticipated that the proposed permanent improvements to the wash bottom will exceed the 0.5-acre threshold triggering the Individual project permitting process. This will need to be confirmed during final design; however it is anticipated that a Nationwide Section 404 permit will be able to be obtained to be compliant with USACE requirements.

APPENDIX A – 15% PLANS FOR SHORT AND LONG BRIDGE ALTERNATIVES

NORTH VALLEY PARKWAY

SKUNK CREEK BRIDGE

BRIDGE EVALUATION

PRELIMINARY

PA

NOT FOR CONSTRUCTION OR RECORDING

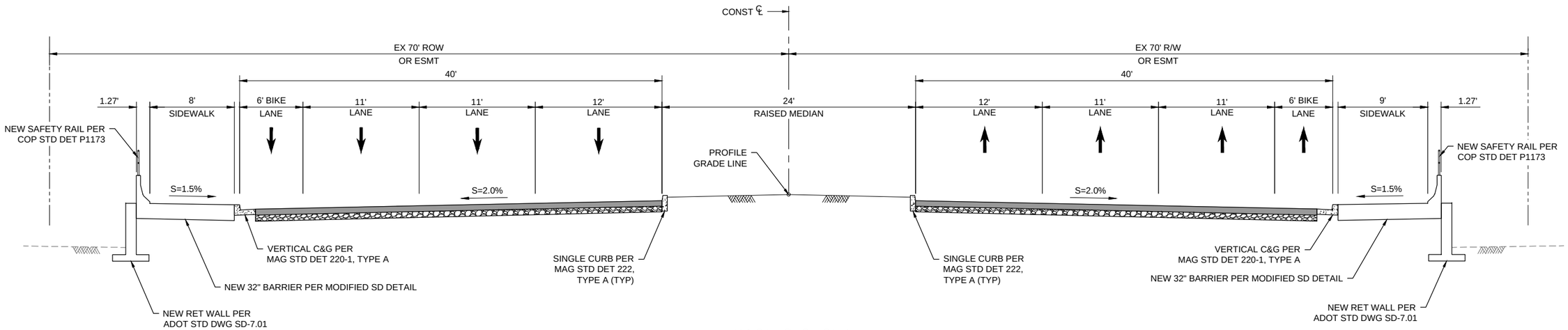
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

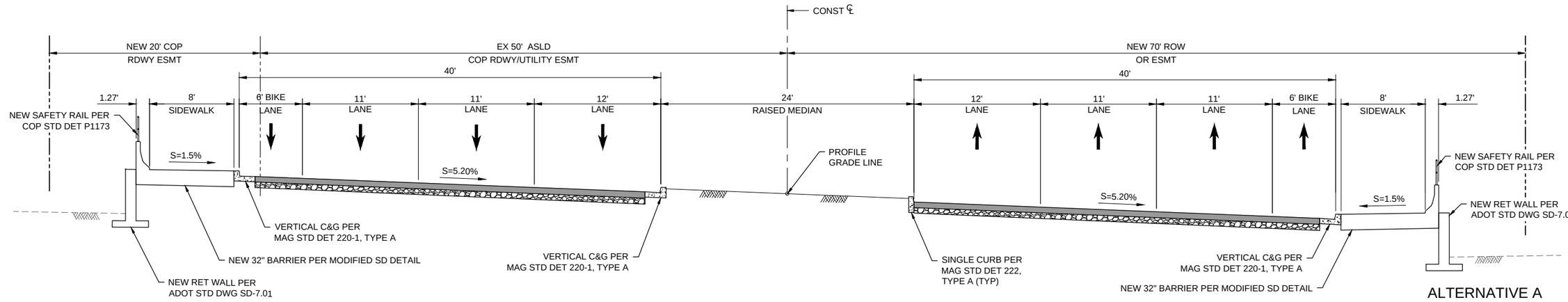
REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



TYPICAL SECTION 1

SECTION CUT AT STA 24+00
LOOKING UPSTATION



TYPICAL SECTION 2

SECTION CUT AT STA 33+00
LOOKING UPSTATION

ALTERNATIVE A

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

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TYPICAL SECTIONS

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE:12/20	DATE: 12/20	DATE: 12/20			
SCALE: NO SCALE			A-01	X	.

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NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY
PA
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F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
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T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

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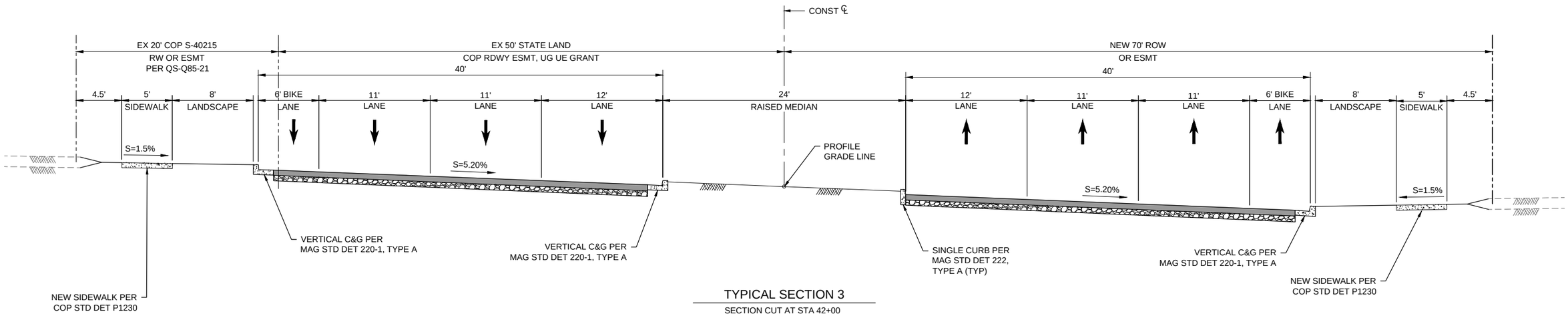
NO.	DESCRIPTION	REV BY	CKD BY	DATE



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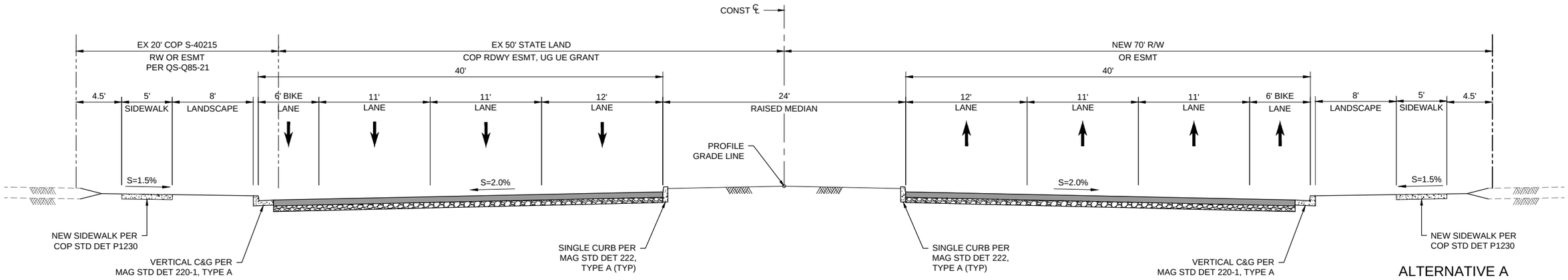
SECTION CUT AT STA 42+00
LOOKING UPSTATION

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



TYPICAL SECTION 4

SECTION CUT AT STA 46+00
LOOKING UPSTATION

ALTERNATIVE A

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

TYPICAL SECTIONS

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
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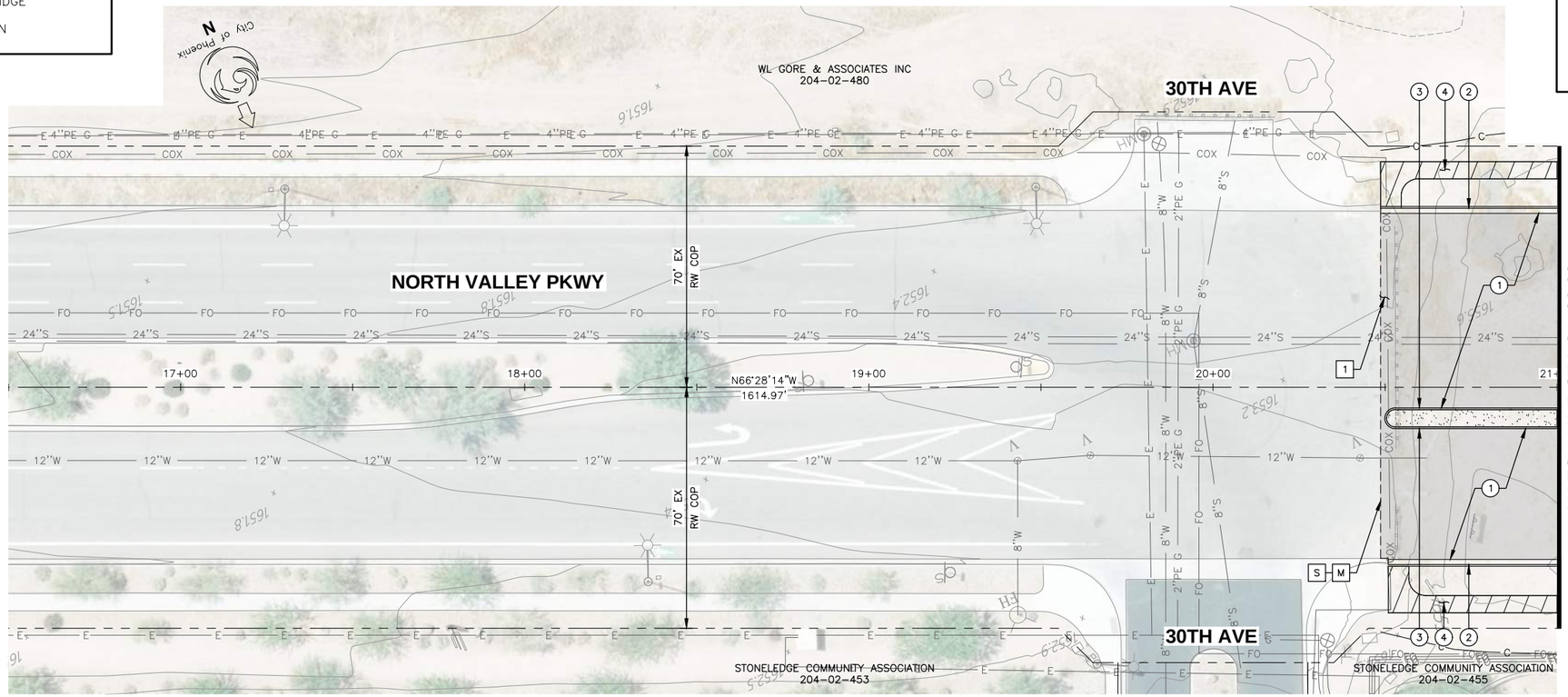
SCALE: NO SCALE			A-02	X	.

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY

PA

NOT FOR CONSTRUCTION OR RECORDING



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

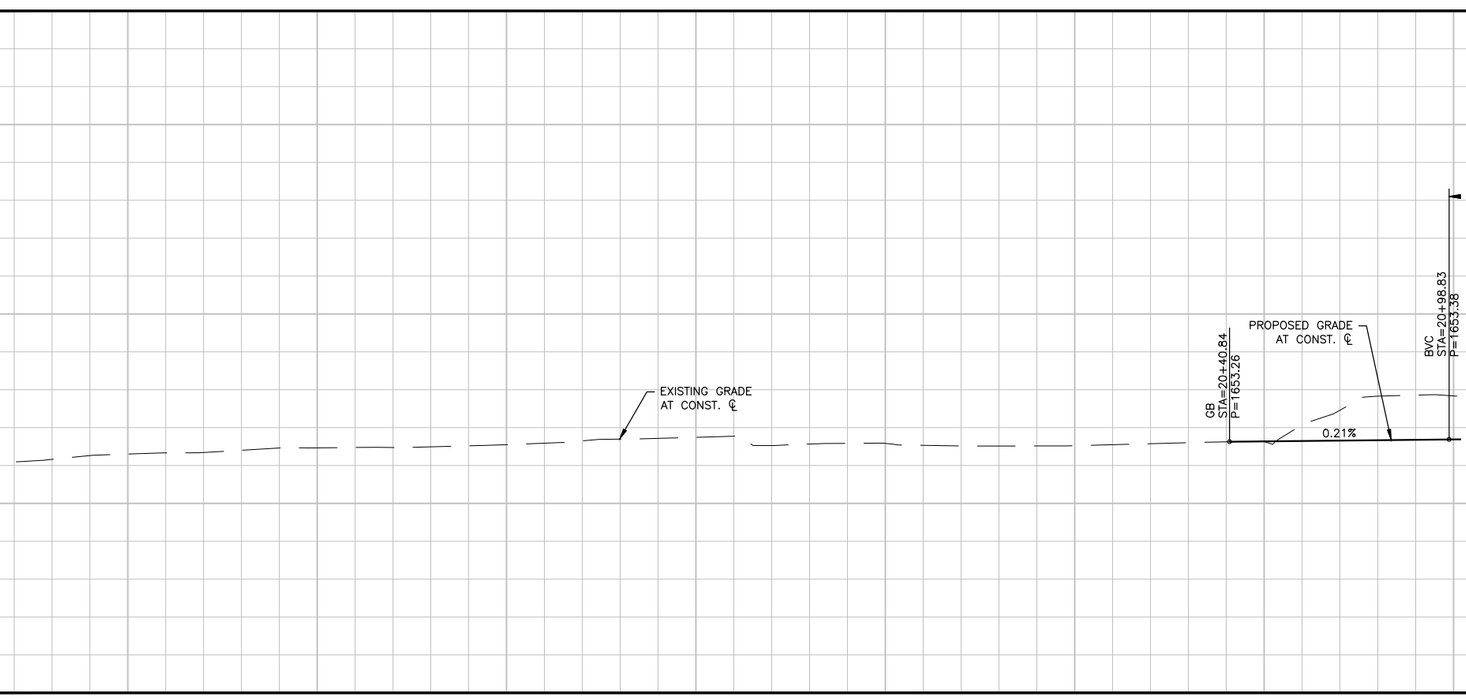
M MATCH EXISTING
P PROTECT IN PLACE
S SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.
1	REMOVE EXISITNG PAVEMENT	SY	34

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	540
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	101
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	104
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	612



ALTERNATIVE A

Call at least two full working days before you begin excavation.
ARIZONA 811 — Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

20 0 20 40 60
SCALE: 1" = 20'
VERT: 1" = 4'

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20			
SCALE: 1" = 20'			A-03	X	.

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

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REVISION BY CITY OF PHOENIX

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Dennis Kay
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NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY
PA
NOT FOR CONSTRUCTION OR RECORDING

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

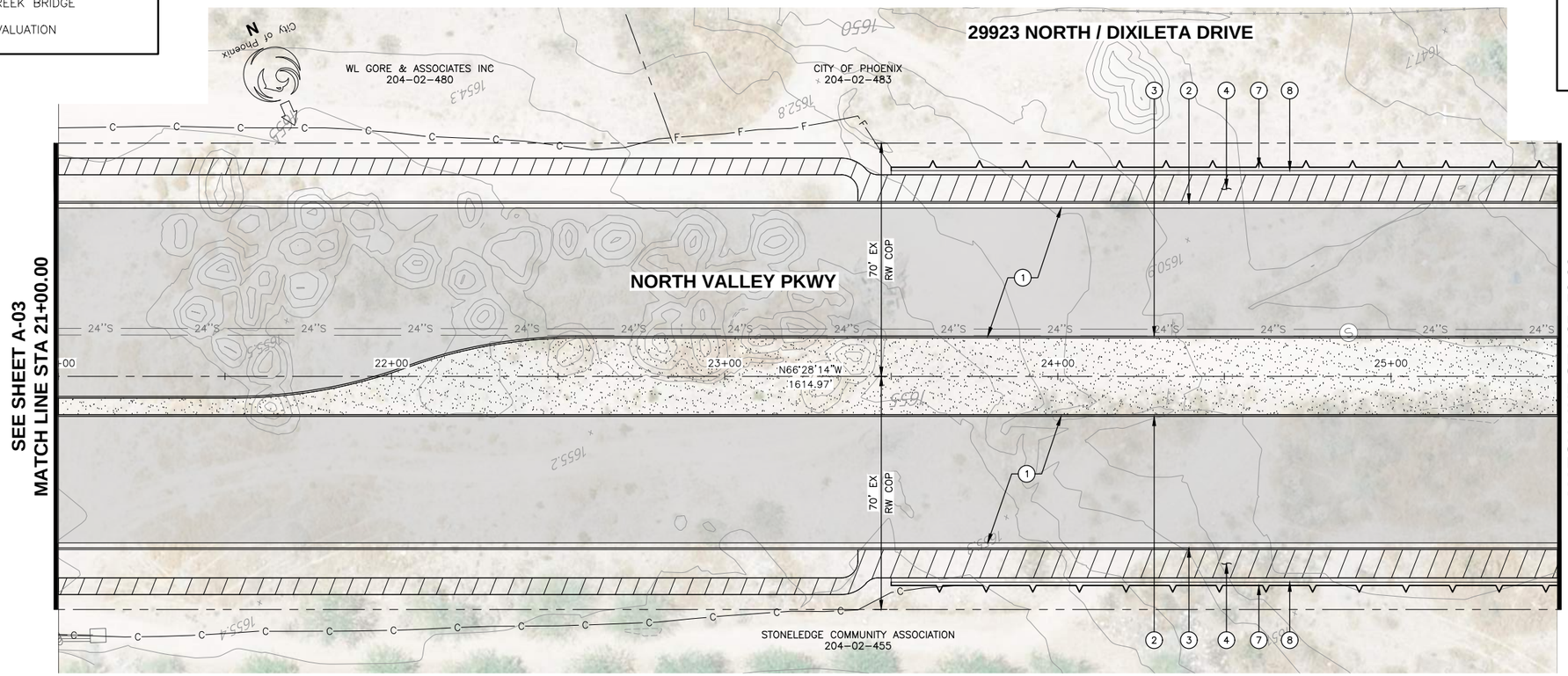
T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

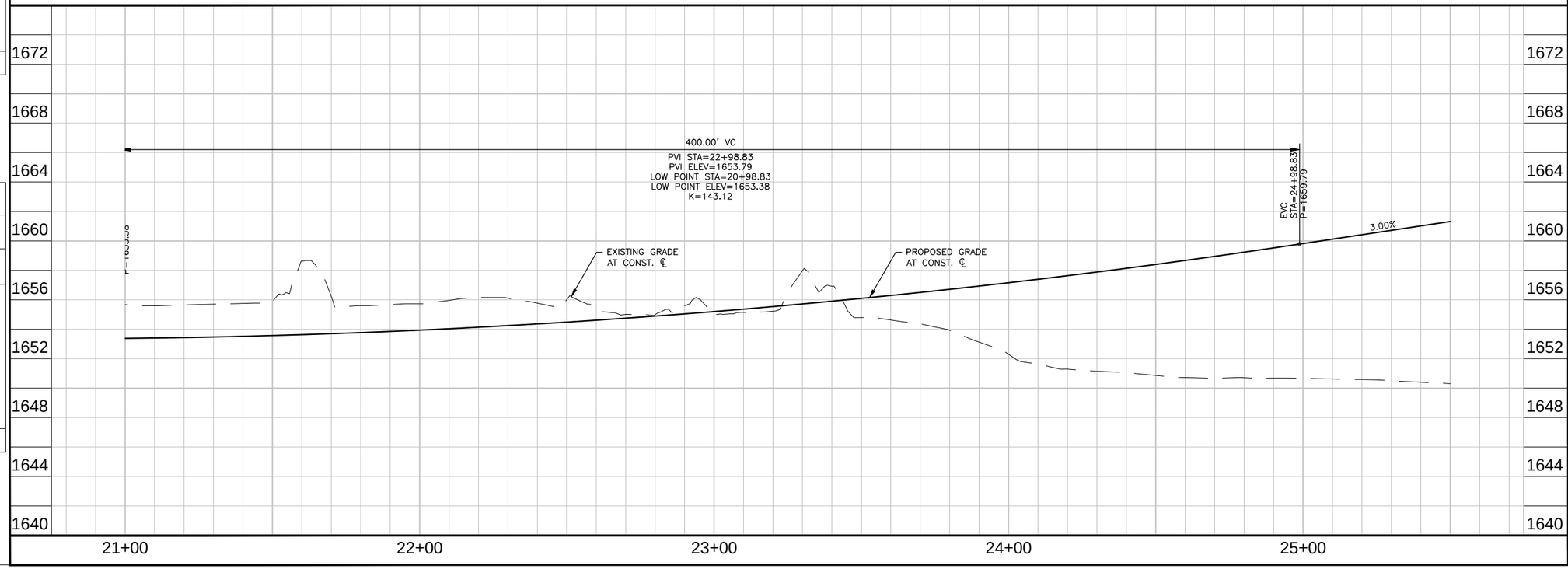
DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

M MATCH EXISTING
P PROTECT IN PLACE
S SAWCUT AND MATCH EXISTING

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE





REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	4,034
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	900
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	902
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	5,889
7	CONCRETE RETAINING WALL PER ADOT SD 7.01	LF	400
8	32" CONCRETE HALF BARRIER PER ADOT C-10.72	LF	400

ALTERNATIVE A

Call at least two full working days before you begin excavation.
ARIZONA 811 Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

20 0 20 40 60
SCALE: 1" = 20'
VERT: 1" = 4'

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20			
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NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY
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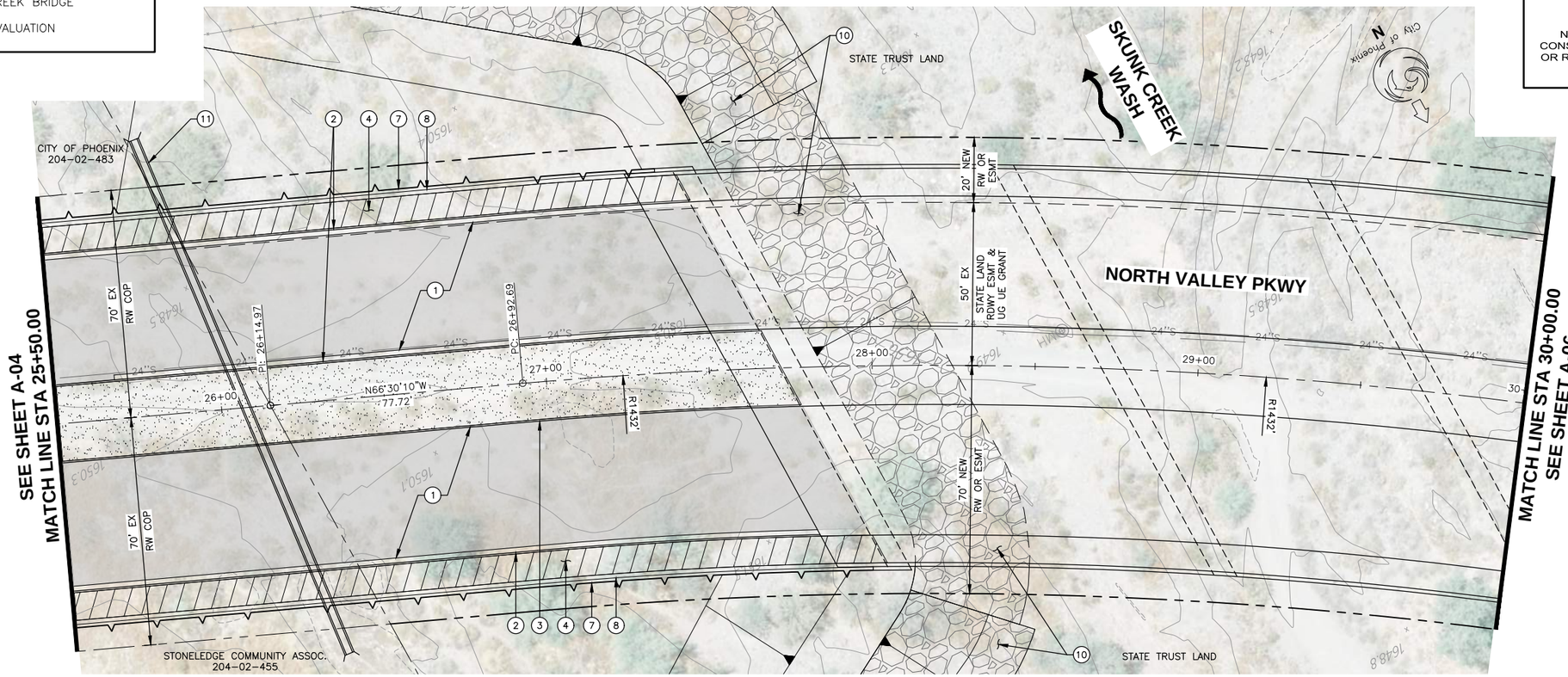
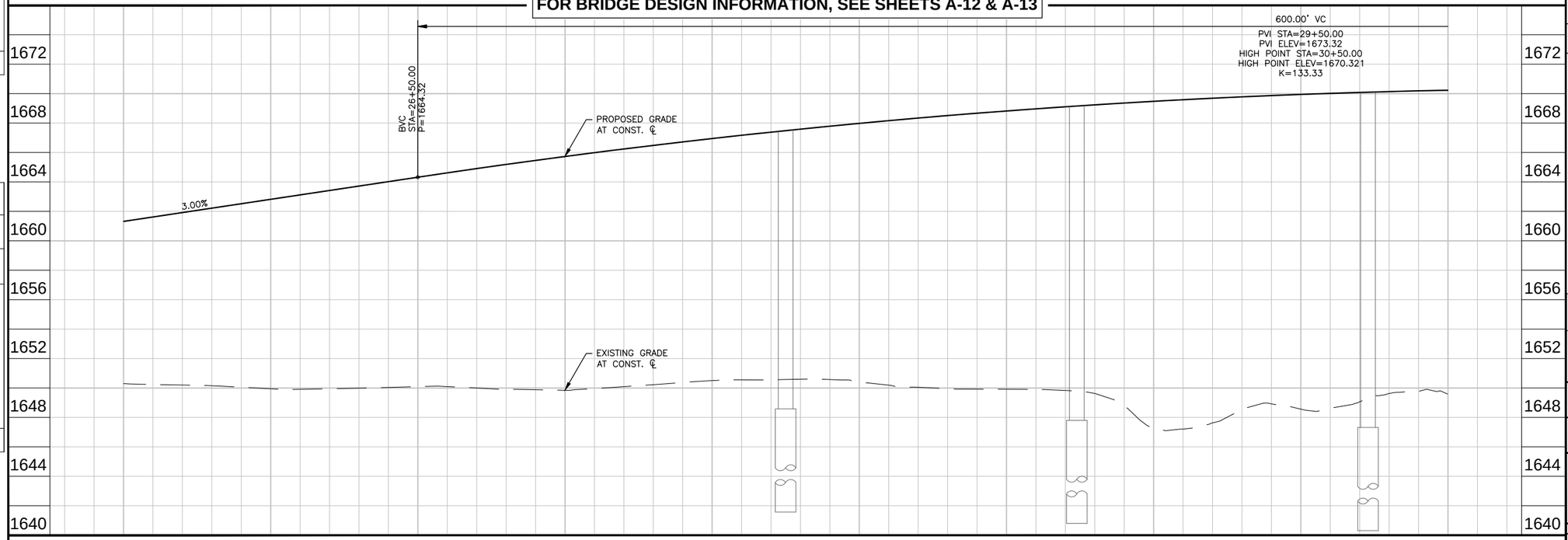
NOT FOR CONSTRUCTION OR RECORDING



FOR BRIDGE DESIGN INFORMATION, SEE SHEETS A-12 & A-13



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

- M — MATCH EXISTING
- P — PROTECT IN PLACE
- S — SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
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2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	643
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	255
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	3,680
7	CONCRETE RETAINING WALL PER ADOT SD 7.01	LF	377
8	32" CONCRETE HALF BARRIER PER ADOT C-10.72	LF	377
10	DRAINAGE SLOPE ARMORING FOR BANK PROTECTION, SEE SHEET A-14	-	-
11	INSTALL 36" RGRCP STORM DRAIN PIPE & HEADWALLS	LF	170

ALTERNATIVE A

Call at least two full working days before you begin excavation.
ARIZONA 811 Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

20 0 20 40 60
SCALE: 1" = 20'
VERT: 1" = 4'

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
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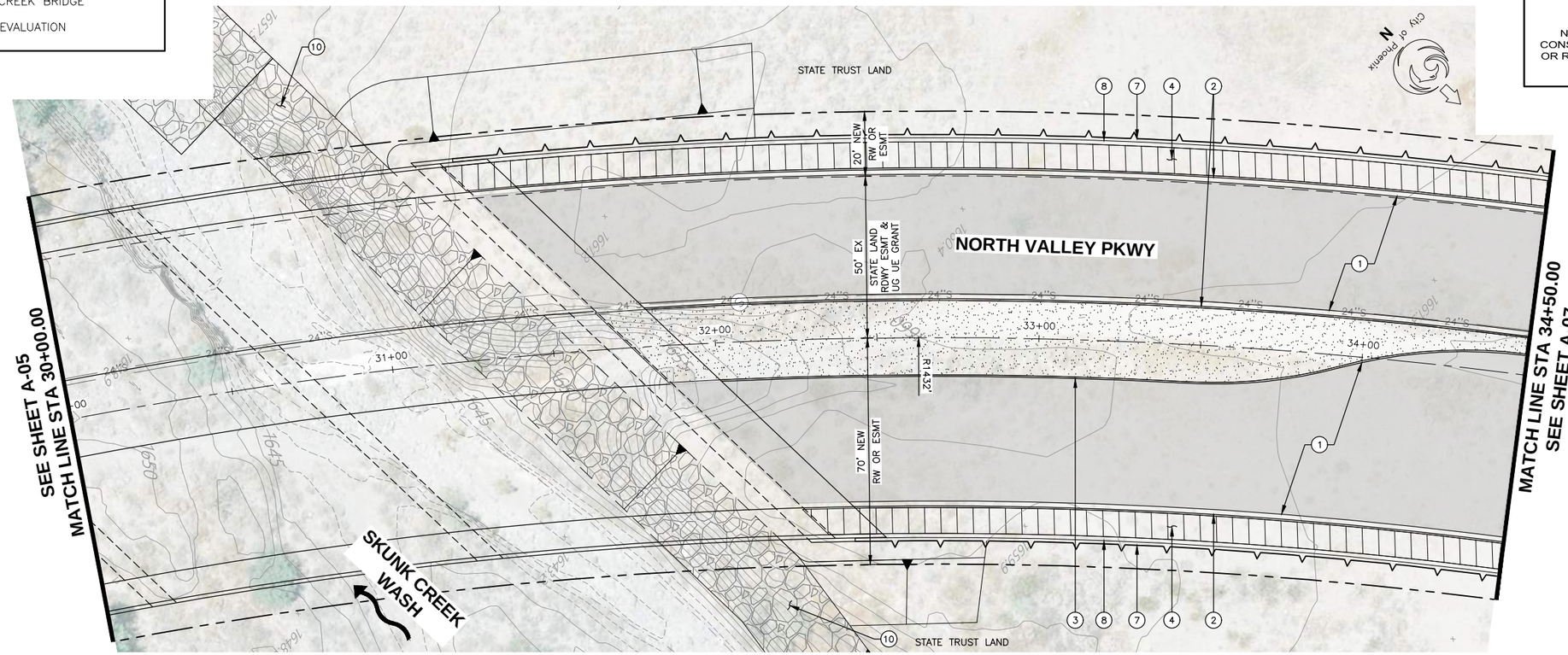
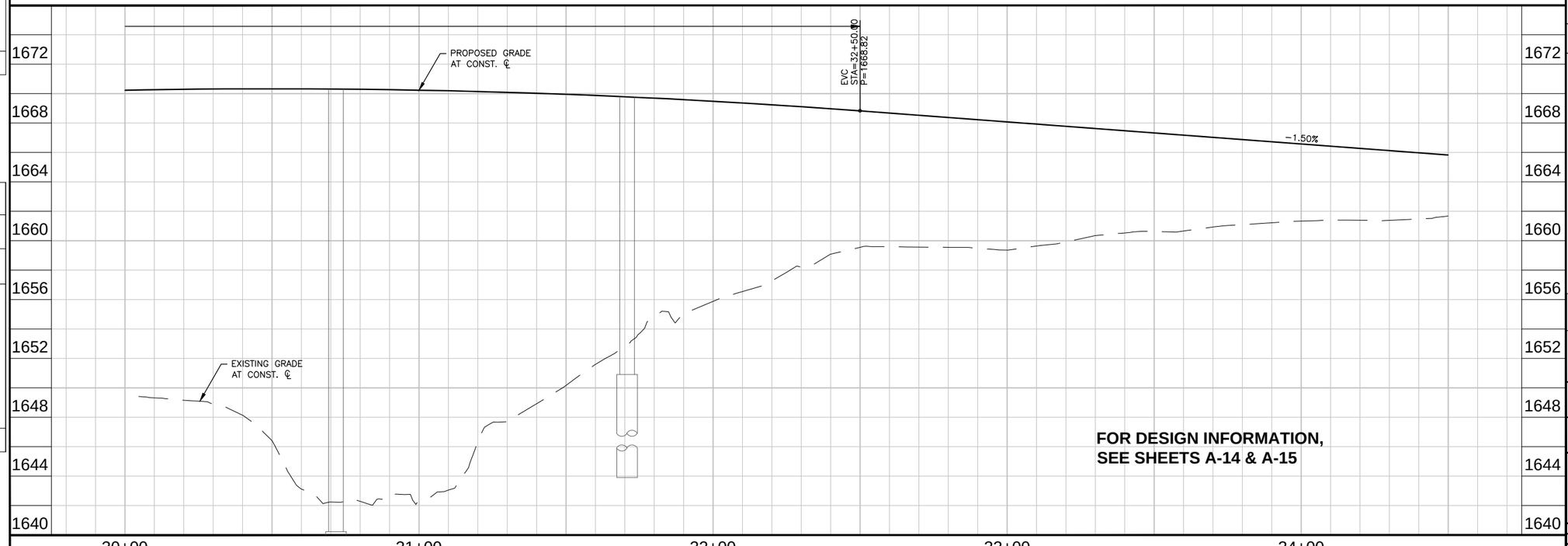
NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY

PA

NOT FOR CONSTRUCTION OR RECORDING





FOR DESIGN INFORMATION,
SEE SHEETS A-14 & A-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

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DES: RH,DR	DR: DR	CK: JB	DATE: 6/21

M MATCH EXISTING
P PROTECT IN PLACE
S SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
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3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	265
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	4,399
7	CONCRETE RETAINING WALL PER ADOT SD 7.01	LF	547
8	32" CONCRETE HALF BARRIER PER ADOT C-10.72	LF	547
10	DRAINAGE SLOPE ARMORING FOR BANK PROTECTION, SEE SHEET A-14	-	-

ALTERNATIVE A

Call at least two full working days before you begin excavation.
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Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

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SCALE: 1" = 20'
VERT: 1" = 4'

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STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE:6/21	DATE: 6/21	DATE: 6/21			
SCALE: 1" = 20'			A-06	X	.

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

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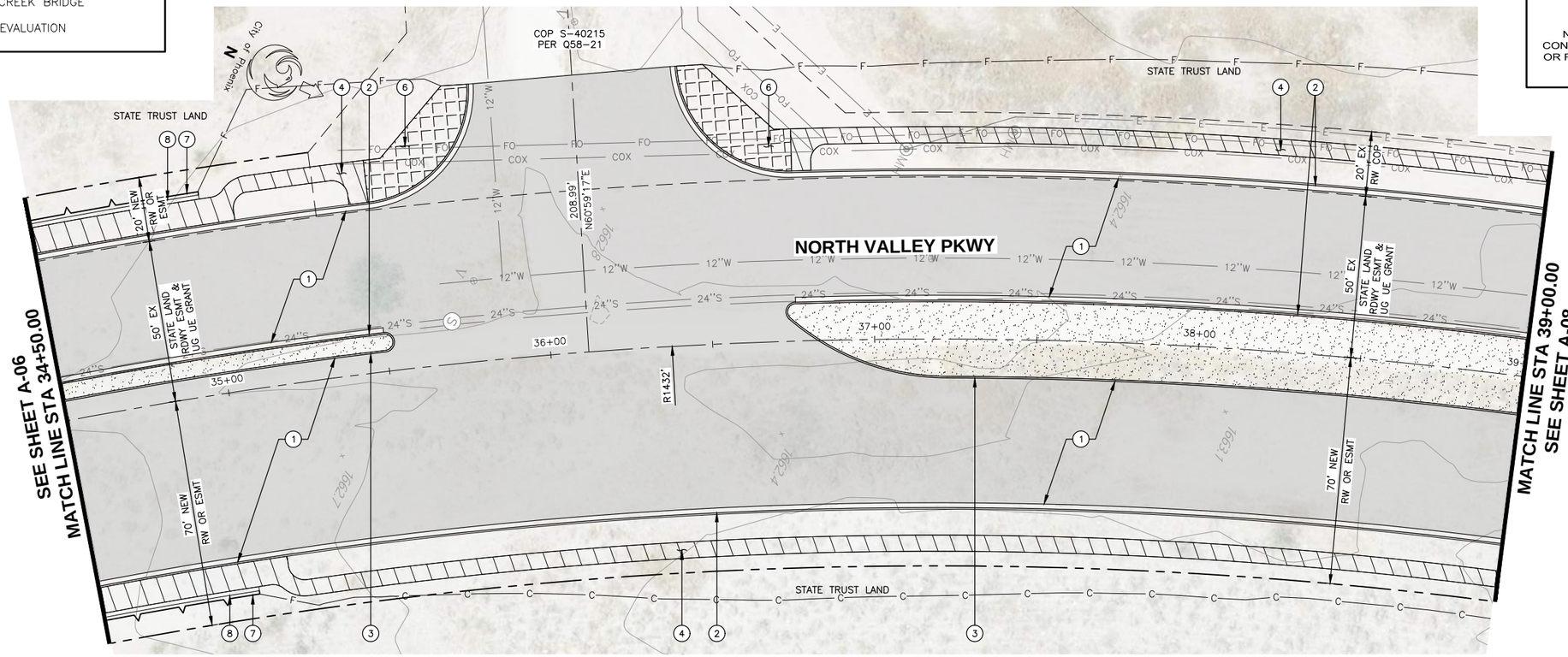
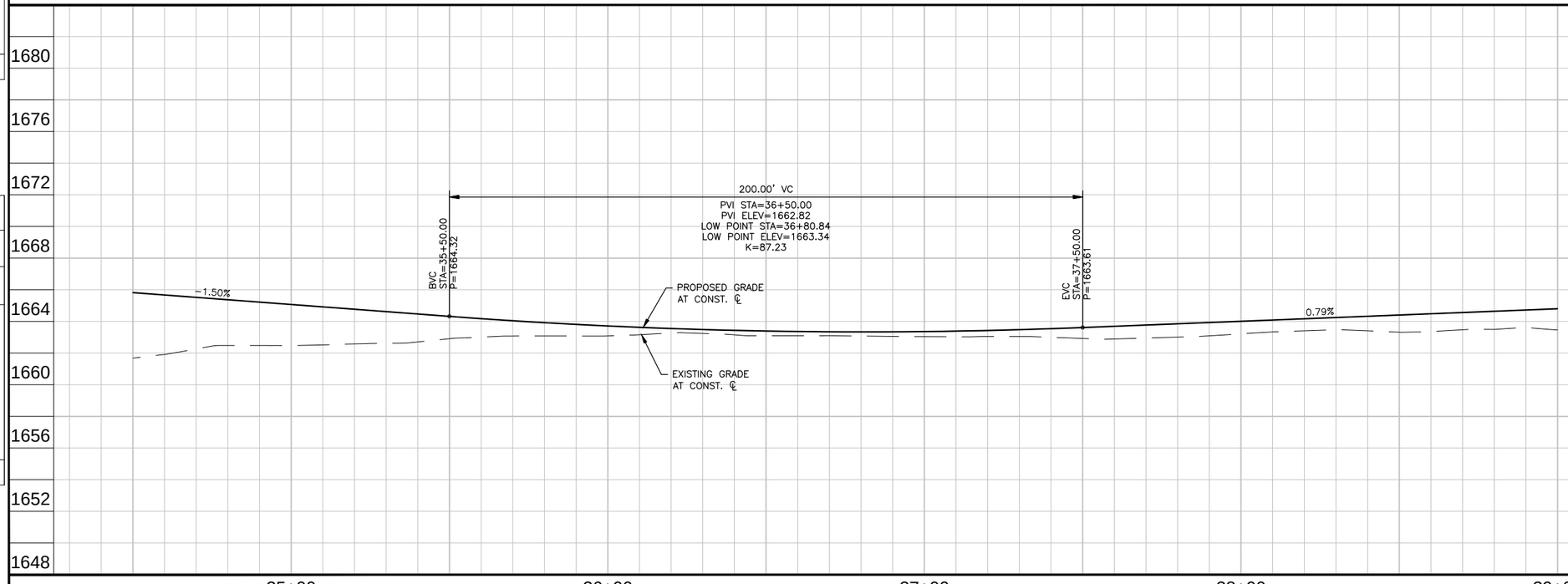
NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

32ND AVE (FUTURE CONNECTION)





PRELIMINARY

PA

NOT FOR CONSTRUCTION OR RECORDING

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
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T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

M	MATCH EXISTING
P	PROTECT IN PLACE
S	SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	4,653
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	2,332
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	346
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	3,562
7	CONCRETE RETAINING WALL PER ADOT SD 7.01	LF	100
8	32" CONCRETE HALF BARRIER PER ADOT C-10.72	LF	100

ALTERNATIVE A

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VERT: 1" = 4'

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20			
SCALE: 1" = 20'			A-07	X	.

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

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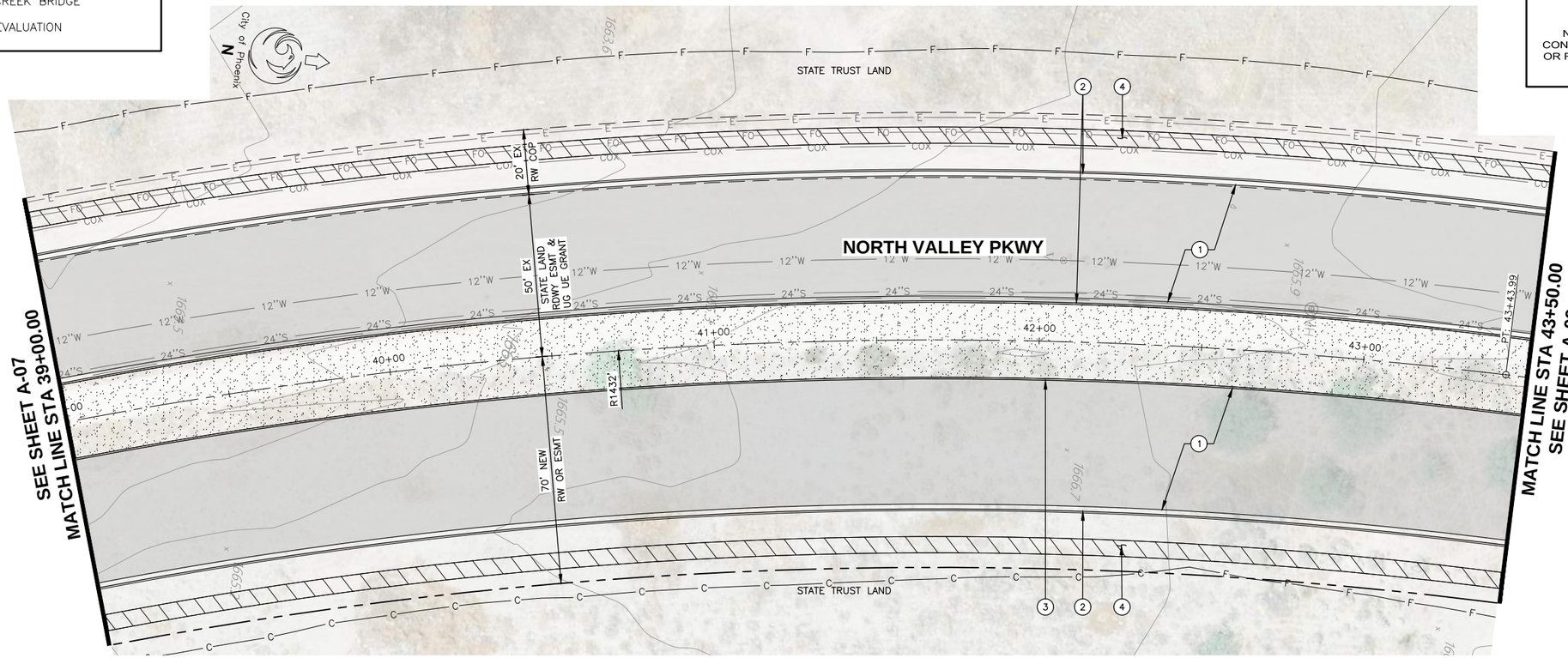
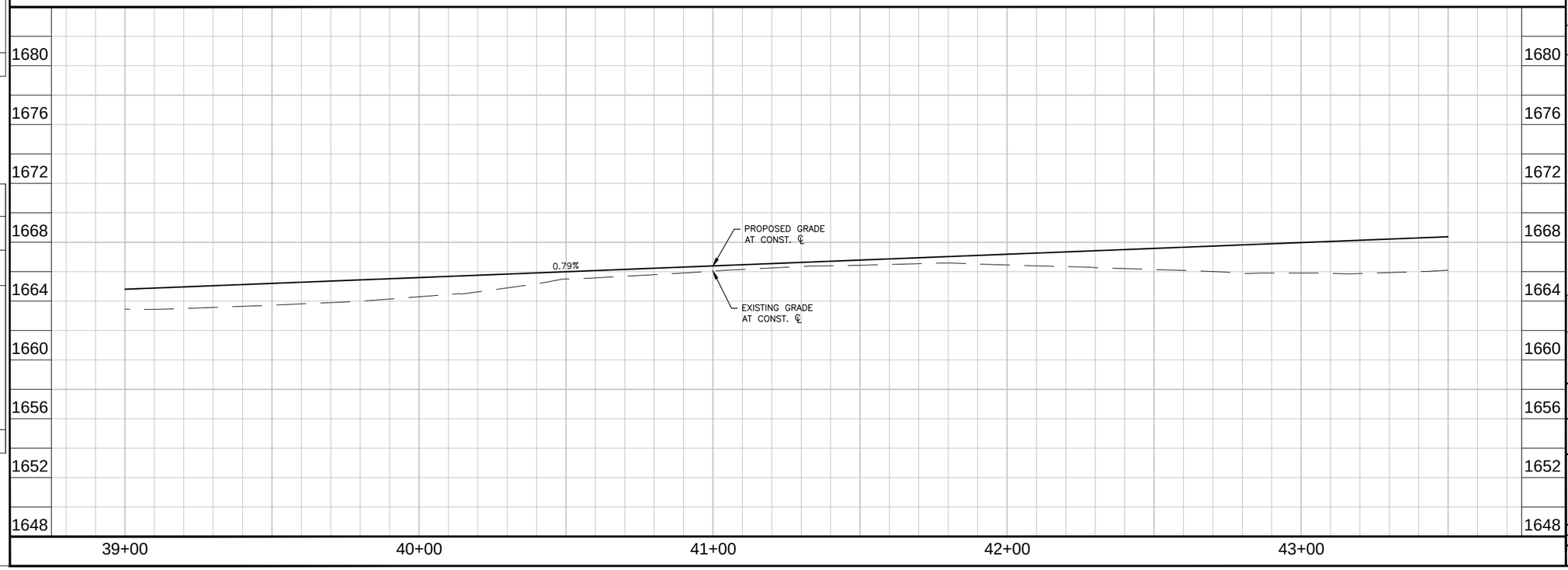
NORTH VALLEY PARKWAY

SKUNK CREEK BRIDGE

BRIDGE EVALUATION





PRELIMINARY

PA

NOT FOR CONSTRUCTION OR RECORDING

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

M	MATCH EXISTING
P	PROTECT IN PLACE
S	SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	3,825
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	1,336
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	440
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	4,500

ALTERNATIVE A

Call at least two full working days before you begin excavation.
ARIZONA 811
Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

20 0 20 40 60

SCALE: 1" = 20'
VERT: 1" = 4'

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20			
SCALE: 1" = 20'			A-08	X	.

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

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NORTH VALLEY PARKWAY

SKUNK CREEK BRIDGE

BRIDGE EVALUATION

PRELIMINARY

PA

NOT FOR CONSTRUCTION OR RECORDING

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

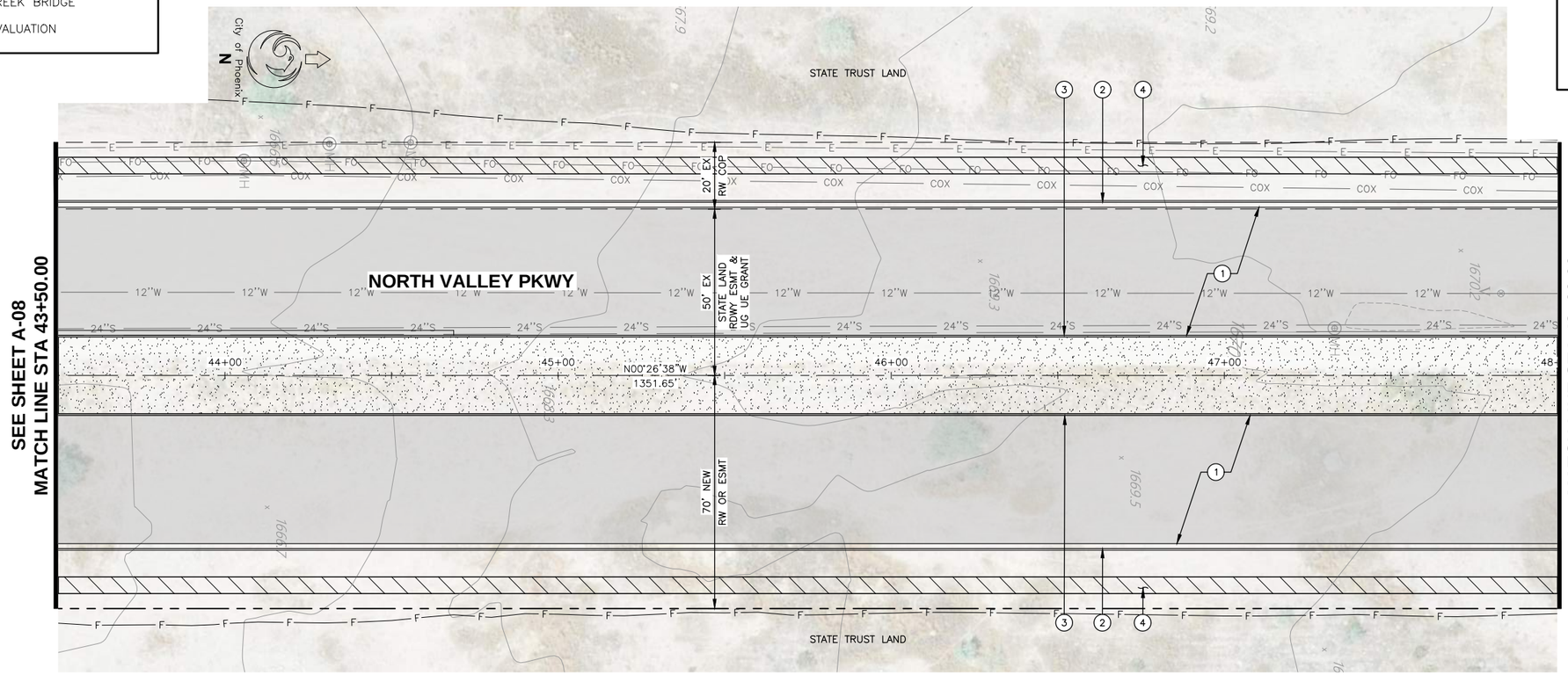
T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

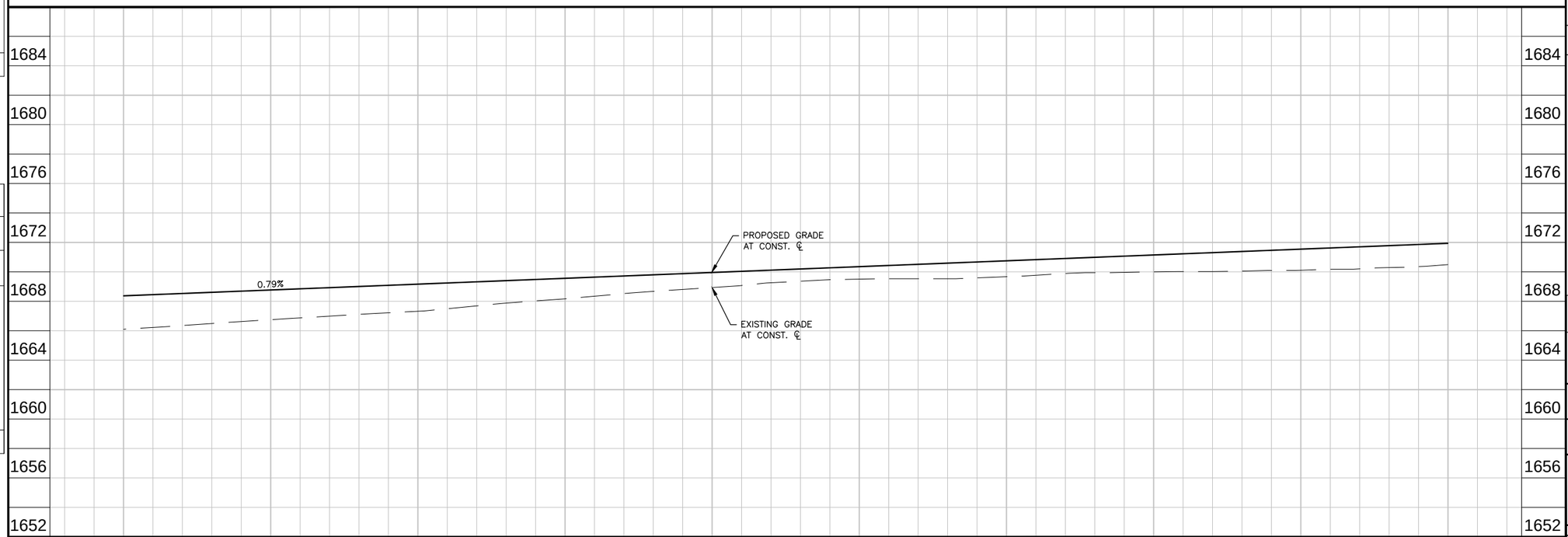
DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

- M — MATCH EXISTING
- P — PROTECT IN PLACE
- S — SAWCUT AND MATCH EXISTING

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE





REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	3,850
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	1,019
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	781
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	4,500

ALTERNATIVE A

Call at least two full working days before you begin excavation. ARIZONA 811 Arizona Blue Stake, Inc. Dial 8-1-1 or 1-800-STAKE-IT (782-5348) In Maricopa County: (602) 263-1100

20 0 20 40 60

SCALE: 1" = 20'
VERT: 1" = 4'

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20	A-09	X	.
SCALE: 1" = 20'					

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Dennis Kay
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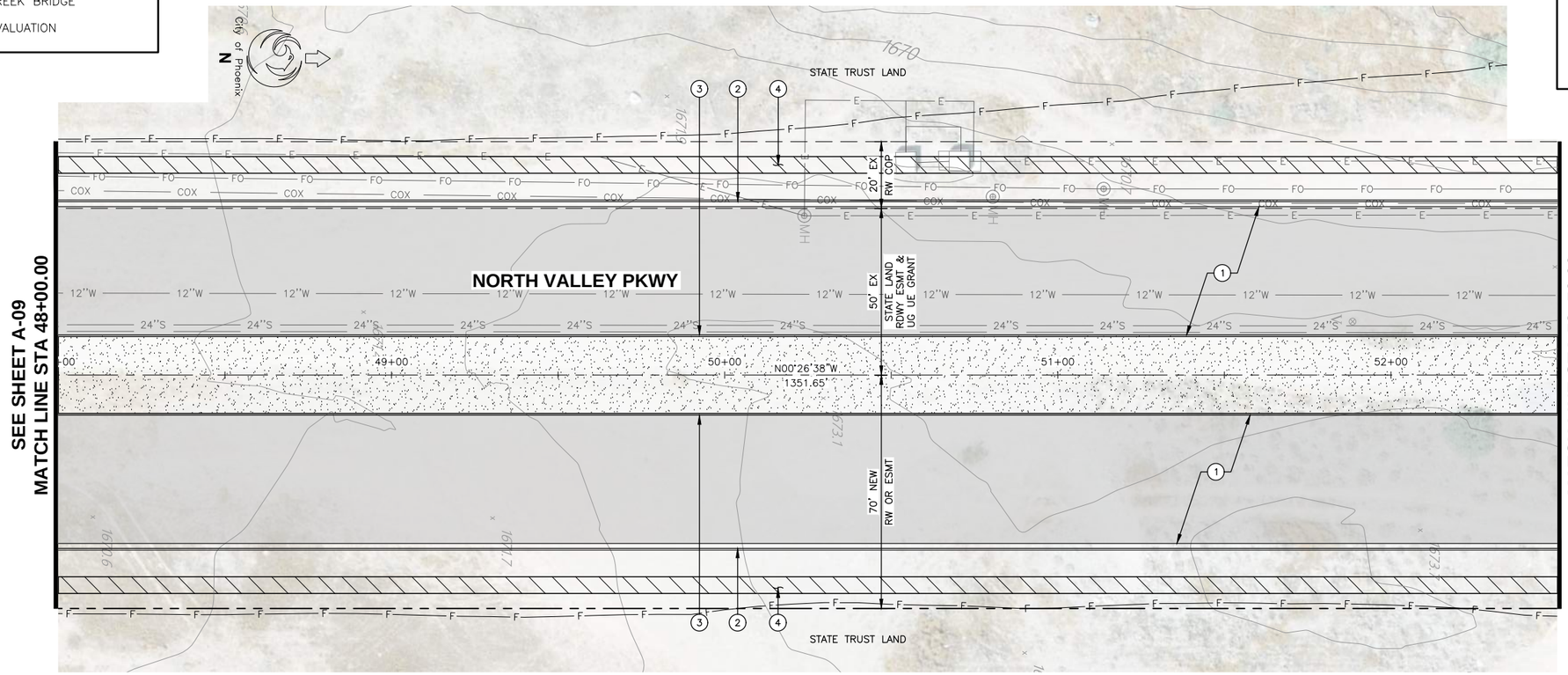
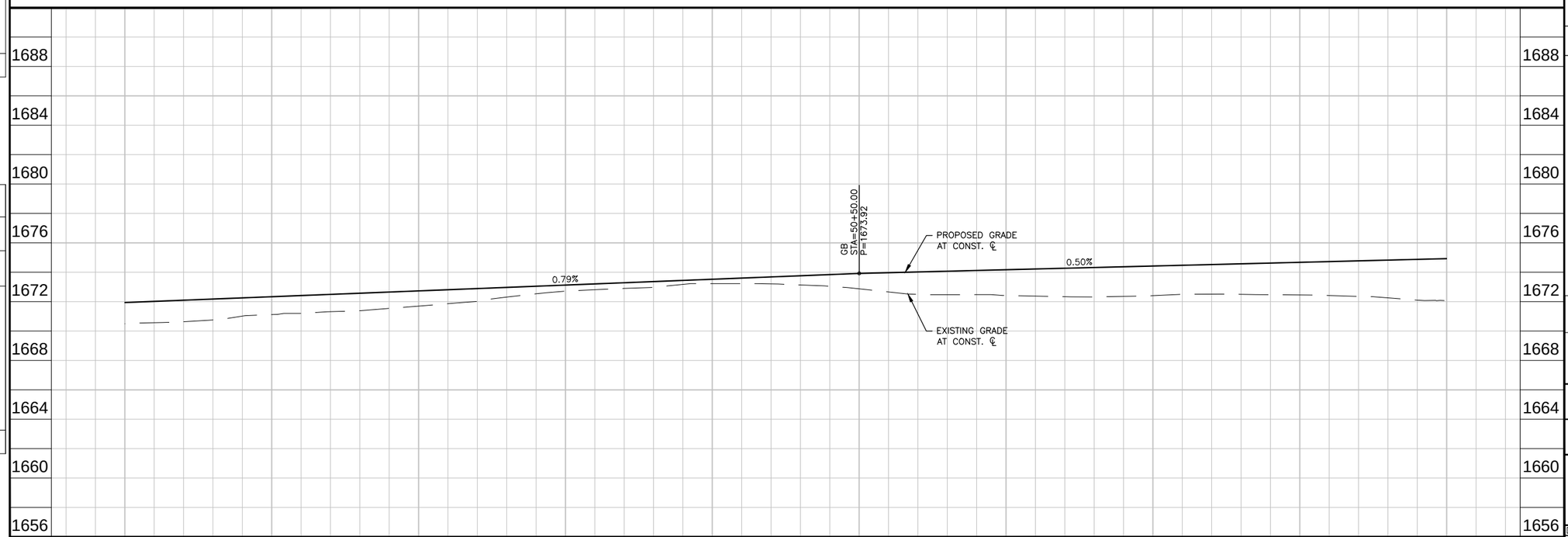
NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY
PA
NOT FOR CONSTRUCTION OR RECORDING





F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

M MATCH EXISTING
P PROTECT IN PLACE
S SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	3,850
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	900
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	900
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	4,500

ALTERNATIVE A

Call at least two full working days before you begin excavation.
ARIZONA 811 Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

20 0 20 40 60
SCALE: 1" = 20'
VERT: 1" = 4'

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE:12/20	DATE: 12/20	DATE: 12/20			
SCALE: 1" = 20'			A-10	X	.

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

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NORTH VALLEY PARKWAY

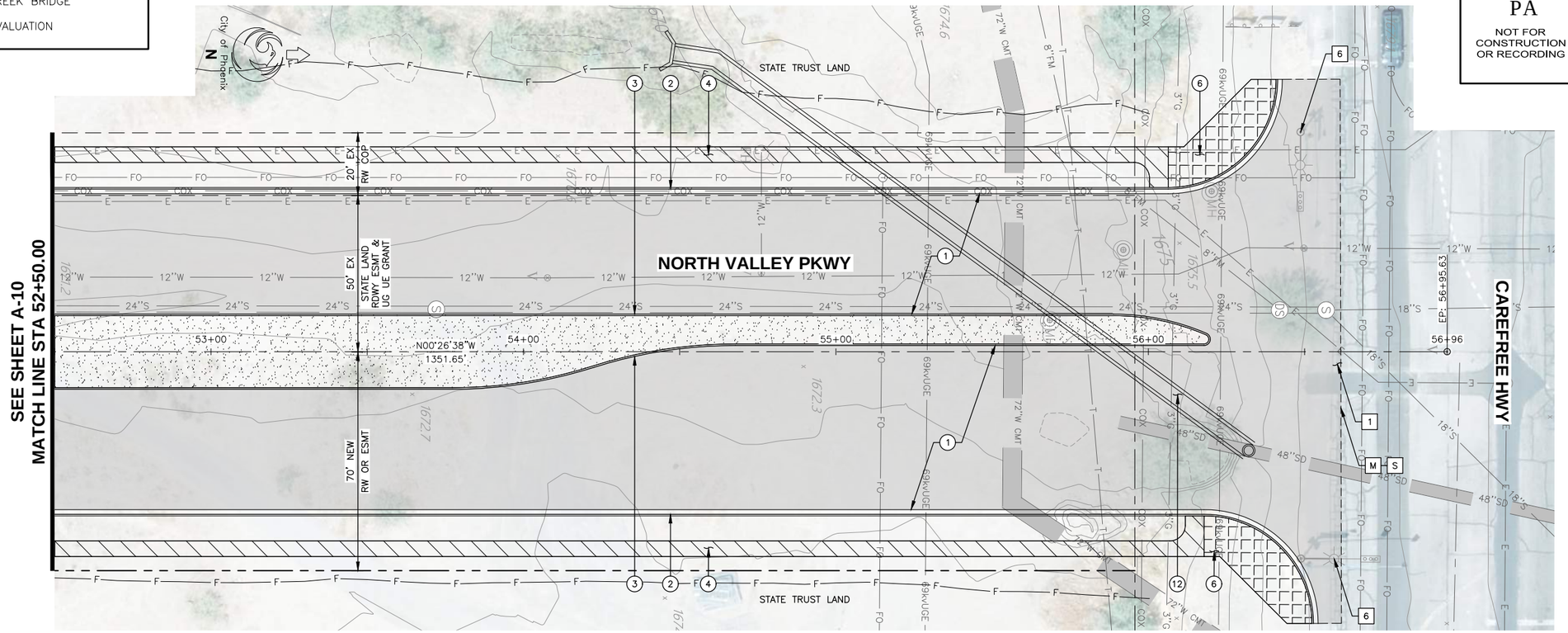
SKUNK CREEK BRIDGE

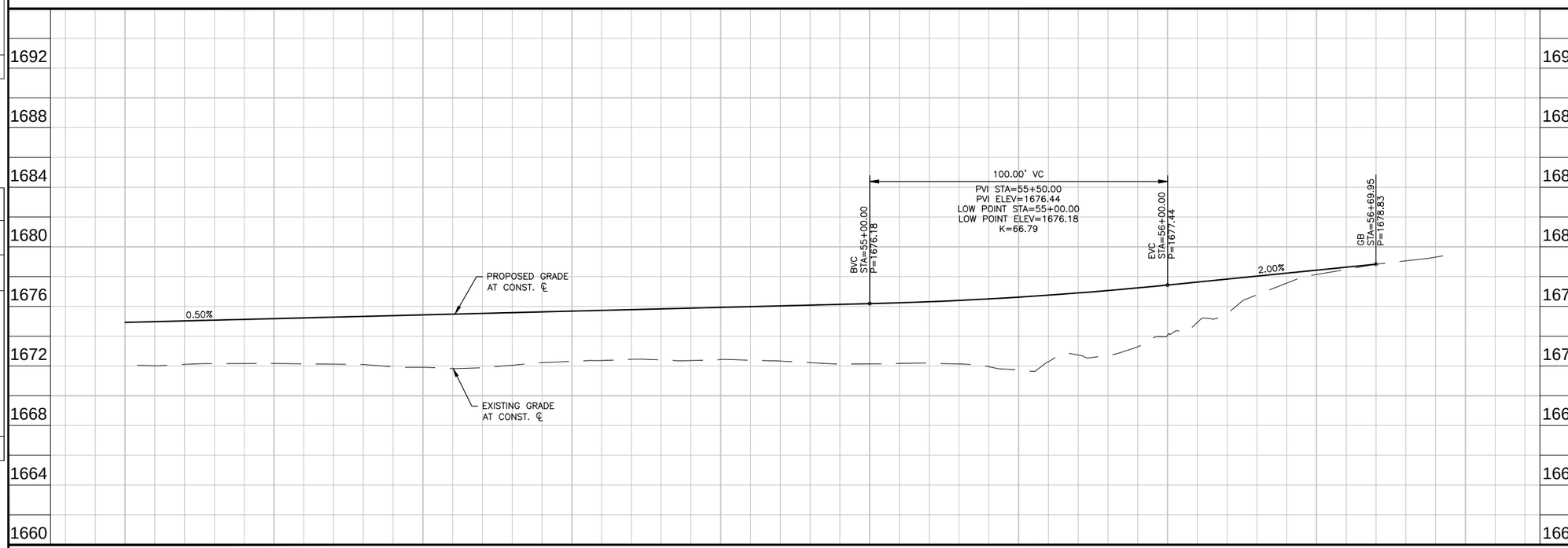
BRIDGE EVALUATION

PRELIMINARY

PA

NOT FOR CONSTRUCTION OR RECORDING





F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

- M — MATCH EXISTING
- P — PROTECT IN PLACE
- S — SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.
1	REMOVE EXISITNG PAVEMENT	SY	168
6	EXISTING TRAFFIC SIGNALS AND EQUIPMENT	LS	1

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	4,117
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	834
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	444
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	3,728
6	CONCRETE SIDEWALK RAMP PER COP STD DET P1235 OR P1236	SF	1,193
9	INSTALL NEW TRAFFIC SIGNAL AND EQUIPMENT	LS	1
12	INSTALL 54" RGRCP STORM DRAIN PIPE & HEADWALL, INC. MANHOLE.	LF	225

ALTERNATIVE A

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20 0 20 40 60

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VERT: 1" = 4'

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20	A-11	X	.
SCALE: 1" = 20'					

REVISION BY CITY OF PHOENIX

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REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

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NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY

PA

NOT FOR CONSTRUCTION OR RECORDING

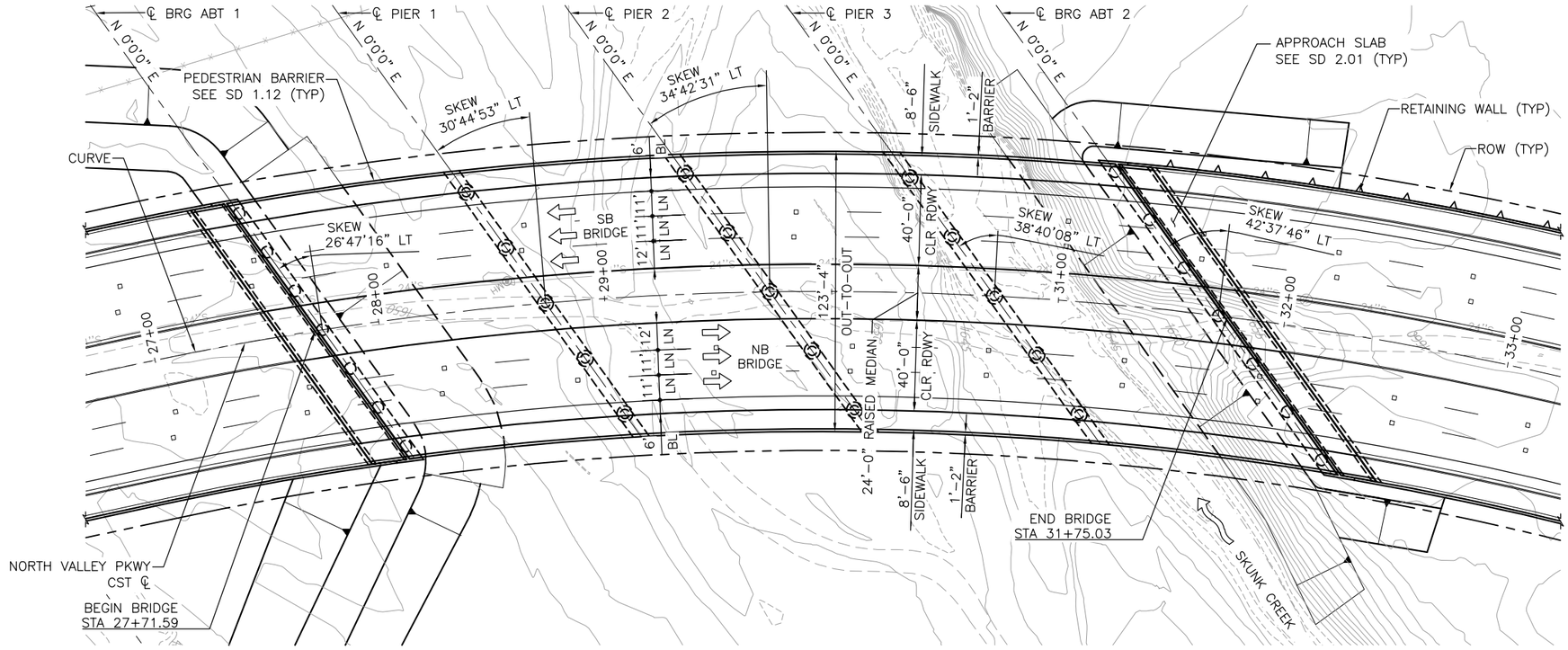
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: AO	DR: JJD	CK: JRP	DATE: 12/20

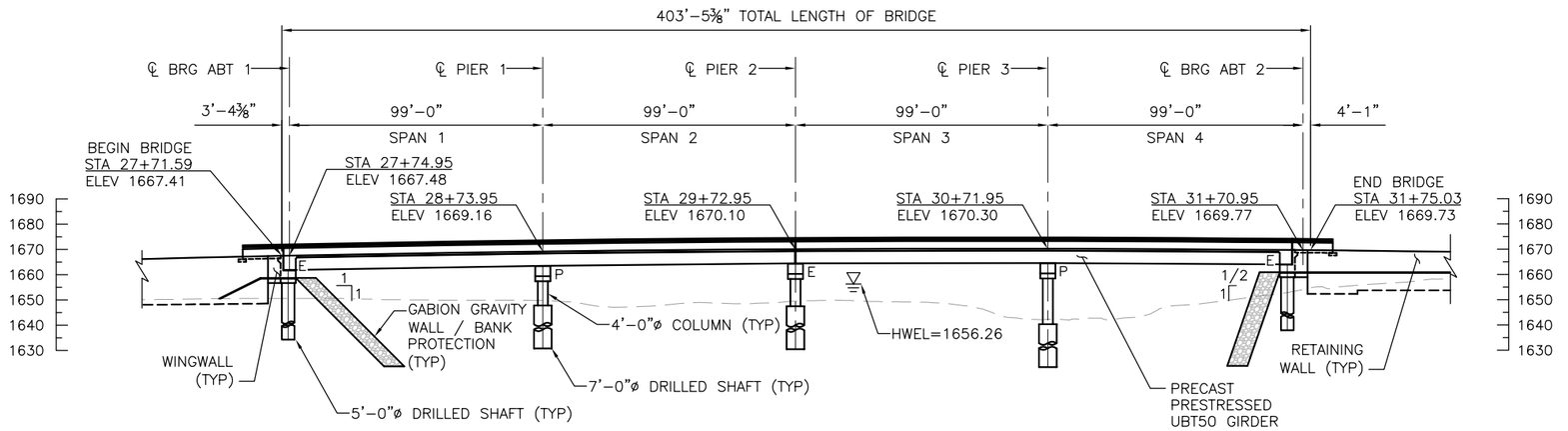
REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



LOCATION PLAN

4 SPAN PRECAST PRESTRESSED CONCRETE GIRDER BRIDGE
SKEW VARIES
SCALE: 1" = 30'-0"



ELEVATION

(STATIONS AND DIMENSIONS TAKEN ALONG NORTH VALLEY PKWY CST ℄)
SCALE: 1" = 30'-0"

Call at least two full working days before you begin excavation.
ARIZONA 811 Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

ALTERNATIVE A

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BRIDGE PLAN & ELEVATION

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: JJD	DES: AO	CK: JRP	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE:12/20	DATE: 12/20	DATE: 12/20			
SCALE:			A-12	X	.

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Dennis Ray

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY
PA
NOT FOR CONSTRUCTION OR RECORDING

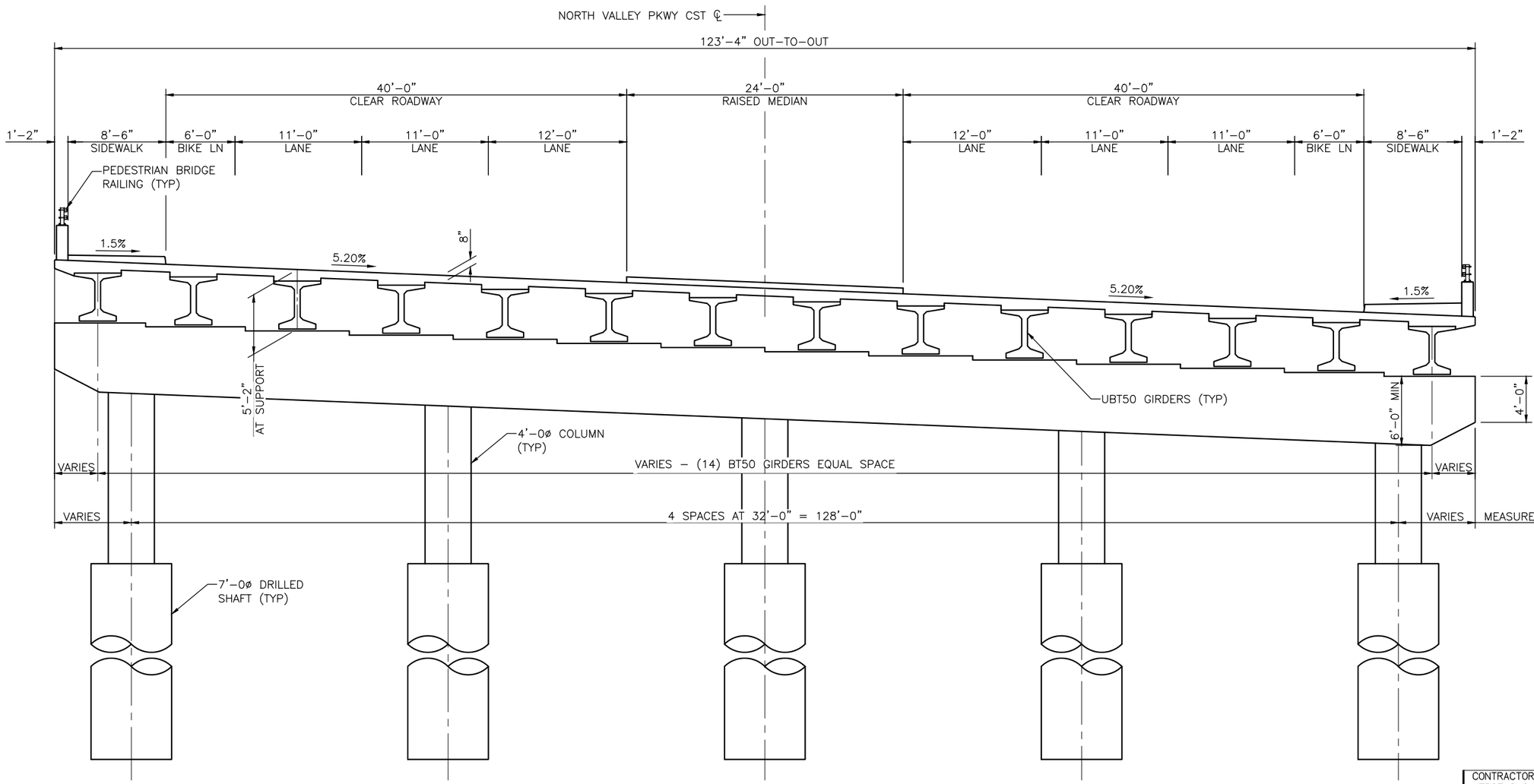
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: AO	DR: JJD	CK: JRP	DATE: 12/20

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



TYPICAL SECTION
(LOOKING UPSTATION)
(DIMENSIONS ARE TAKEN PERPENDICULAR TO THE CST ℄ UNLESS NOTED)
SCALE: 1" = 5'–0"

Call at least two full working days before you begin excavation.
ARIZONA 811 Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

ALTERNATIVE A

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BRIDGE TYPICAL SECTION

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: JJD	DES: AO	CK: JRP	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE:12/20	DATE: 12/20	DATE: 12/20			
SCALE:			A–13	X	.

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY

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F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

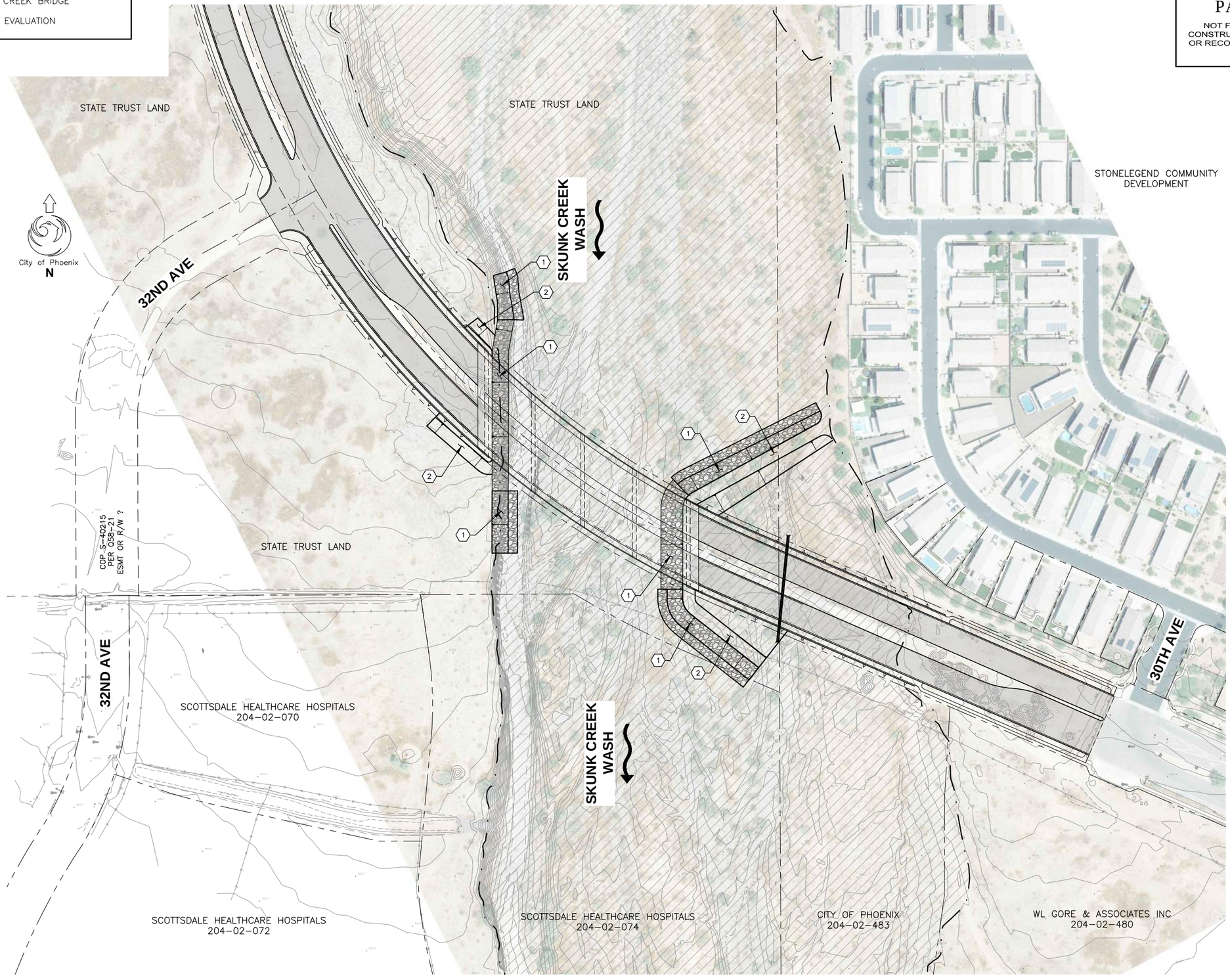
TY LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 6/21

M	MATCH EXISTING
P	PROTECT IN PLACE
S	SAWCUT AND MATCH EXISTING

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	GABIONS - BANK PROTECTION	CY	14,700
2	EARTHWORK / FILL - BANK PROTECTION	CY	13,154



LEGEND

EXISTING FLOODPLAIN LIMITS

ALTERNATIVE A

Call at least two full working days before you begin excavation.
ARIZONA 811 Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

80 0 80 160 240
SCALE: 1" = 80'

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BANK PROTECTION

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
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SCALE:			A-14	X	.

REVISION BY CITY OF PHOENIX

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NORTH VALLEY PARKWAY

SKUNK CREEK BRIDGE

BRIDGE EVALUATION

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DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

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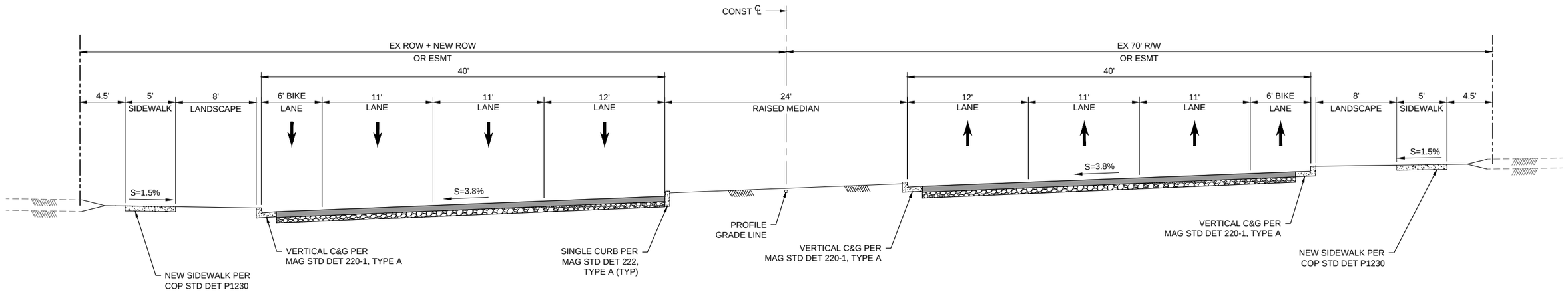
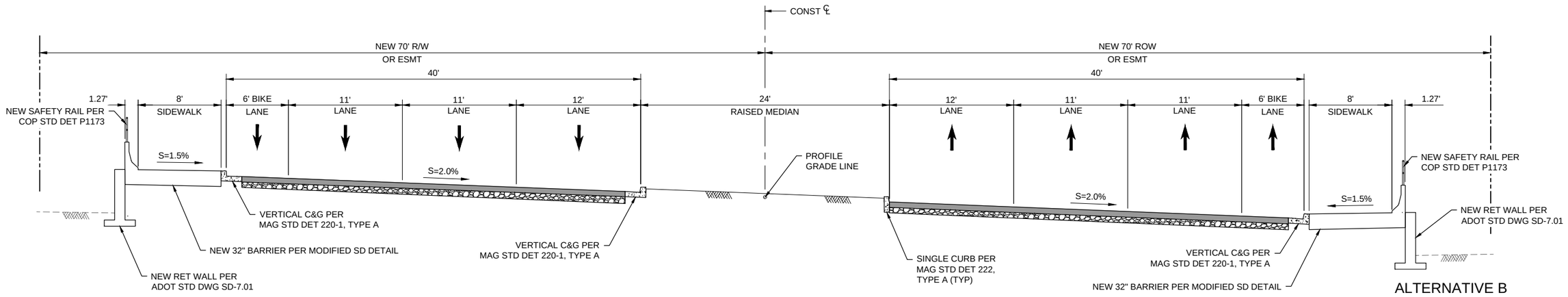


TYPICAL SECTION 1

SECTION CUT AT STA 19+00
LOOKING UP STATION



TYPICAL SECTION 2

SECTION CUT AT STA 27+00
LOOKING UPSTATION

ALTERNATIVE B

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

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TYPICAL SECTIONS

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20			
SCALE: NO SCALE			B-01	X	.

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NORTH VALLEY PARKWAY

SKUNK CREEK BRIDGE

BRIDGE EVALUATION

PRELIMINARY

PA

NOT FOR CONSTRUCTION OR RECORDING

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

REVISION BY CITY OF PHOENIX

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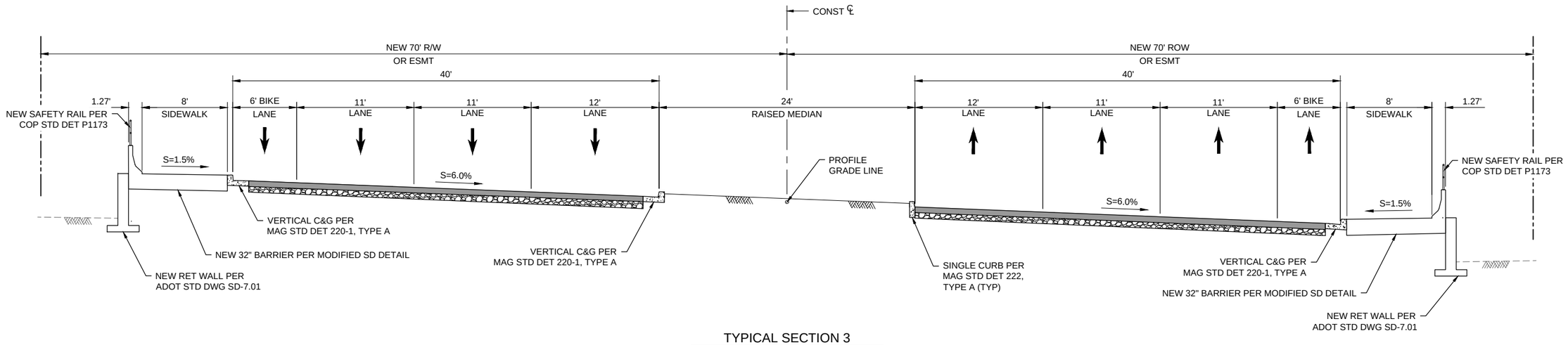
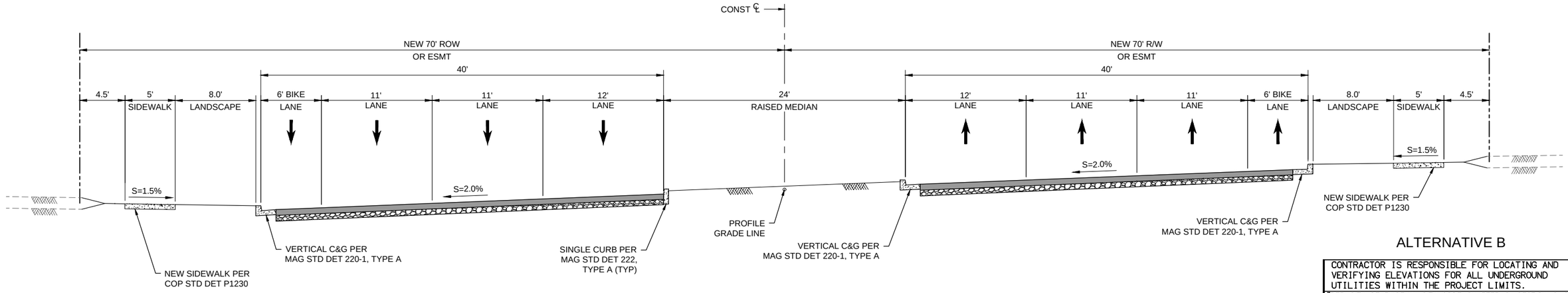


TYPICAL SECTION 3

SECTION CUT AT STA 43+00
LOOKING UPSTATION

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



TYPICAL SECTION 4

SECTION CUT AT STA 56+00
LOOKING UPSTATION

ALTERNATIVE B

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE:12/20	DATE: 12/20	DATE: 12/20			
SCALE: NO SCALE			B-02	X	.

NORTH VALLEY PARKWAY

SKUNK CREEK BRIDGE

BRIDGE EVALUATION

PRELIMINARY

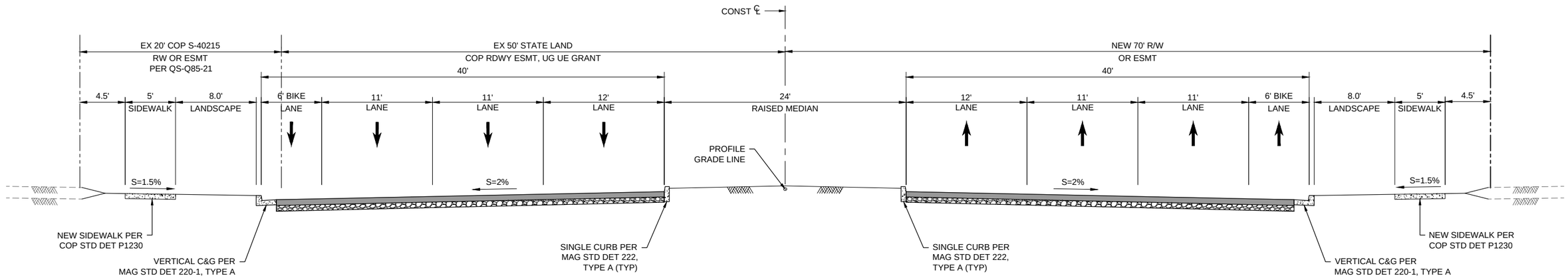
PA

NOT FOR CONSTRUCTION OR RECORDING

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20



TYPICAL SECTION 5

SECTION CUT AT STA 60+00
LOOKING UP STATION

ALTERNATIVE B

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20			
SCALE: NO SCALE			B-03	X	.

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

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REVISION BY CITY OF PHOENIX

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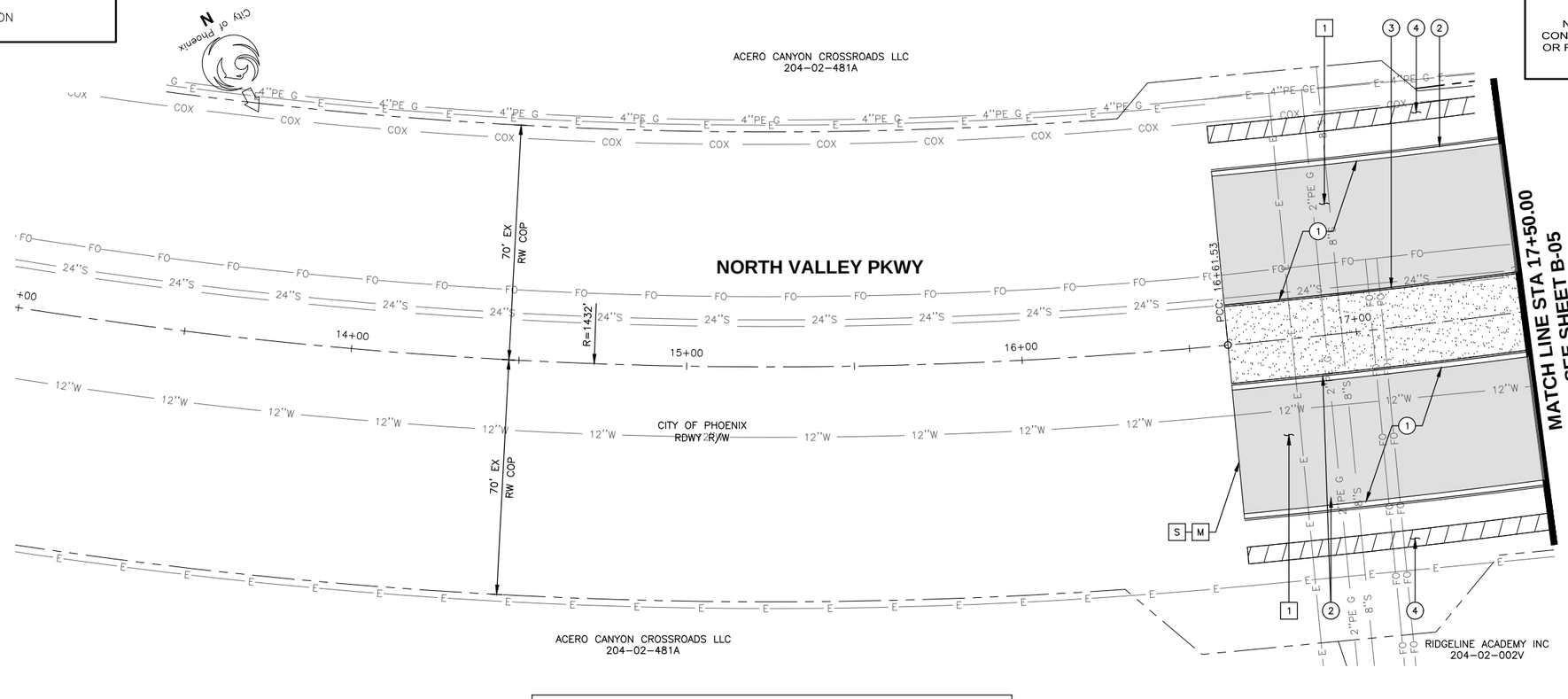
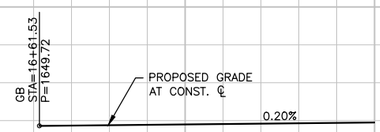
NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY
PA
NOT FOR CONSTRUCTION OR RECORDING



PROFILE AND ROADWAY LIMITS TO BE DEVELOPED DURING FINAL DESIGN TO MATCH INTO EXISTING ROADWAY



1668 1664 1660 1656 1652 1648 1644 1640 1636

13+00 14+00 15+00 16+00 17+00

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

M MATCH EXISTING
P PROTECT IN PLACE
S SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	743
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	266
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	86
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	885

ALTERNATIVE B

Call at least two full working days before you begin excavation.
ARIZONA 811 — Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

20 0 20 40 60
SCALE: 1" = 20'
VERT: 1" = 4'

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20			
SCALE: 1" = 20'			B-04	X	.

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

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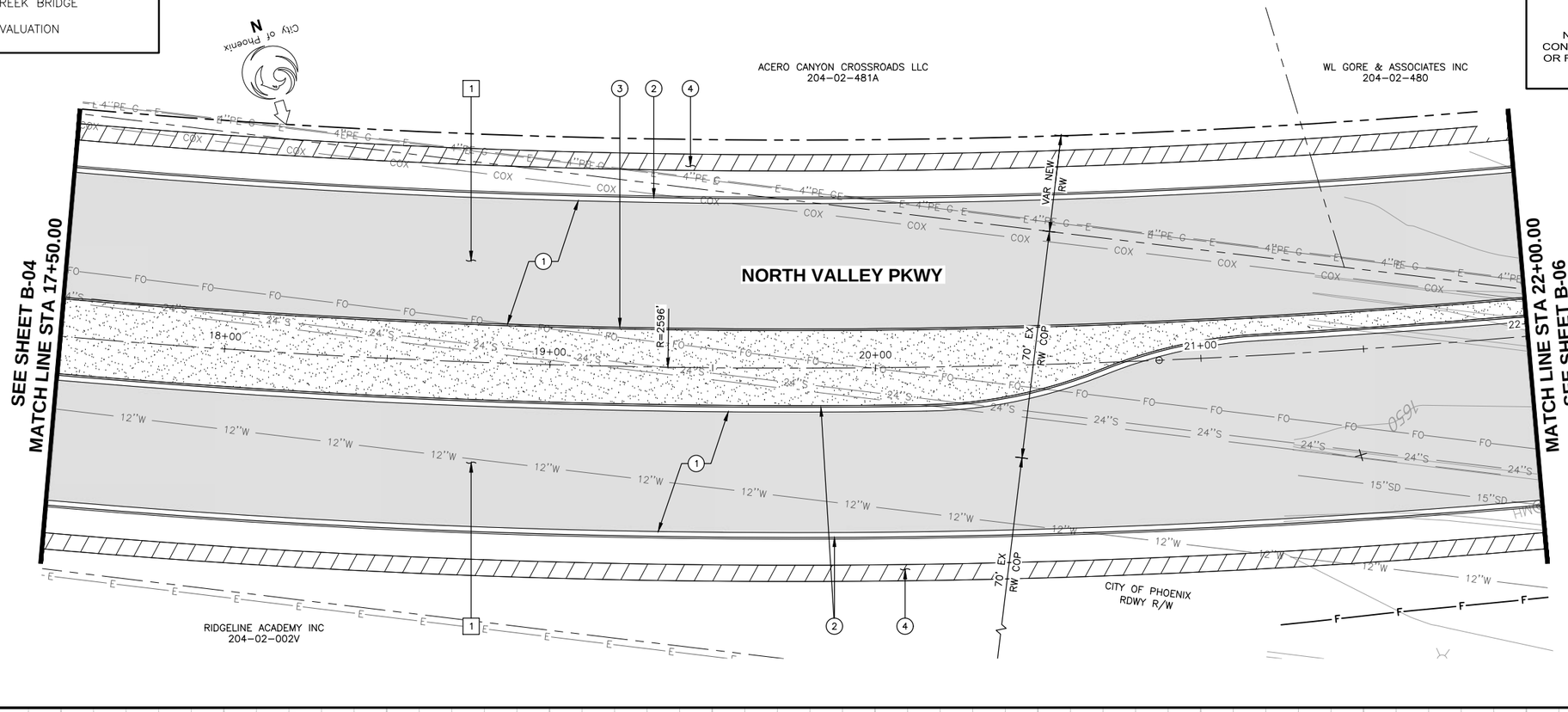
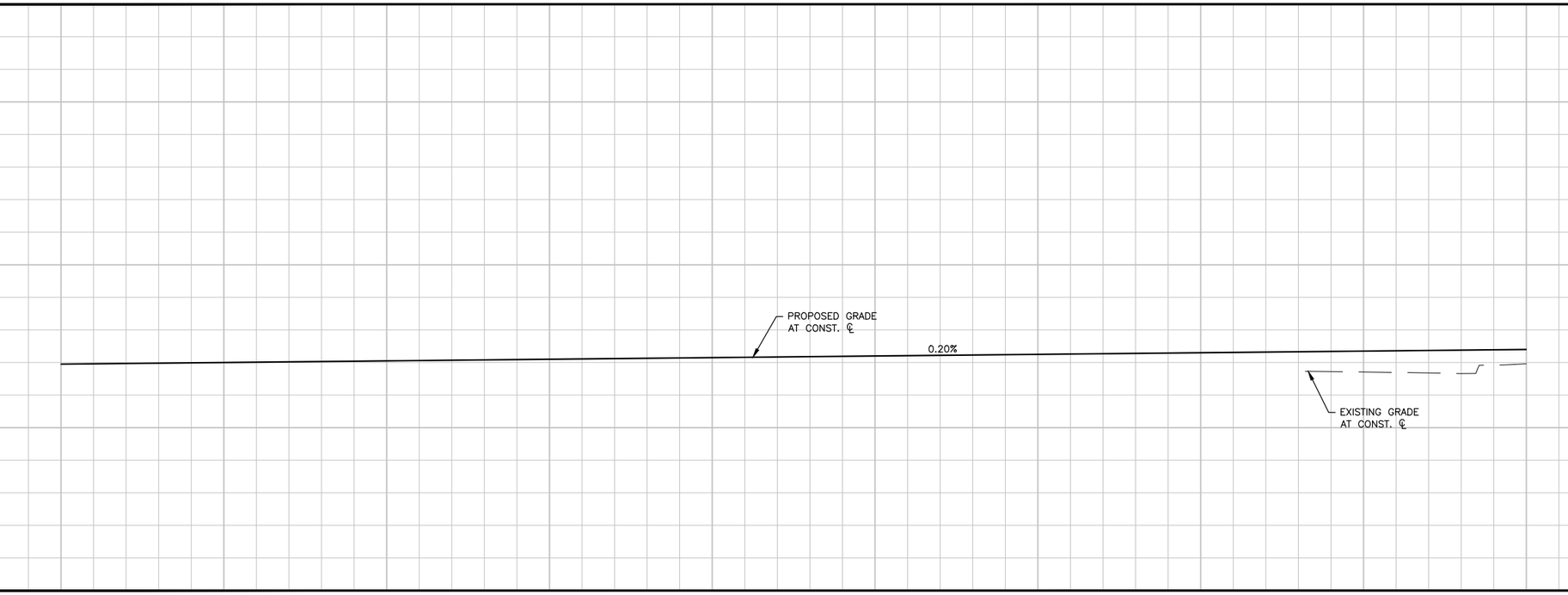
NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY
PA
NOT FOR CONSTRUCTION OR RECORDING





F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

M MATCH EXISTING
P PROTECT IN PLACE
S SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.
1	REMOVE EXISITNG PAVEMENT	SY	719
2	EXISTING CONCRETE CURB & GUTTER	LF	312
4	EXISTING CONCRETE SIDEWALK, RAMP, DWY, VALLEY GUTTER OR MISC. CONCRETE.	SF	786

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	4,040
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	1,353
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	448
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	4,500

ALTERNATIVE B

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Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

20 0 20 40 60
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VERT: 1" = 4'

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20			
SCALE: 1" = 20'			B-05	X	.

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NORTH VALLEY PARKWAY

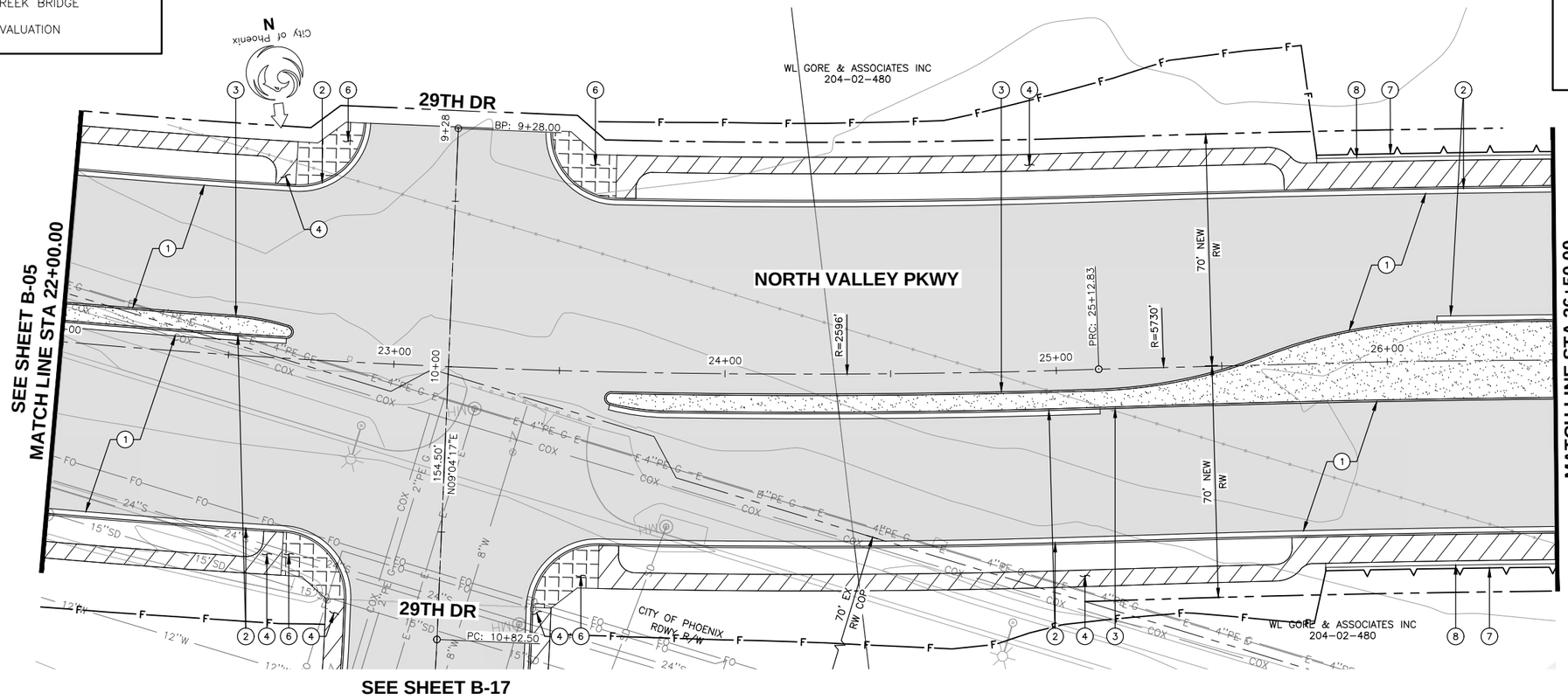
SKUNK CREEK BRIDGE

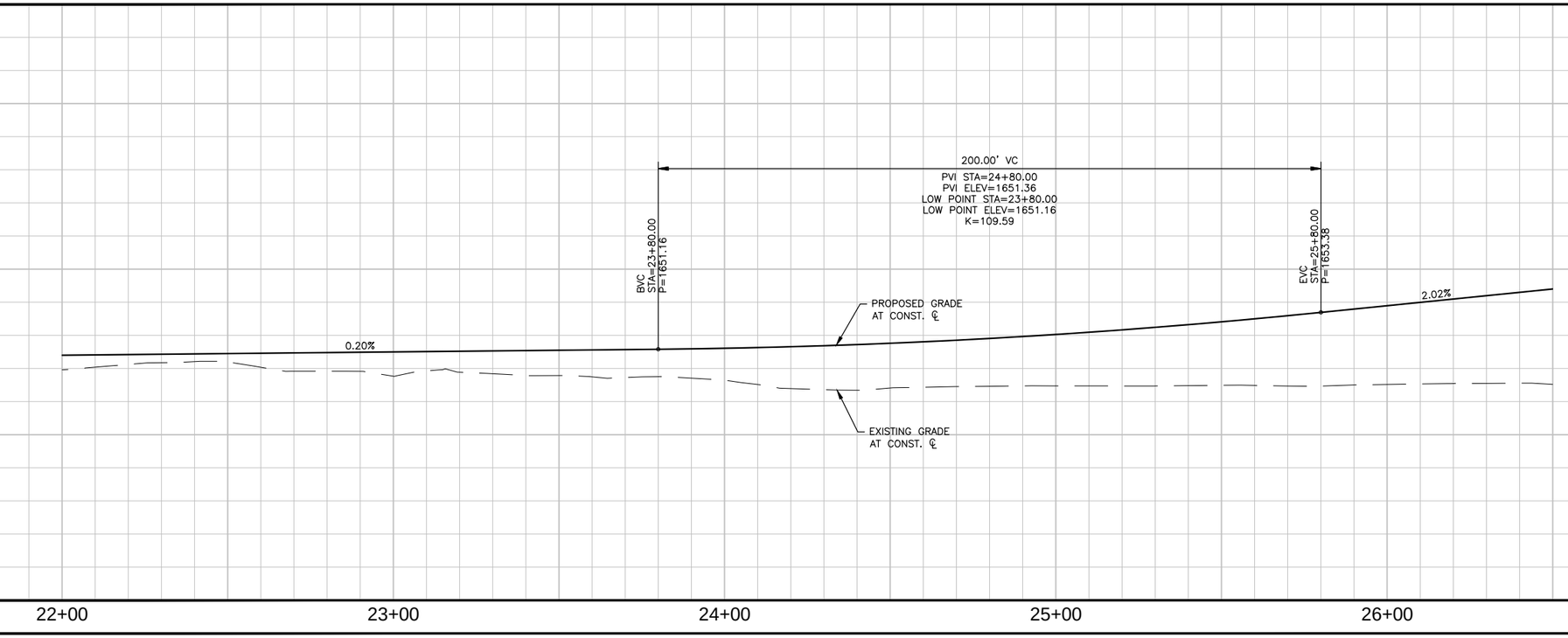
BRIDGE EVALUATION

PRELIMINARY

PA

NOT FOR CONSTRUCTION OR RECORDING





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F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

M	MATCH EXISTING
P	PROTECT IN PLACE
S	SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	4,900
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	1,157
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	104
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	4,266
6	CONCRETE SIDEWALK RAMP PER COP STD DET P1235 OR P1236	SF	934
7	CONCRETE RETAINING WALL PER ADOT SD 7.01	LF	140
8	32" CONCRETE HALF BARRIER PER ADOT C-10.72	LF	140

ALTERNATIVE B

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In Maricopa County: (602) 263-1100

20 0 20 40 60

SCALE: 1" = 20'
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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE:12/20	DATE: 12/20	DATE: 12/20			
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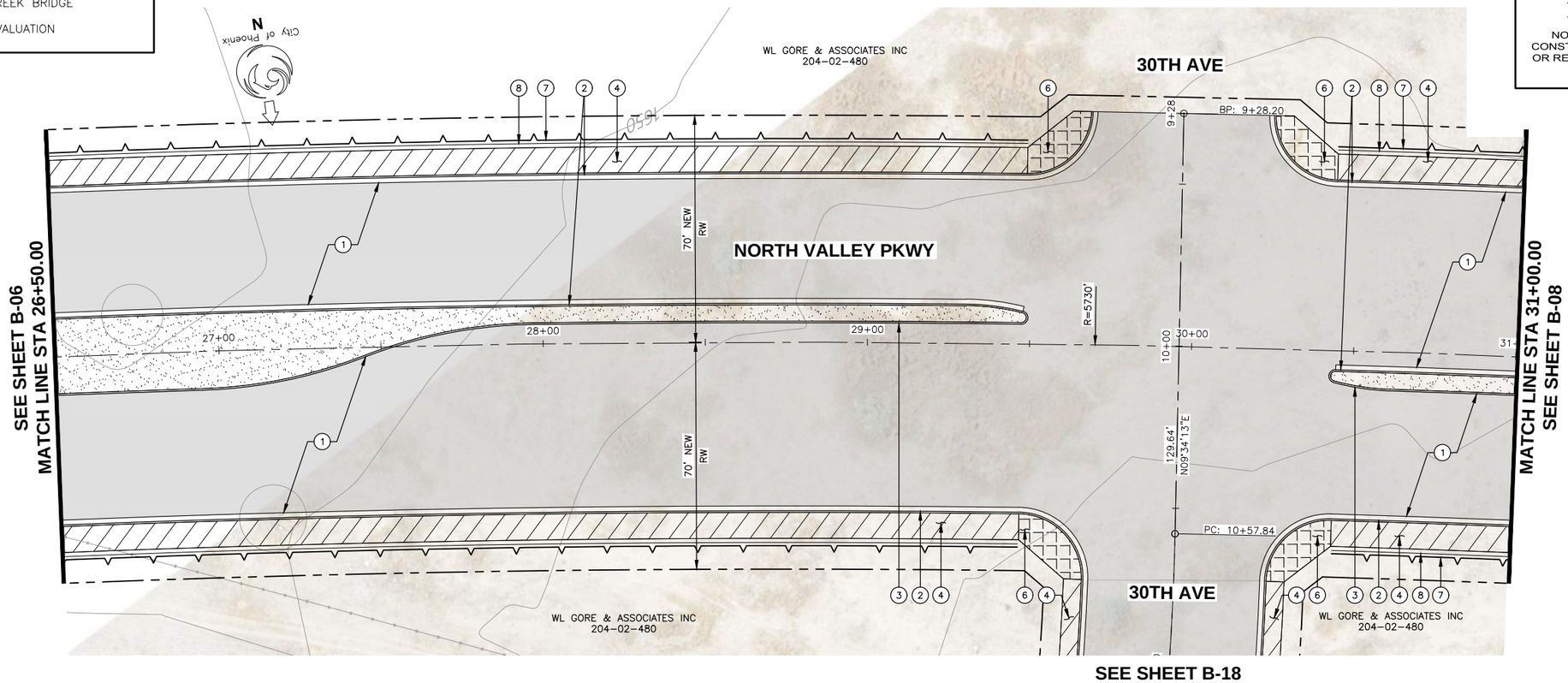
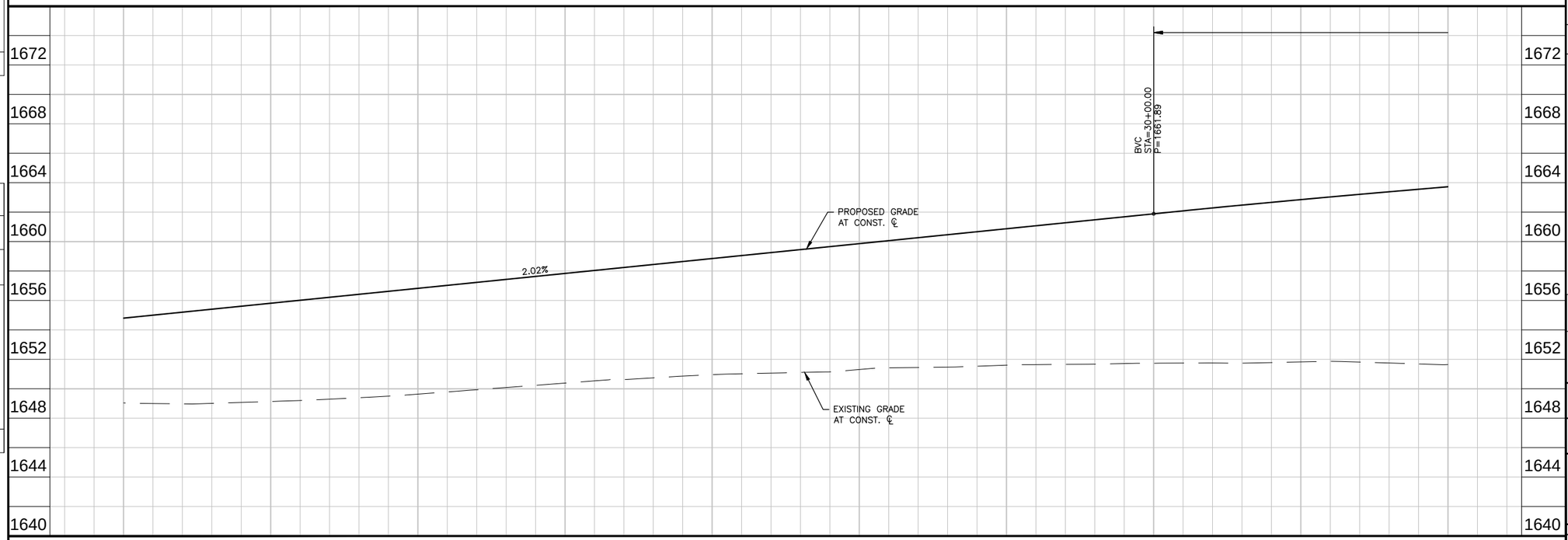
NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY
PA
NOT FOR CONSTRUCTION OR RECORDING





F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

M MATCH EXISTING
P PROTECT IN PLACE
S SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.
1	REMOVE EXISITNG PAVEMENT	SY	3,611
2	EXISTING CONCRETE CURB & GUTTER	LF	1,233
4	EXISTING CONCRETE SIDEWALK, RAMP, DWY, VALLEY GUTTER OR MISC. CONCRETE.	SF	6,133

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	4,864
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	1,188
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	367
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	5,686
6	CONCRETE SIDEWALK RAMP PER COP STD DET P1235 OR P1236	SF	873
7	CONCRETE RETAINING WALL PER ADOT SD 7.01	LF	707
8	32" CONCRETE HALF BARRIER PER ADOT C-10.72	LF	707

ALTERNATIVE B

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE:12/20	DATE: 12/20	DATE: 12/20	B-07	X	.
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REVISION BY CITY OF PHOENIX

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NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

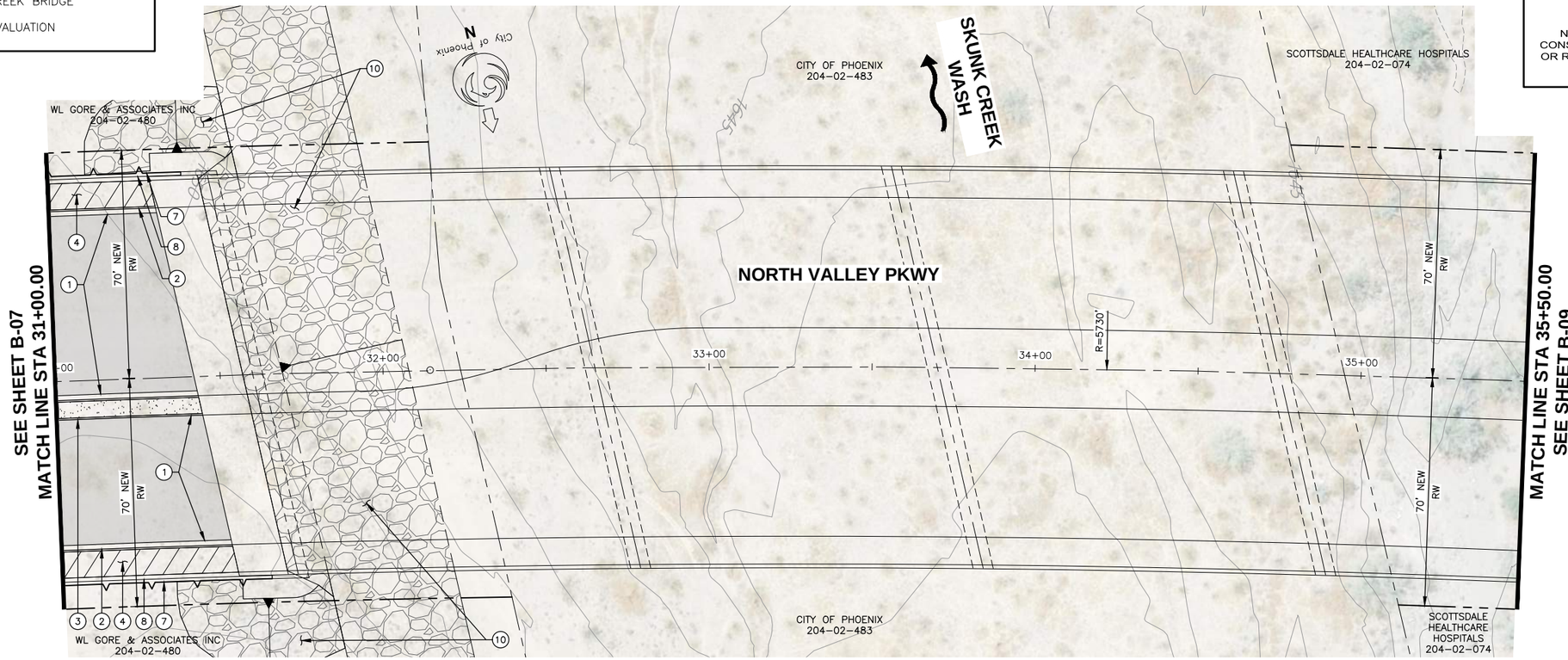
PRELIMINARY
PA
NOT FOR CONSTRUCTION OR RECORDING

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

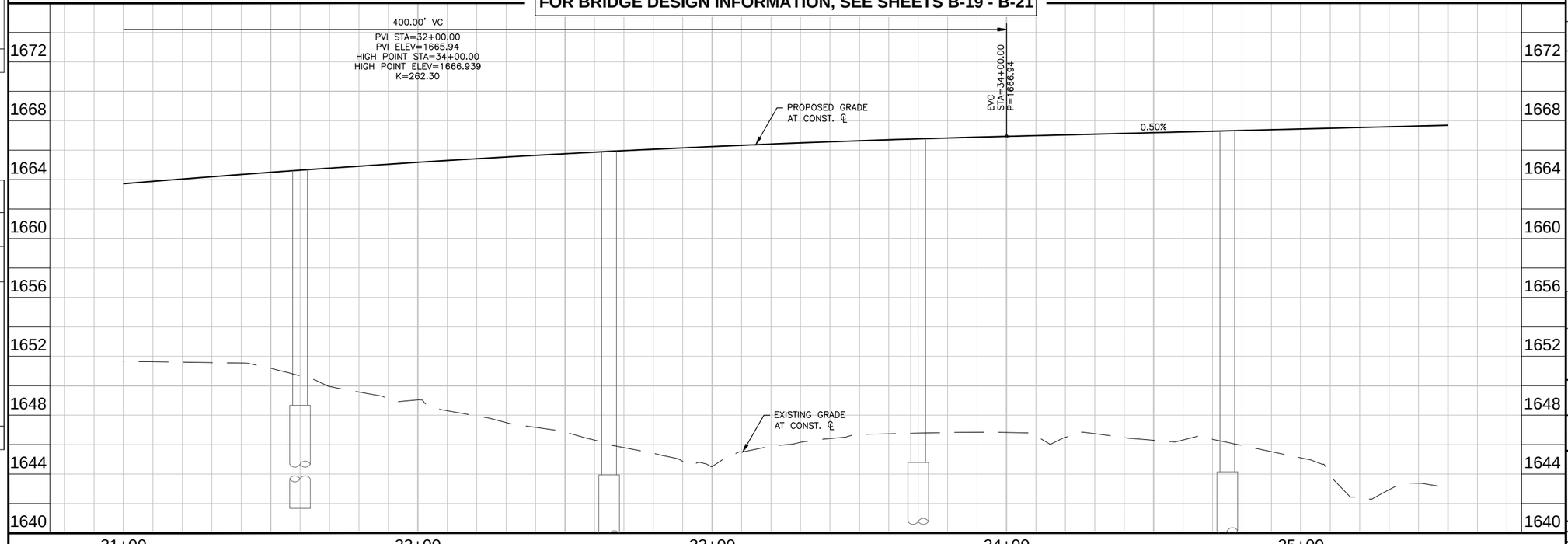
TY LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

- M — MATCH EXISTING
- P — PROTECT IN PLACE
- S — SAWCUT AND MATCH EXISTING



FOR BRIDGE DESIGN INFORMATION, SEE SHEETS B-19 - B-21



NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	435
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	127
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	44
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	671
7	CONCRETE RETAINING WALL PER ADOT SD 7.01	LF	104
8	32" CONCRETE HALF BARRIER PER ADOT C-10.72	LF	104
10	DRAINAGE SLOPE ARMORING FOR BANK PROTECTION, SEE SHEET B-22	-	-

ALTERNATIVE B

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

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SCALE: 1" = 20'			B-08	X	.

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REVISION BY CITY OF PHOENIX

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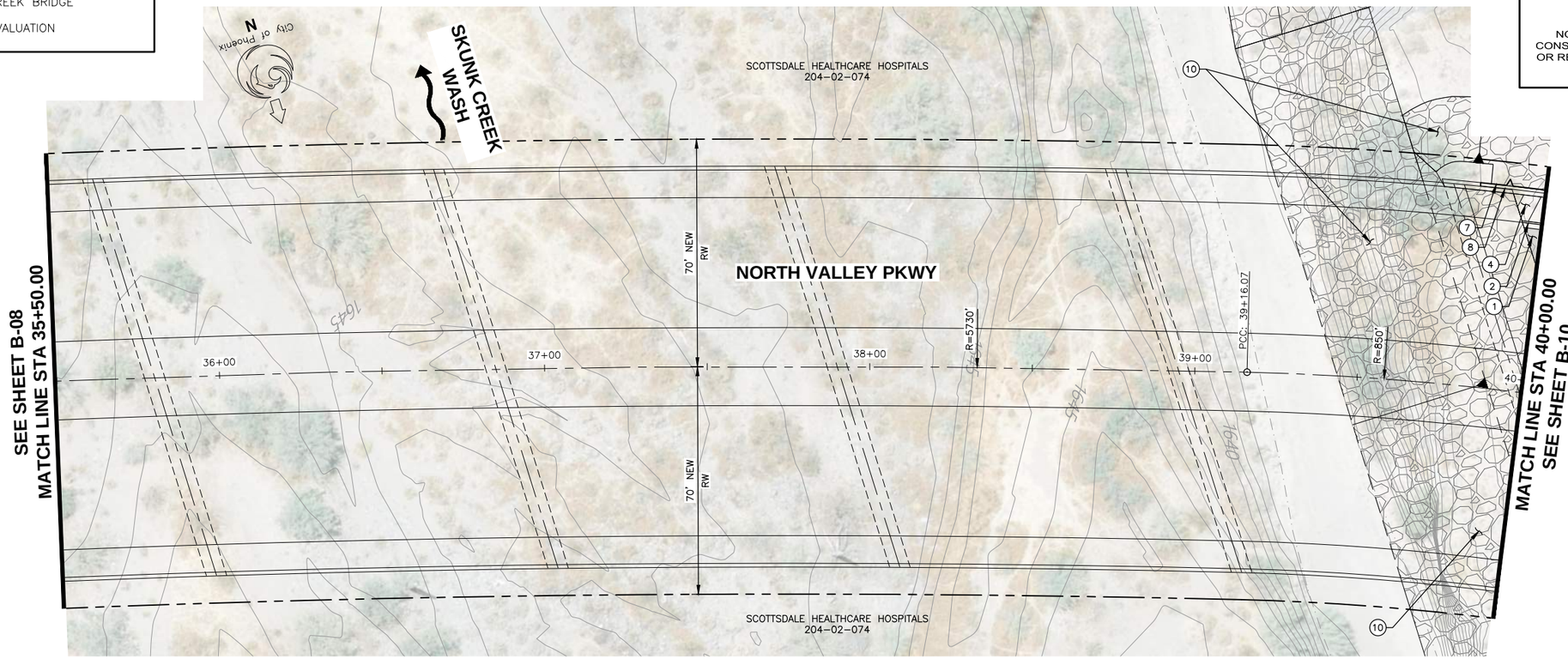
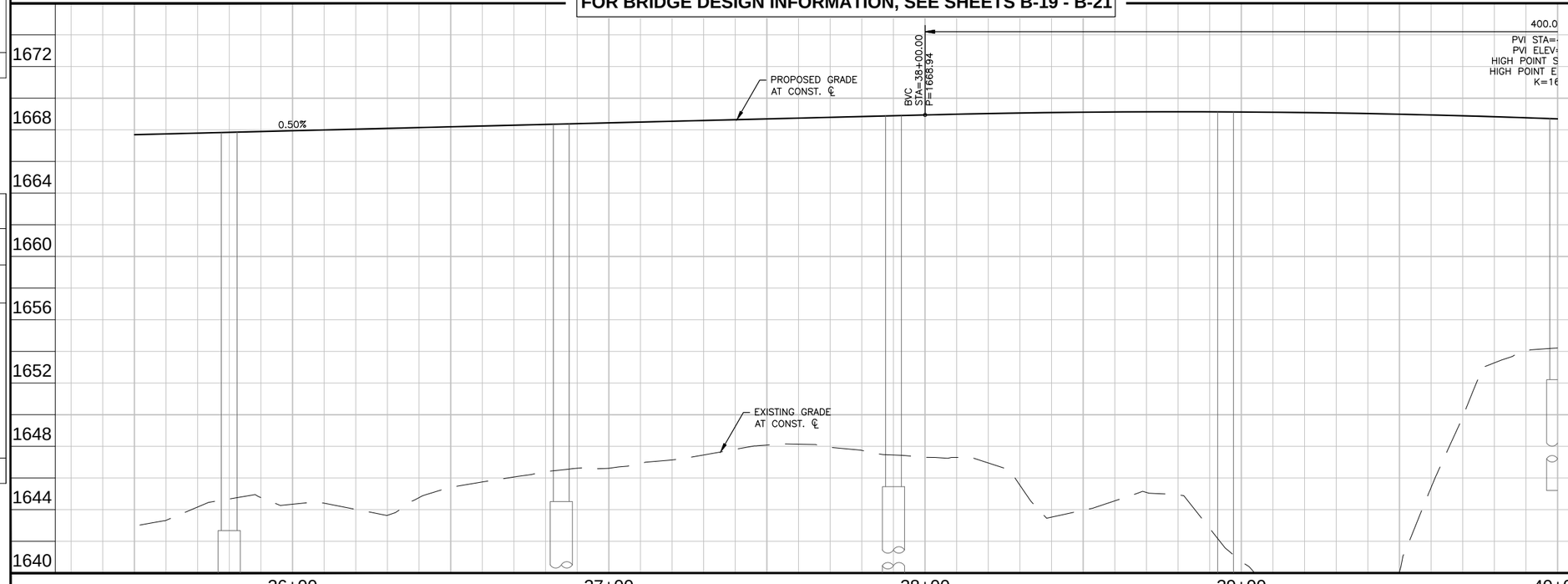
NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION



FOR BRIDGE DESIGN INFORMATION, SEE SHEETS B-19 - B-21



PRELIMINARY

PA

NOT FOR CONSTRUCTION OR RECORDING

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

- M — MATCH EXISTING
- P — PROTECT IN PLACE
- S — SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
(10)	DRAINAGE SLOPE ARMORING FOR BANK PROTECTION, SEE SHEET B-22	-	-

ALTERNATIVE B

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20			
SCALE: 1" = 20'			B-09	X	.

REVISION BY CITY OF PHOENIX

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REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

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NORTH VALLEY PARKWAY

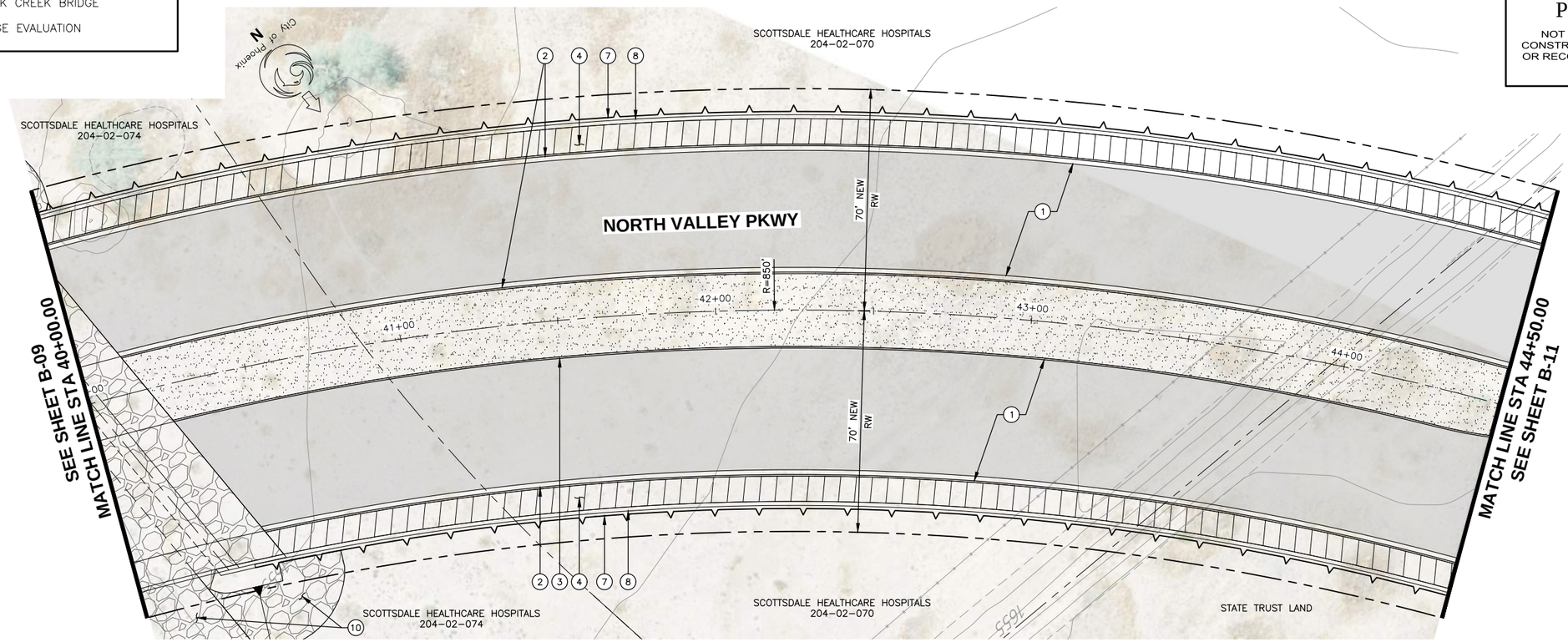
SKUNK CREEK BRIDGE

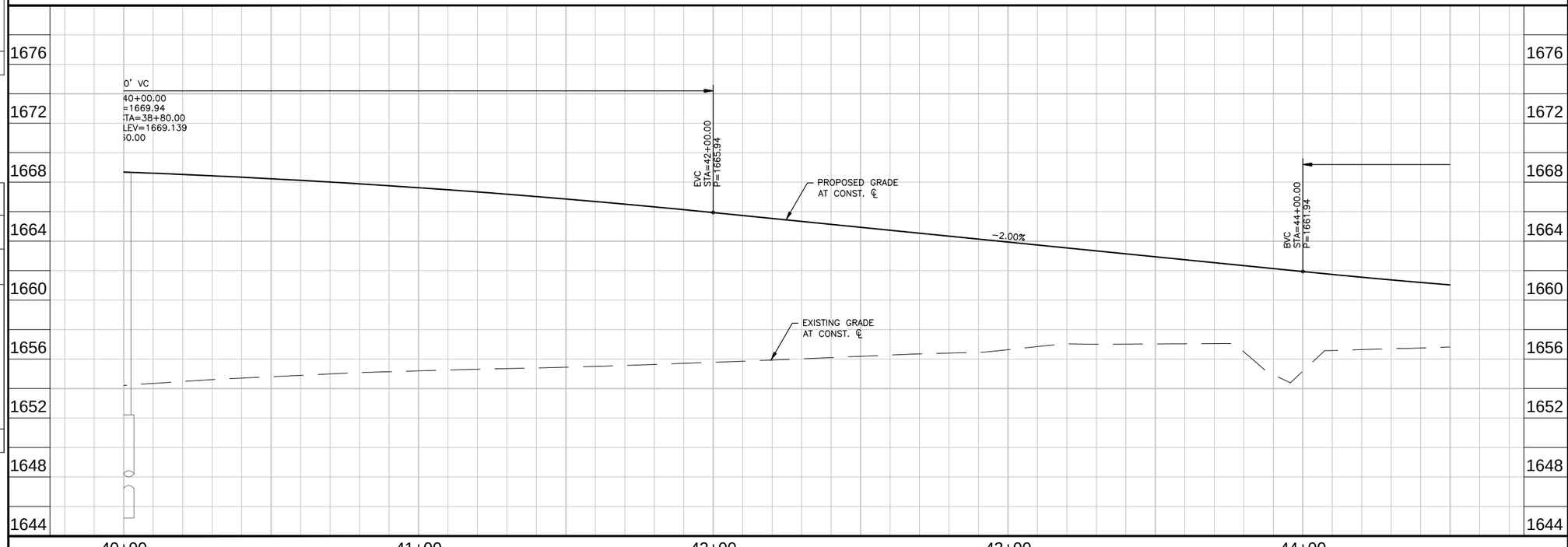
BRIDGE EVALUATION

PRELIMINARY

PA

NOT FOR CONSTRUCTION OR RECORDING





F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL — T.Y.LIN INTERNATIONAL
engineers | planners | scientists — CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

M	MATCH EXISTING
P	PROTECT IN PLACE
S	SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	3,620
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	1306
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	420
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	6,904
7	CONCRETE RETAINING WALL PER ADOT SD 7.01	LF	883
8	32" CONCRETE HALF BARRIER PER ADOT C-10.72	LF	883
10	DRAINAGE SLOPE ARMORING FOR BANK PROTECTION, SEE SHEET B-22	-	-

ALTERNATIVE B

Call at least two full working days before you begin excavation.
ARIZONA 811 — Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

20 0 20 40 60

SCALE: 1" = 20'
VERT: 1" = 4'

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20			
SCALE: 1" = 20'			B-10	X	.

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NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY
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F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

TY LIN INTERNATIONAL T.Y.LIN INTERNATIONAL
engineers | planners | scientists CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

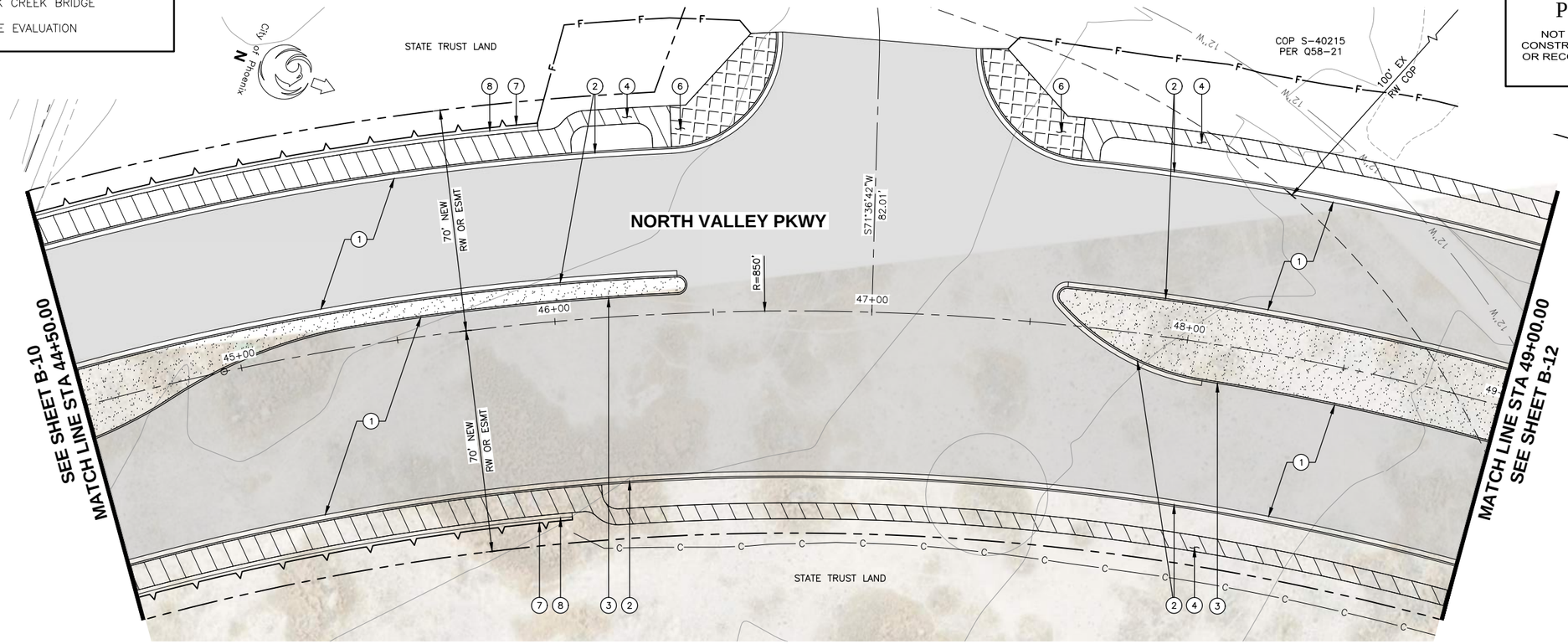
M MATCH EXISTING
P PROTECT IN PLACE
S SAWCUT AND MATCH EXISTING

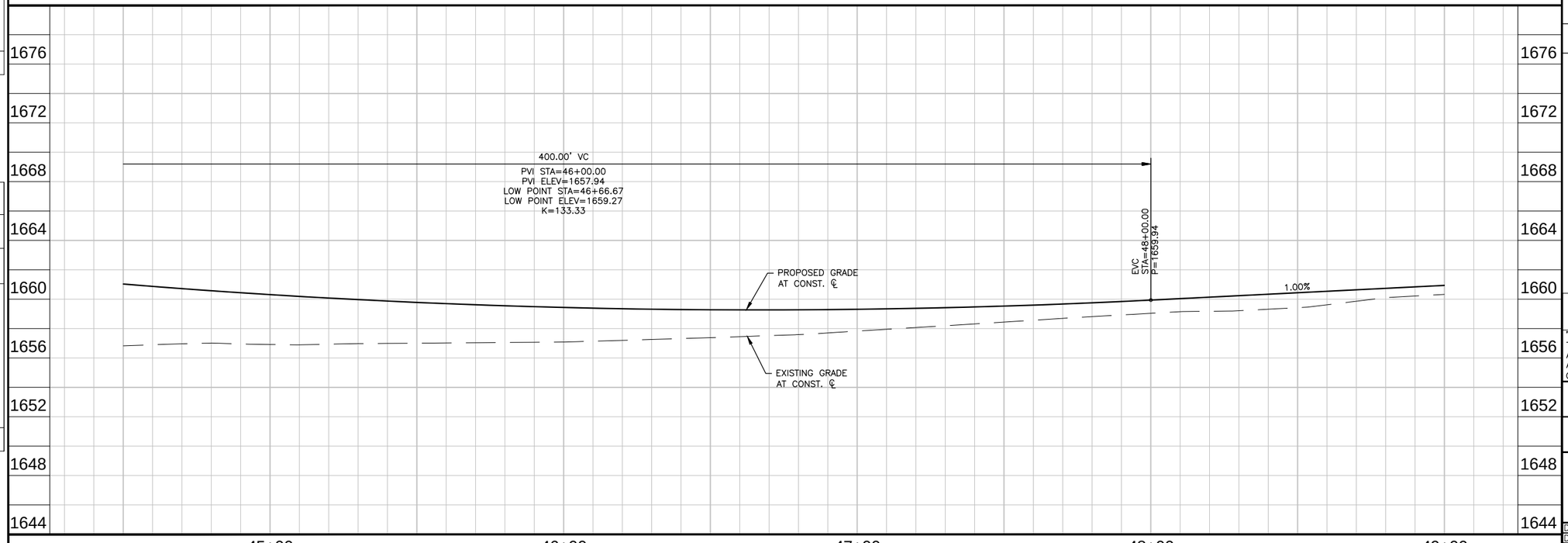
REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	4,739
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	1270
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	293
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	4,136
6	CONCRETE SIDEWALK RAMP PER COP STD DET P1235 OR P1236	SF	1,147
7	CONCRETE RETAINING WALL PER ADOT SD 7.01	LF	300
8	32" CONCRETE HALF BARRIER PER ADOT C-10.72	LF	300





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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20			
SCALE: 1" = 20'			B-11	X	.

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NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

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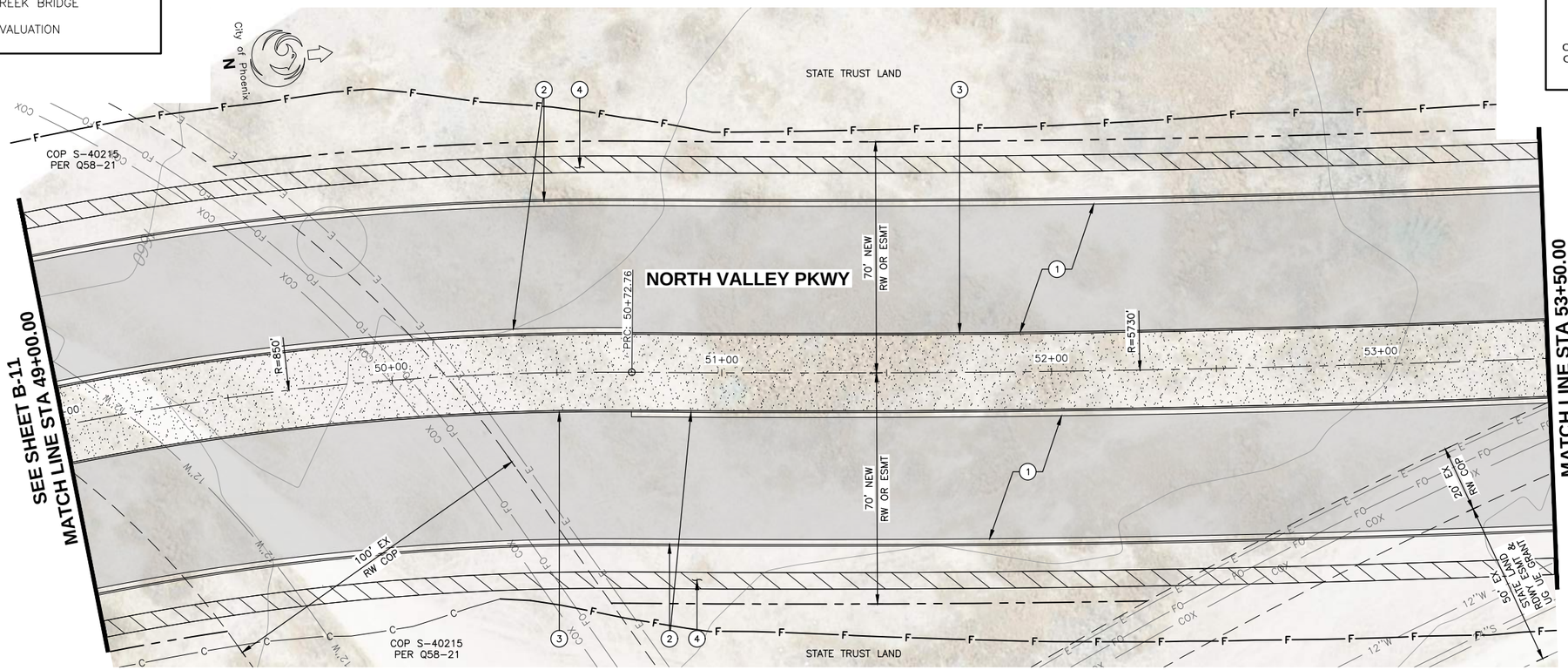

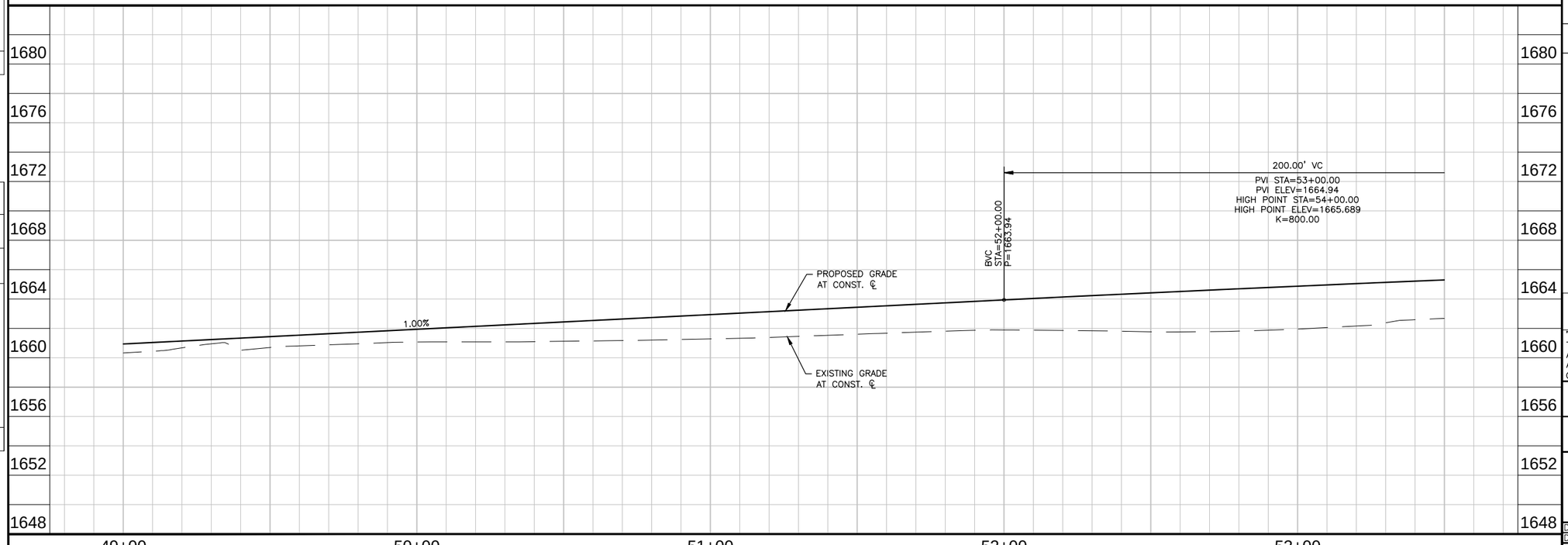

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

M MATCH EXISTING
P PROTECT IN PLACE
S SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	3,775
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	1352
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	447
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	4,500

ALTERNATIVE B

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE:12/20	DATE: 12/20	DATE: 12/20			
SCALE: 1" = 20'			B-12	X	.

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NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

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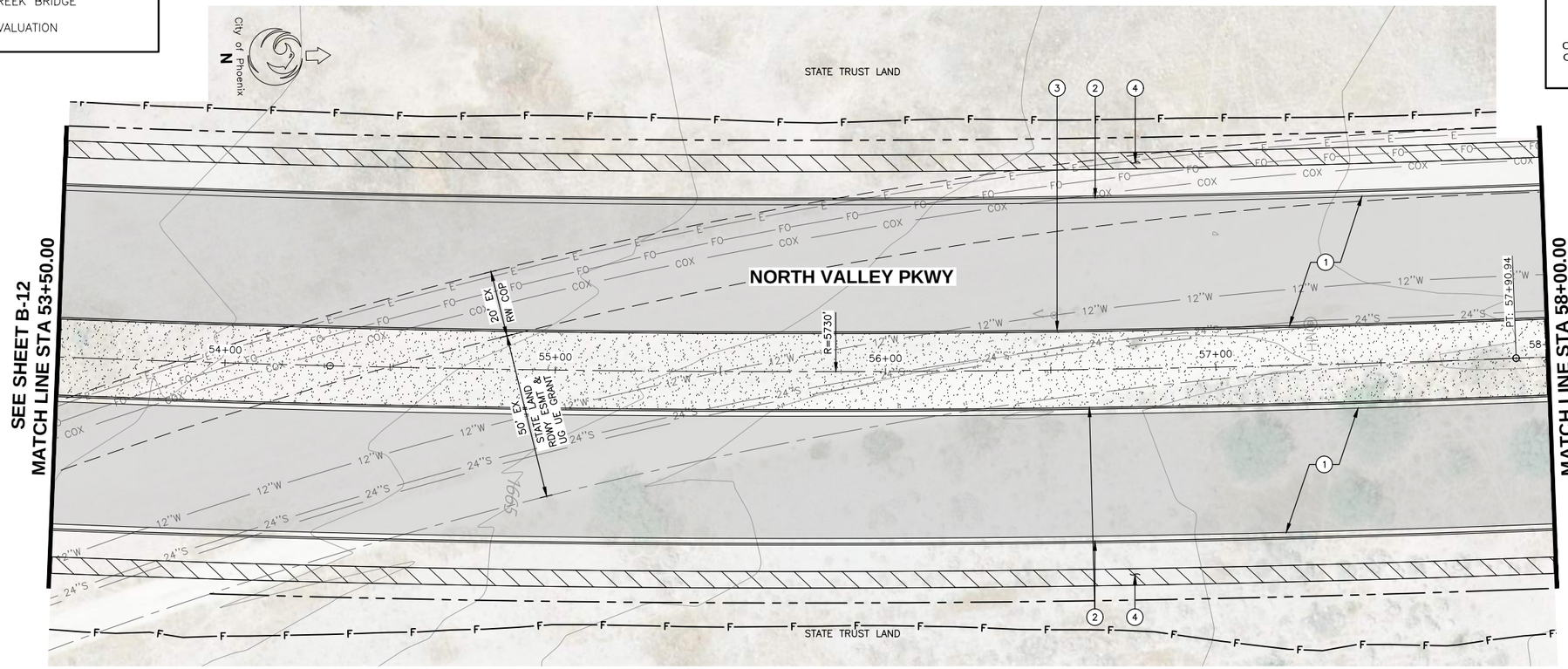

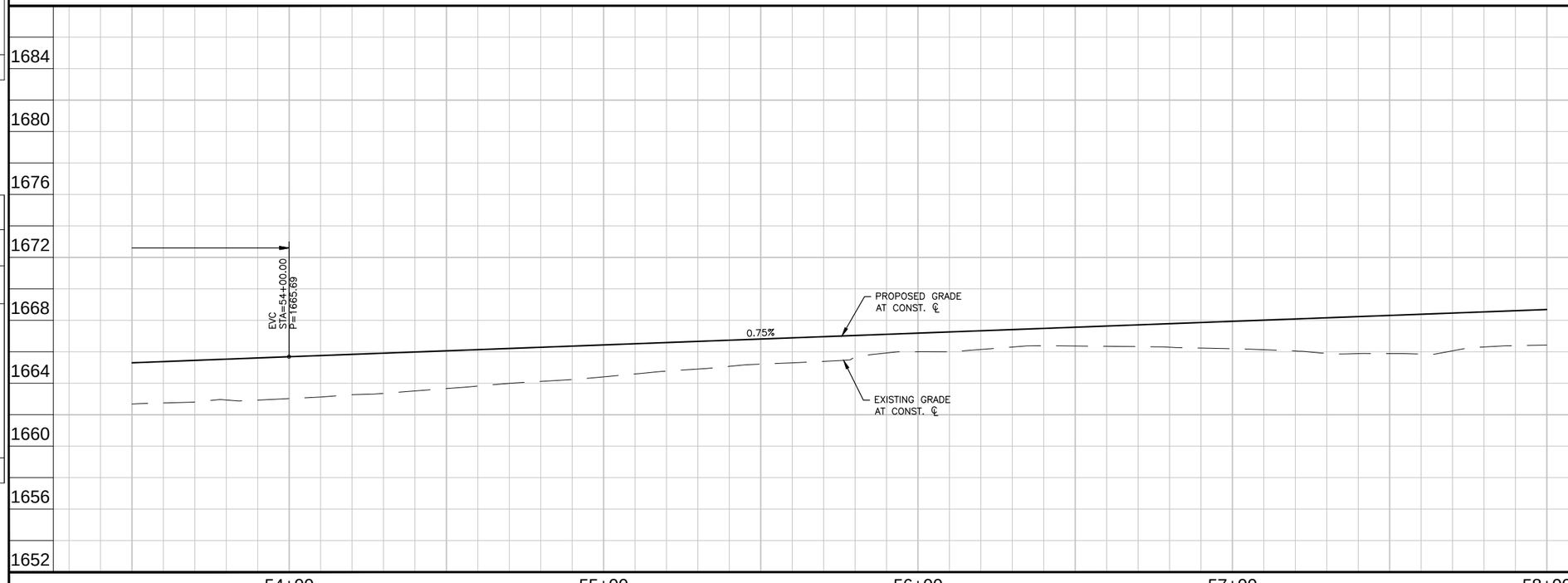

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

M MATCH EXISTING
P PROTECT IN PLACE
S SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	3,836
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	1351
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	449
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	4,500

ALTERNATIVE B

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
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SCALE: 1" = 20'			B-13	X	.

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NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY
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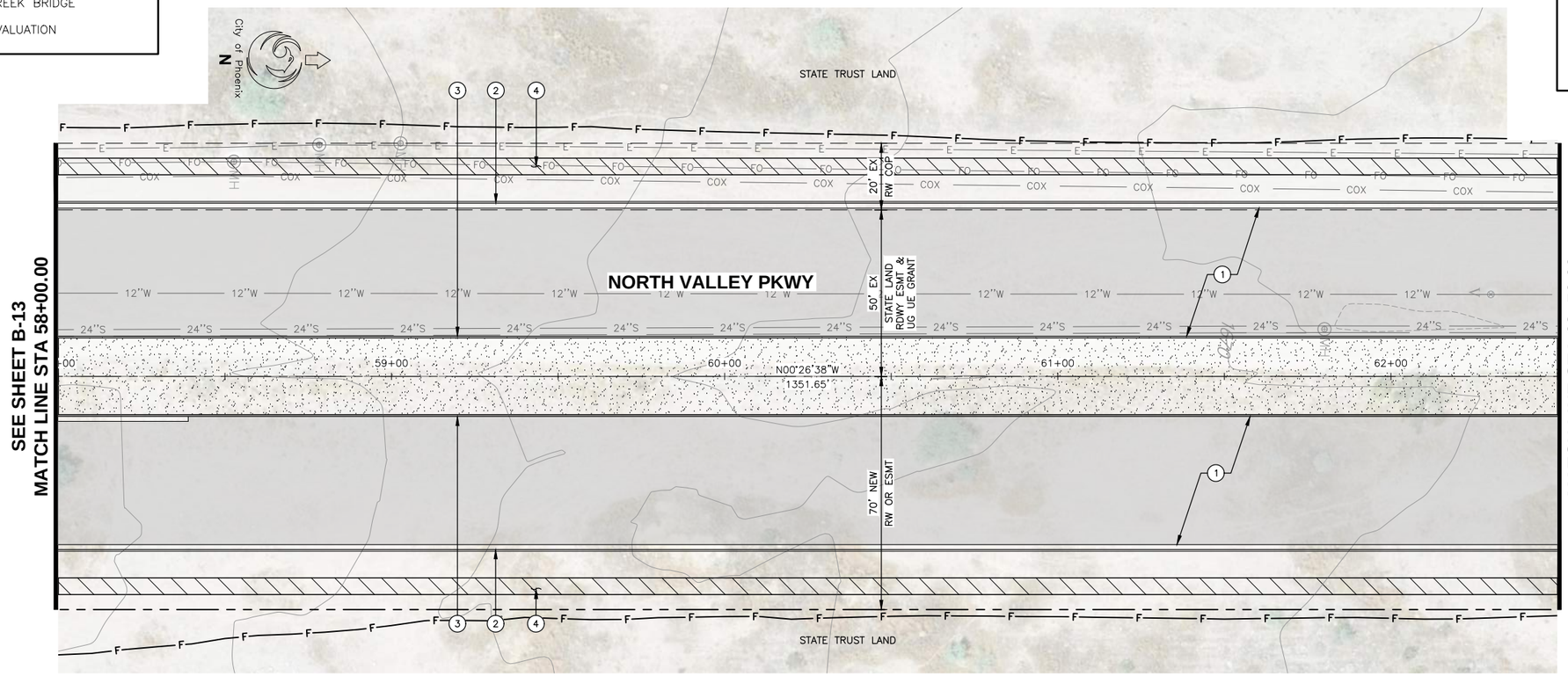

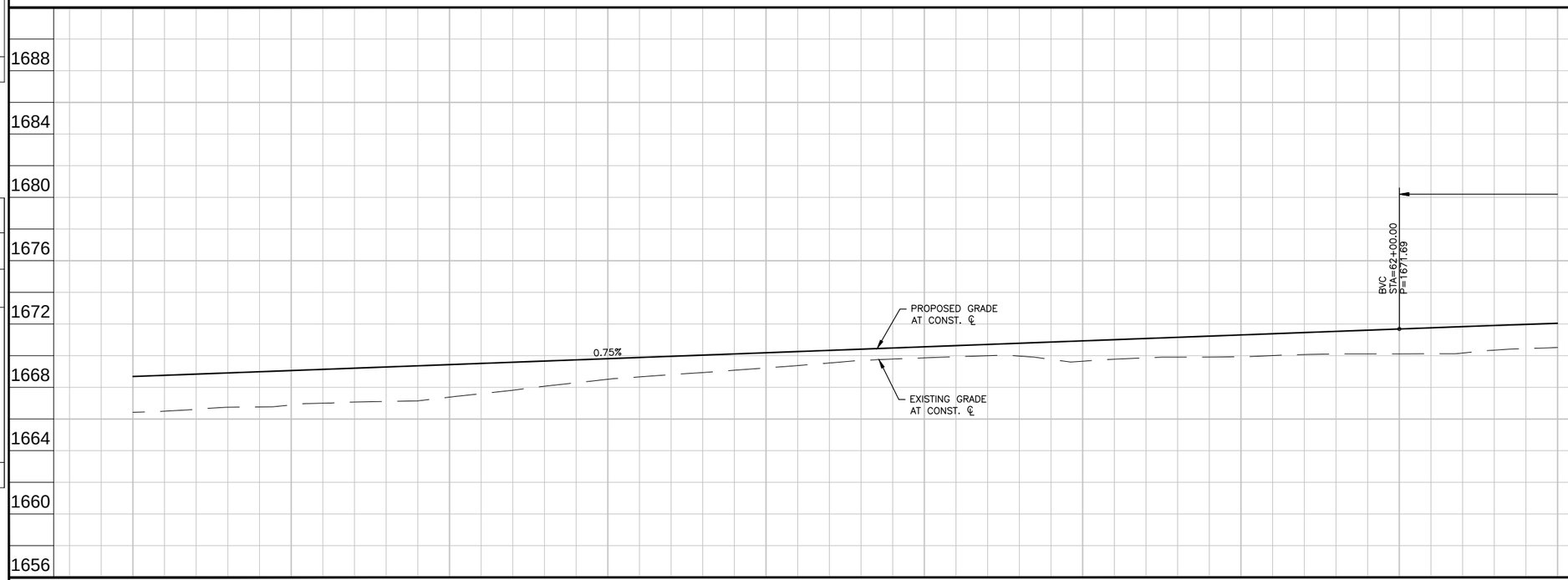

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

M MATCH EXISTING
P PROTECT IN PLACE
S SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	3,844
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	900
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	900
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	4,500

ALTERNATIVE B

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE:12/20	DATE: 12/20	DATE: 12/20			
SCALE: 1" = 20'			B-14	X	.

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NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

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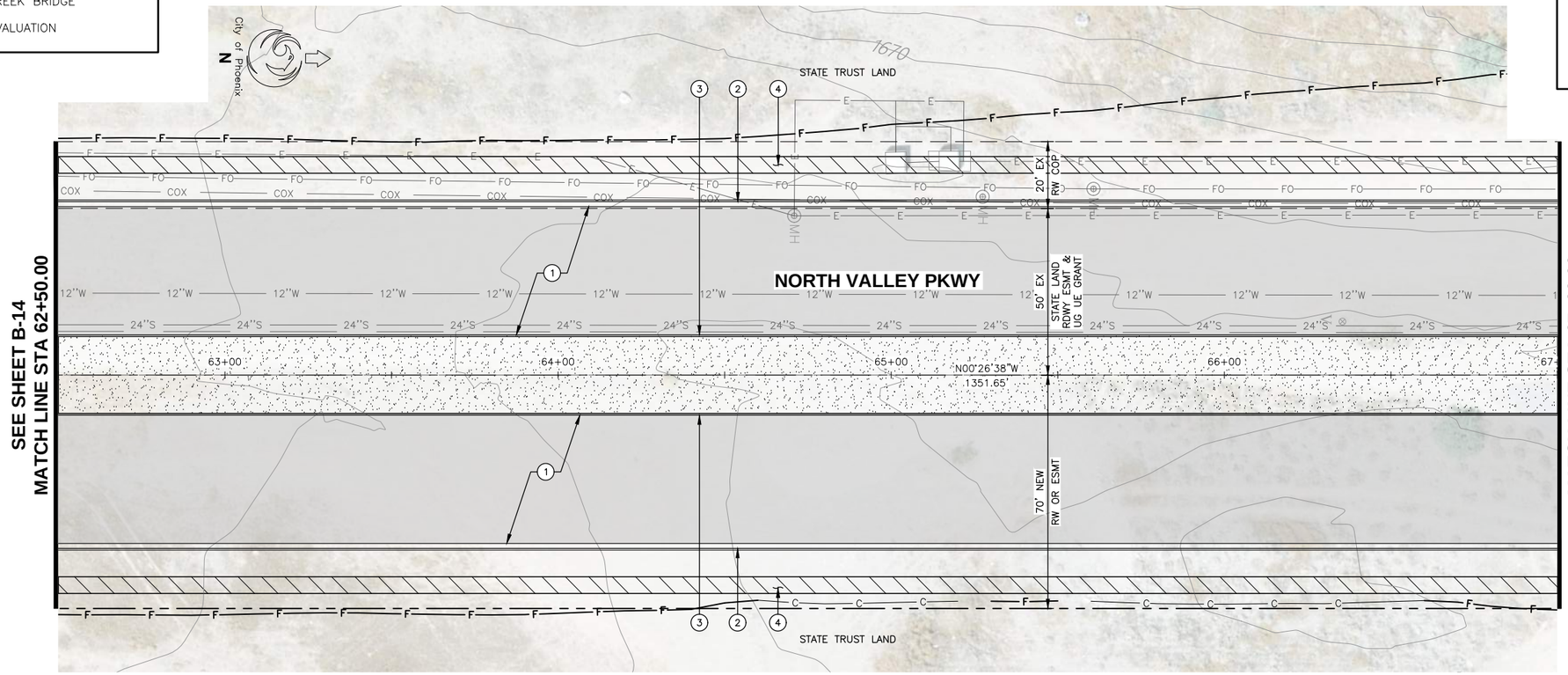

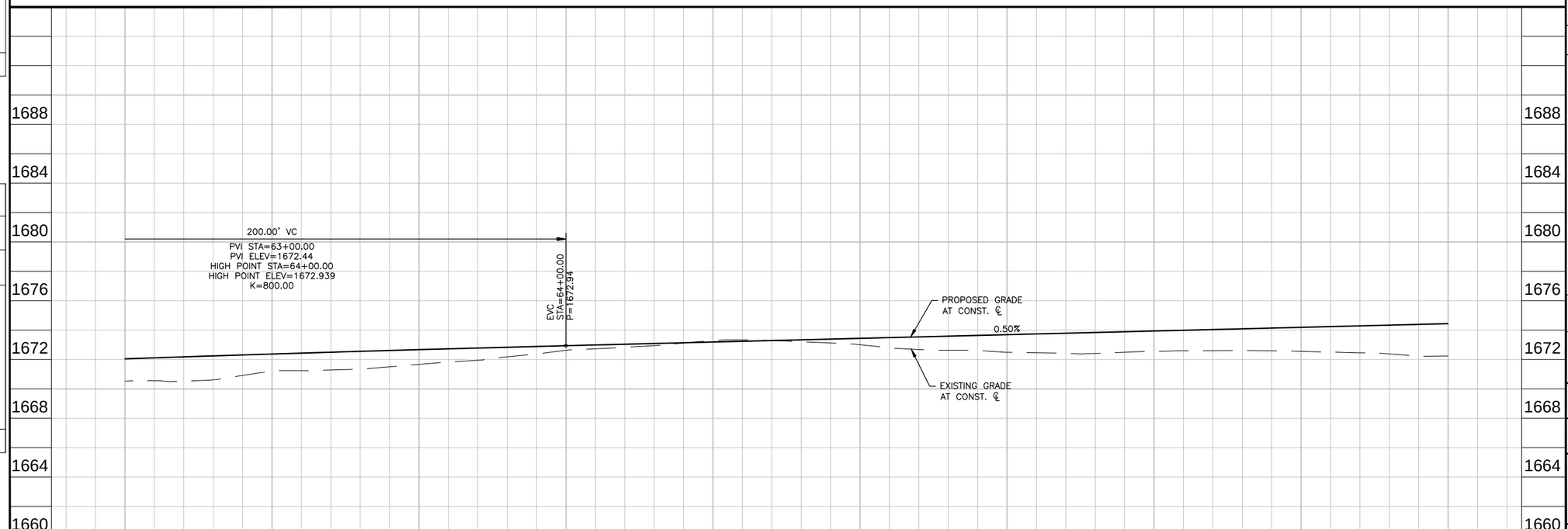

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F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
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T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

M MATCH EXISTING
P PROTECT IN PLACE
S SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	3,850
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	900
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	900
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	4,500

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20	B-15	X	.

SCALE: 1" = 20'

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NORTH VALLEY PARKWAY

SKUNK CREEK BRIDGE

BRIDGE EVALUATION

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DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

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P PROTECT IN PLACE

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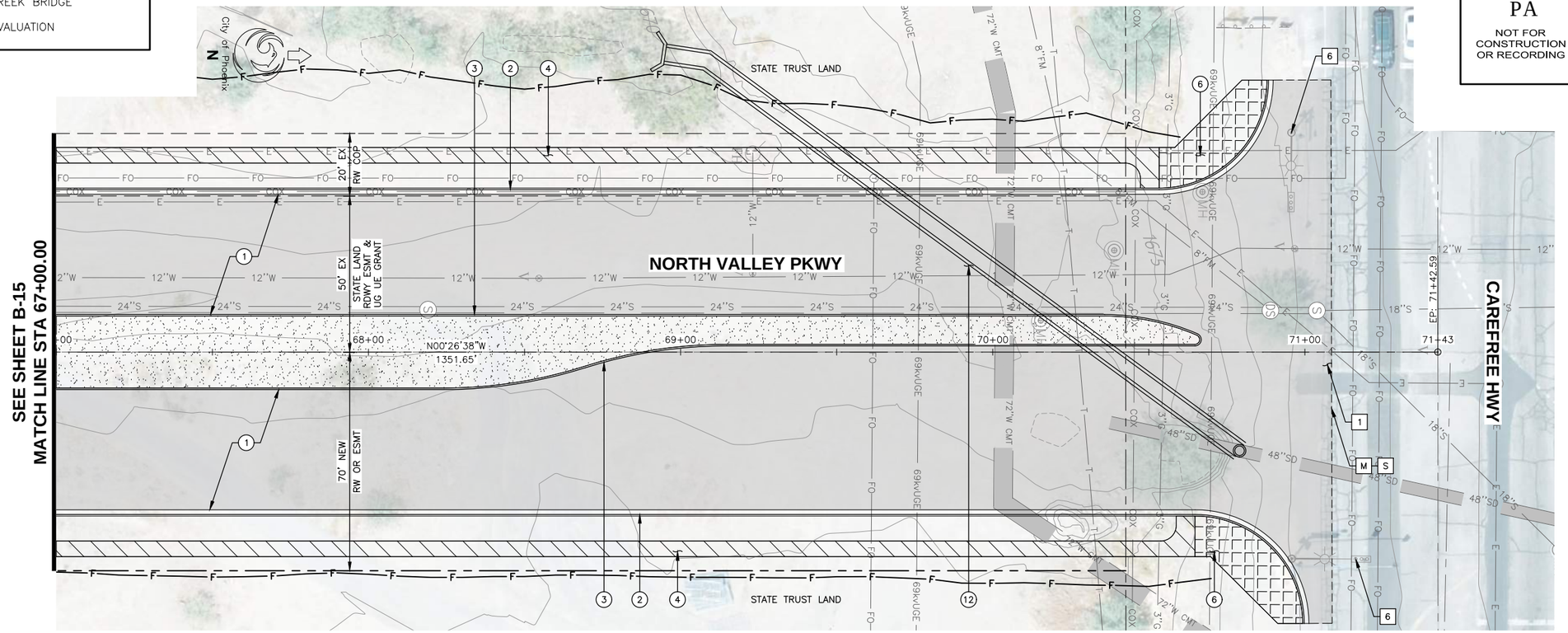

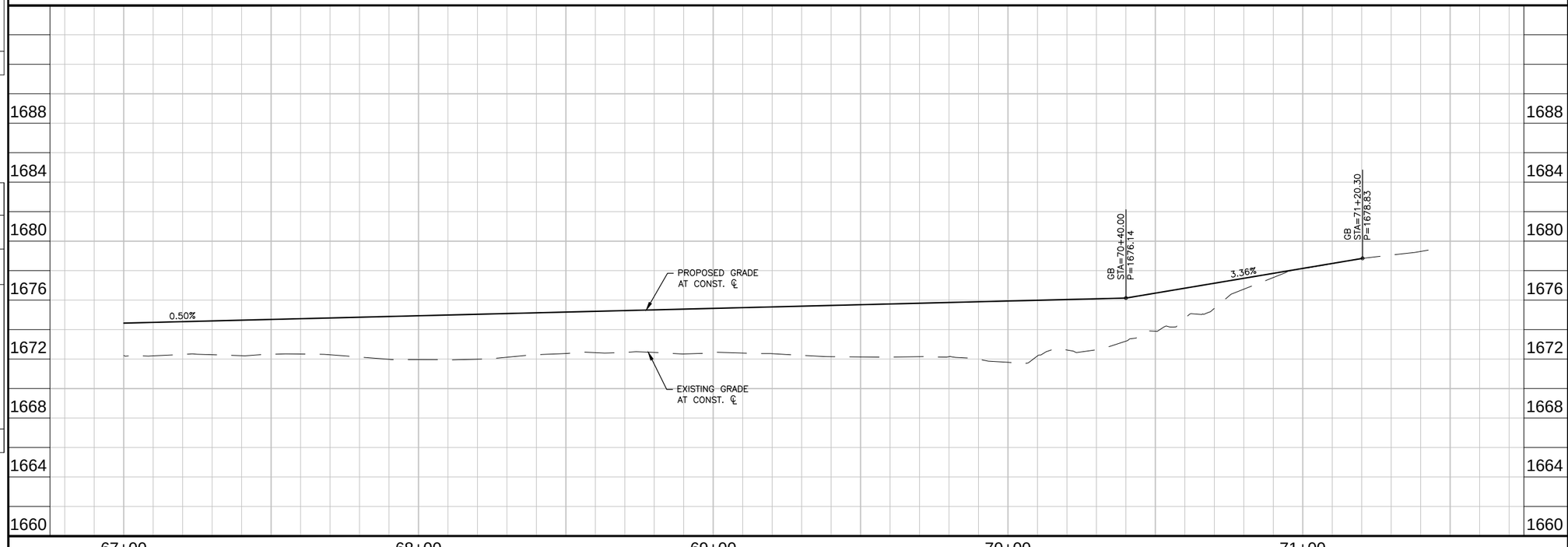

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.
1	REMOVE EXISITNG PAVEMENT	SY	168
6	EXISTING TRAFFIC SIGNALS AND EQUIPMENT	LS	1

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	4,091
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	828
3	SINGLE CURB PER MAG STD. DET. 222, TYPE "A"	LF	444
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	3,697
6	CONCRETE SIDEWALK RAMP PER COP STD DET P1235 OR P1236	SF	1193
9	INSTALL NEW TRAFFIC SIGNAL AND EQUIPMENT	LS	1
12	INSTALL 54" RGRCP STORM DRAIN PIPE & HEADWALL, INC. MANHOLE.	LF	225

ALTERNATIVE B

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20			
SCALE: 1" = 20'			B-16	X	.

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REVISION BY CITY OF PHOENIX

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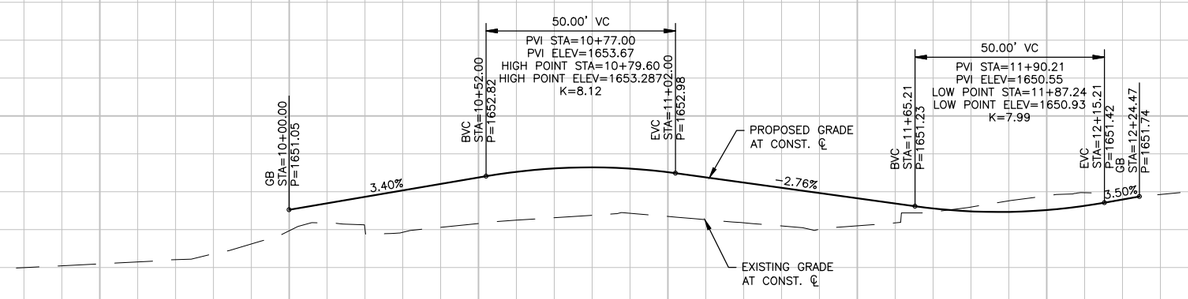
NORTH VALLEY PARKWAY

SKUNK CREEK BRIDGE

BRIDGE EVALUATION

NORTH VALLEY PKWY

SEE SHEET B-06



PRELIMINARY

PA

NOT FOR CONSTRUCTION OR RECORDING

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

TY LIN INTERNATIONAL — T.Y.LIN INTERNATIONAL engineers | planners | scientists — CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

M MATCH EXISTING

P PROTECT IN PLACE

S SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.
1	REMOVE EXISITNG PAVEMENT	SY	4,636
2	EXISTING CONCRETE CURB & GUTTER	LF	1,842
4	EXISTING CONCRETE SIDEWALK, RAMP, DWY, VALLEY GUTTER OR MISC. CONCRETE.	SF	7,098

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	513
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	175
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	961

ALTERNATIVE B

Call at least two full working days before you begin excavation.
ARIZONA 811 — Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

20 0 20 40 60

SCALE: 1" = 20'
VERT: 1" = 4'

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
DATE: 12/20	DATE: 12/20	DATE: 12/20			
SCALE: 1" = 20'			B-17	X	.

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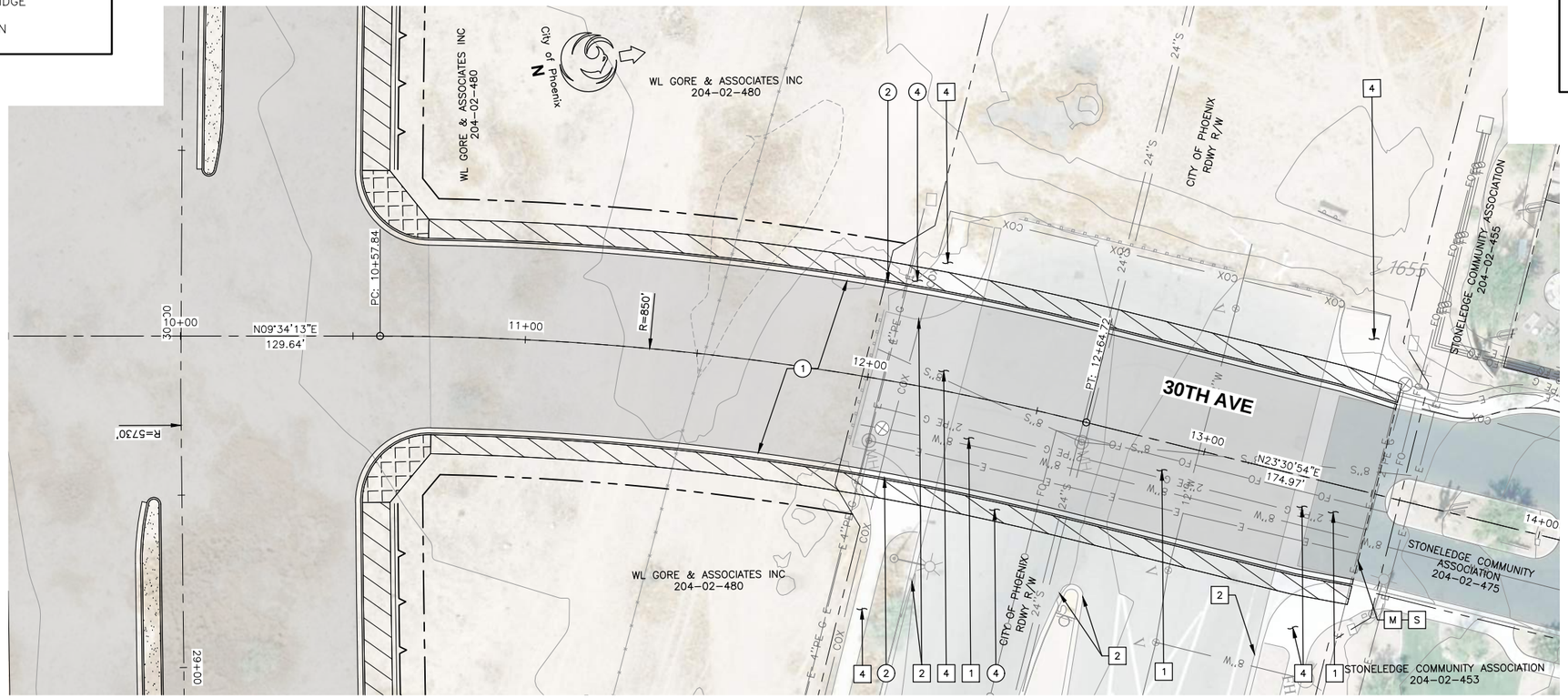
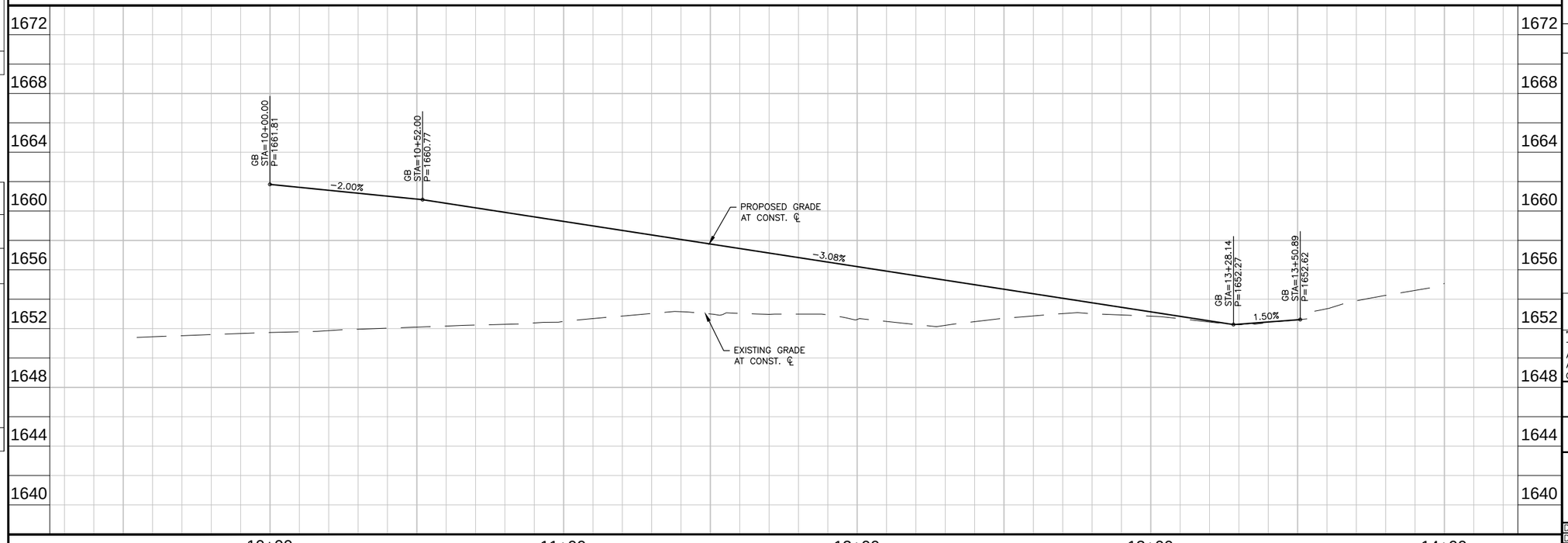
NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

SEE SHEET B-07



NORTH VALLEY PKWY



PRELIMINARY

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TY LIN INTERNATIONAL — T.Y.LIN INTERNATIONAL engineers | planners | scientists — CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 12/20

M MATCH EXISTING
P PROTECT IN PLACE
S SAWCUT AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.
1	REMOVE EXISITNG PAVEMENT	SY	3,611
2	EXISTING CONCRETE CURB & GUTTER	LF	1,233
4	EXISTING CONCRETE SIDEWALK, RAMP, DWY, VALLEY GUTTER OR MISC. CONCRETE.	SF	6,132

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	PAVEMENT SECTION PER TYPICAL SECTIONS. *ACUTAL PVMT SECTION TBD IN FINAL DESIGN	SY	1,639
2	CURB AND GUTTER PER MAG STD. DET. 220-1, TYPE "A"	LF	557
4	CONCRETE SIDEWALK PER COP STD DET P1230	SF	3,066

ALTERNATIVE B

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In Maricopa County: (602) 263-1100

20 0 20 40 60
SCALE: 1" = 20'
VERT: 1" = 4'

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PLAN & PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
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NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY

PA

NOT FOR CONSTRUCTION OR RECORDING

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: AO	DR: JJD	CK: JRP	DATE: 12/20

REVISION BY CITY OF PHOENIX

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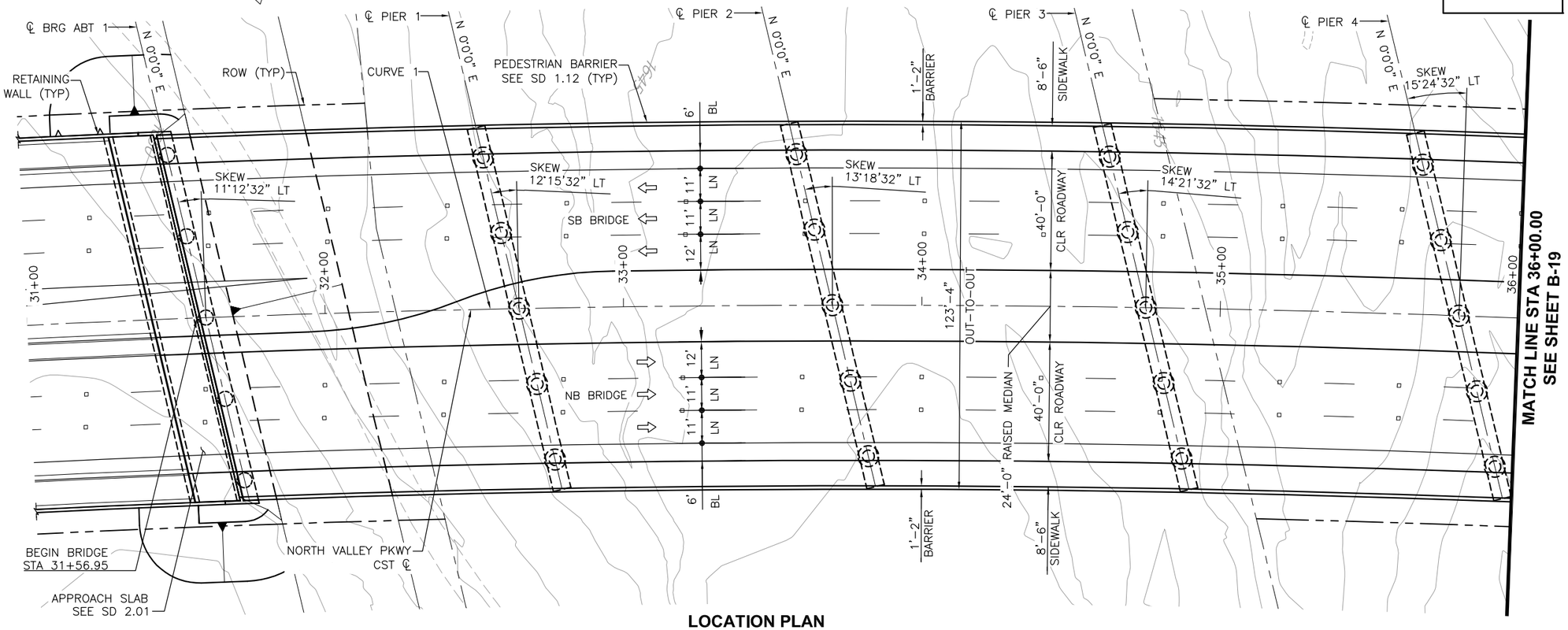
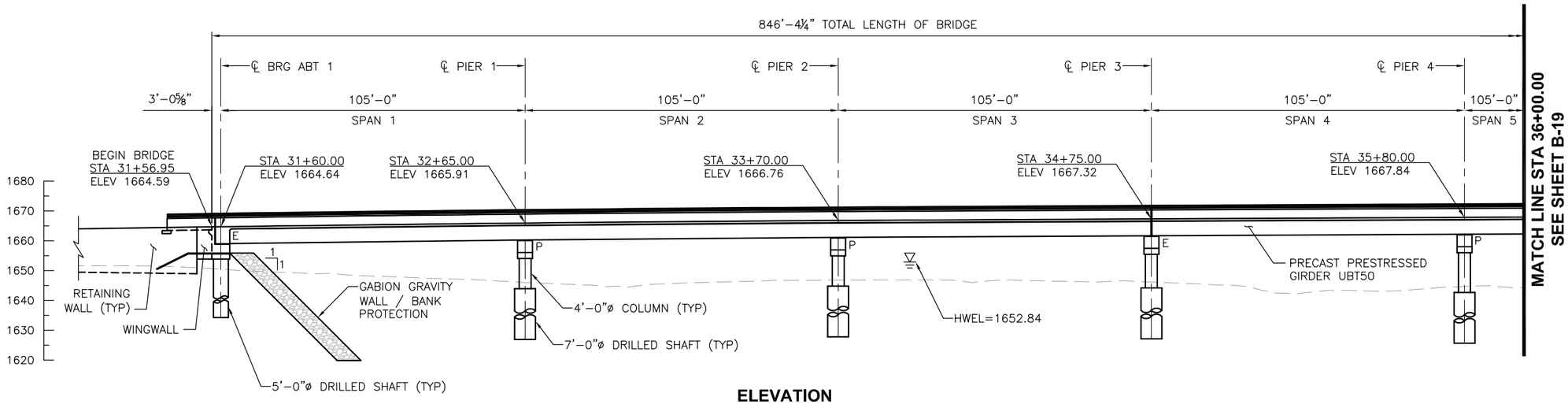


LOCATION PLAN

8 SPAN PRECAST PRESTRESSED CONCRETE GIRDER BRIDGE
SKEW VARIES
SCALE: 1" = 20'-0"



ELEVATION

(STATIONS AND DIMENSIONS TAKEN ALONG NORTH VALLEY PKWY CST ℄)
SCALE: 1" = 20'-0"

Call at least two full working days before you begin excavation.
ARIZONA 811 Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

ALTERNATIVE B

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BRIDGE PLAN & ELEVATION

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: JJD	DES: AO	CK: JRP	SHEET NO:	TOTAL SHEETS	AS BUILT
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SCALE:					

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NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY
PA
NOT FOR CONSTRUCTION OR RECORDING

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: AO	DR: JJD	CK: JRP	DATE: 12/20

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REVISION BY CITY OF PHOENIX

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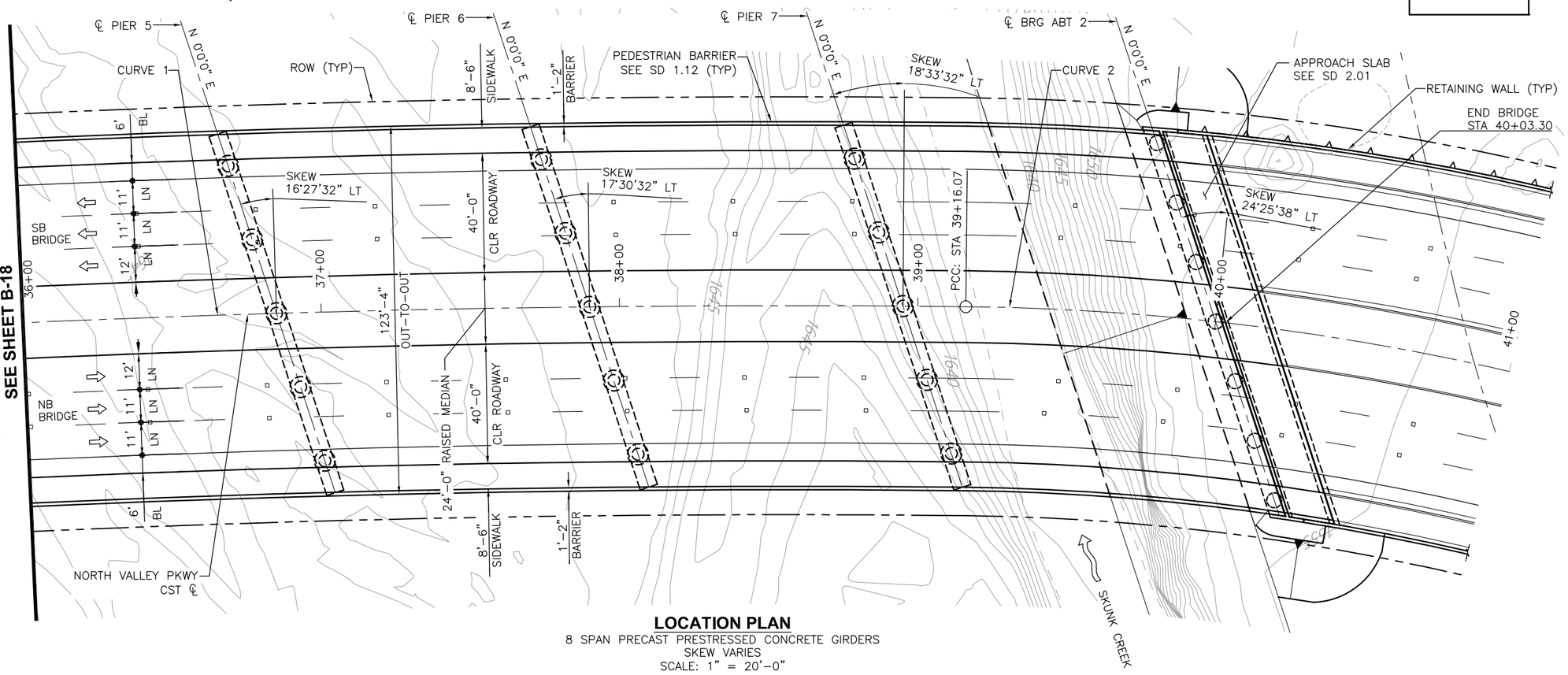
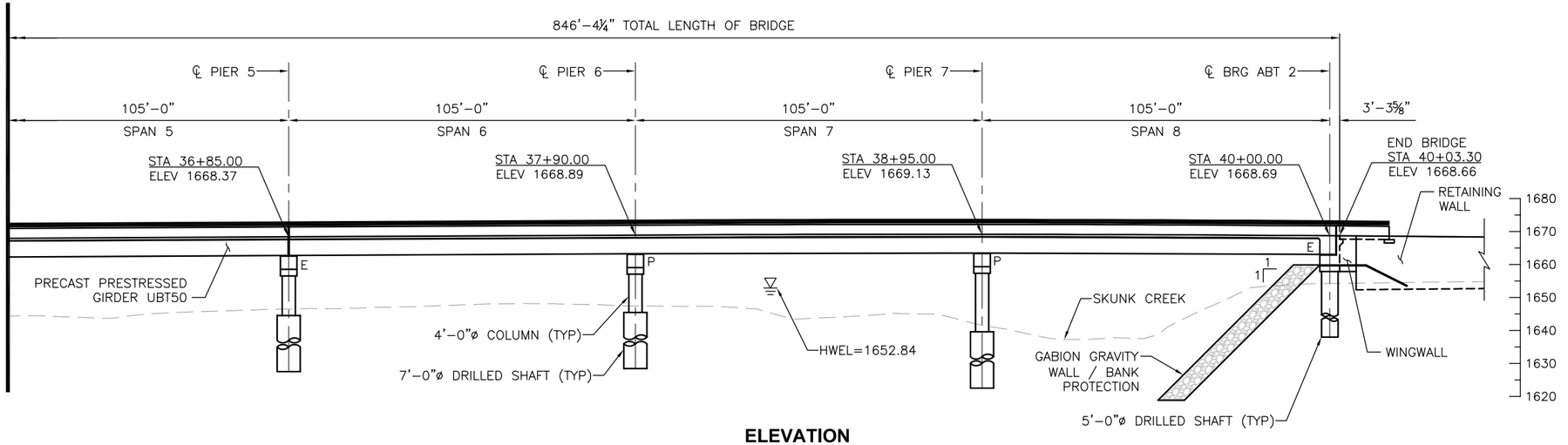


LOCATION PLAN

8 SPAN PRECAST PRESTRESSED CONCRETE GIRDERS
SKEW VARIES
SCALE: 1" = 20'-0"



ELEVATION

(STATIONS AND DIMENSIONS TAKEN ALONG NORTH VALLEY PKWY CST ℄)
SCALE: 1" = 20'-0"

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BRIDGE PLAN & ELEVATION

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: JJD	DES: AO	CK: JRP	SHEET NO:	TOTAL SHEETS	AS BUILT
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NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY
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F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: AO	DR: JJD	CK: JRP	DATE: 12/20

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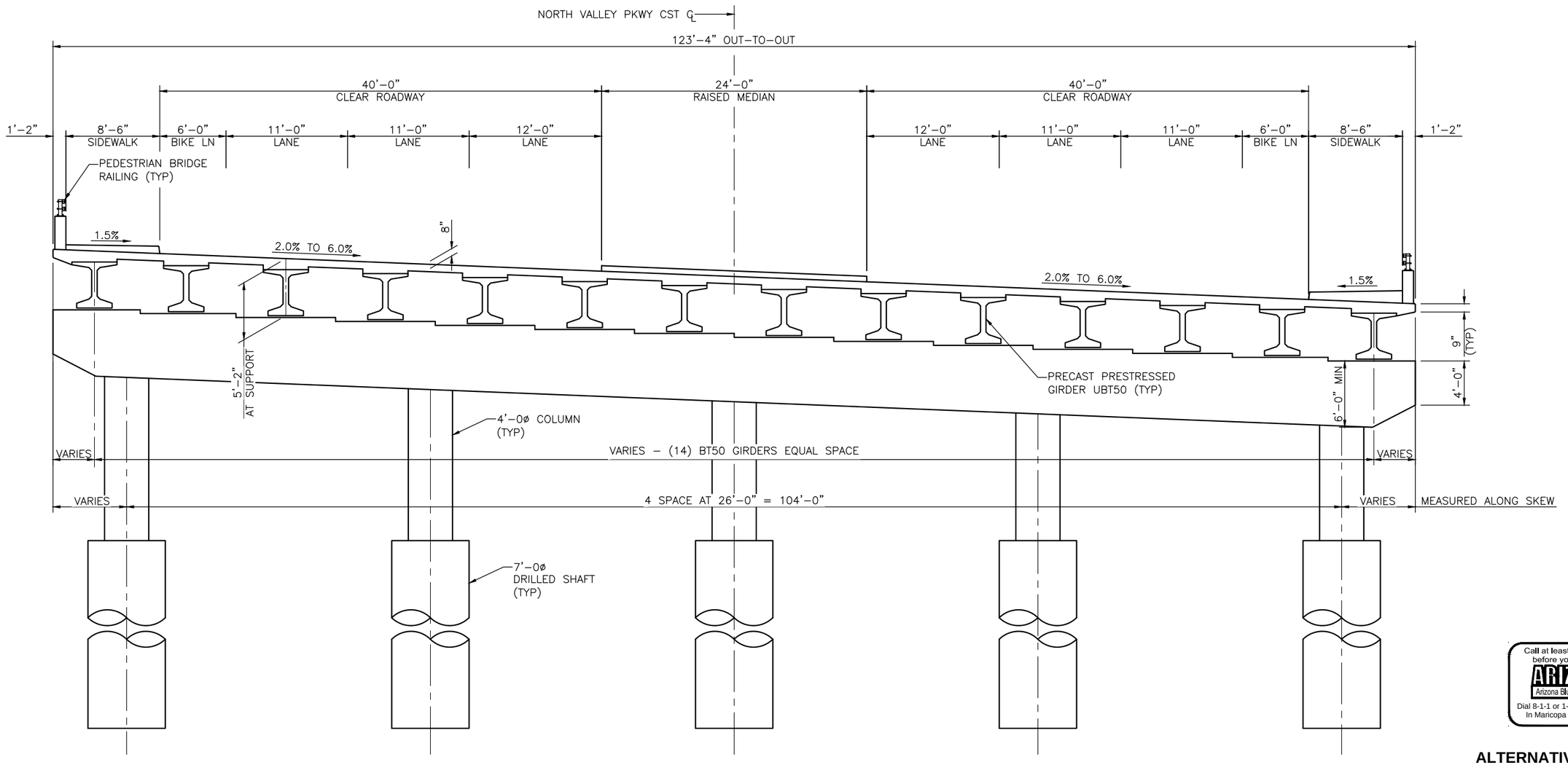

TYPICAL SECTION
(LOOKING UPSTATION)
(DIMENSIONS ARE TAKEN PERPENDICULAR TO THE CST ℄ UNLESS NOTED)
SCALE: 1" = 5'–0"

Call at least two full working days before you begin excavation.
ARIZONA 811 Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
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ALTERNATIVE B

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BRIDGE TYPICAL SECTION

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: JJD	DES: AO	CK: JRP	SHEET NO:	TOTAL SHEETS	AS BUILT
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NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE
BRIDGE EVALUATION

PRELIMINARY
PA
NOT FOR CONSTRUCTION OR RECORDING

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85110173-1		.	.

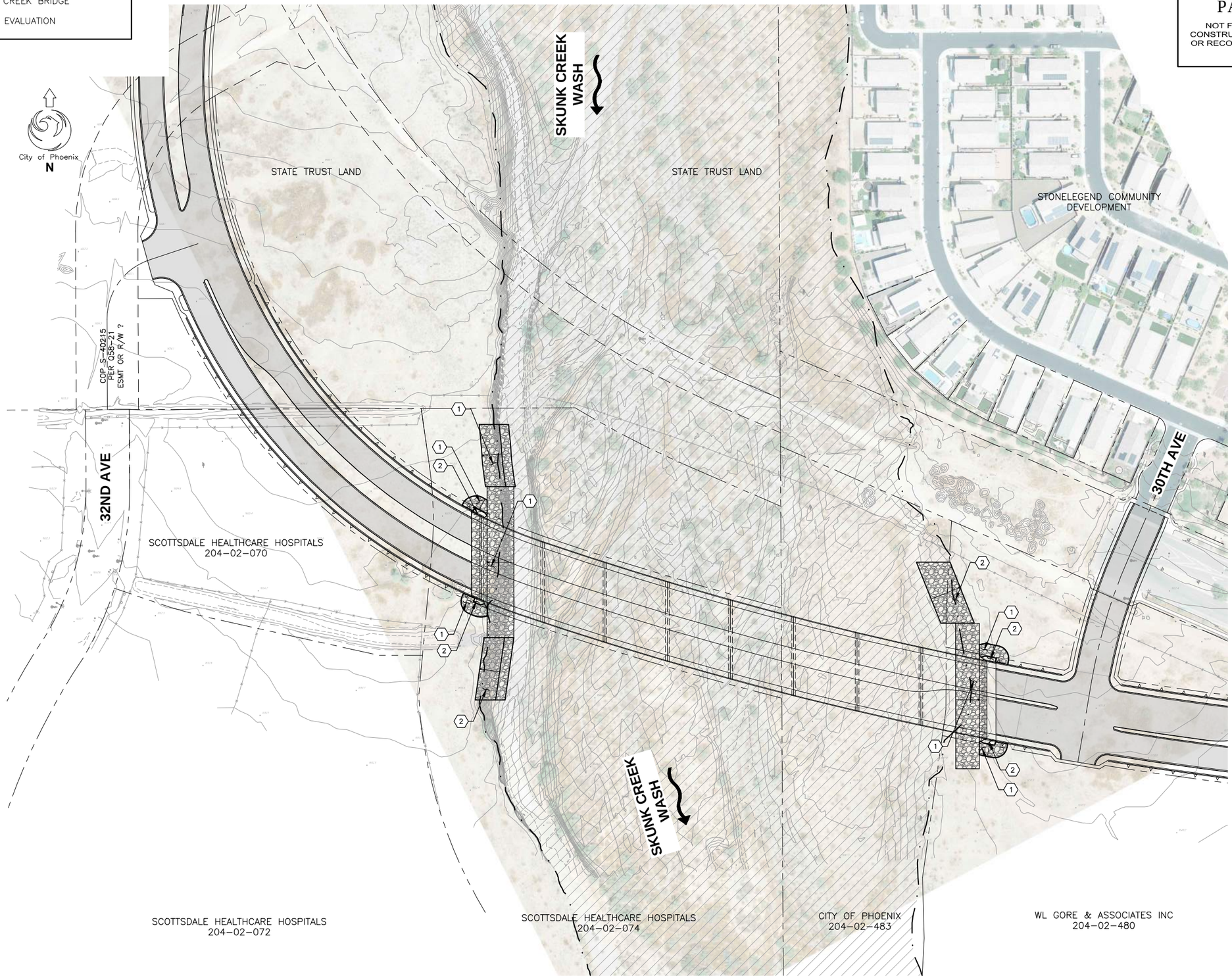
T.Y. LIN INTERNATIONAL engineers | planners | scientists — T.Y.LIN INTERNATIONAL CONSULTING ENGINEER

DES: RH,DR	DR: DR	CK: JB	DATE: 6/21

M	MATCH EXISTING
P	PROTECT IN PLACE
S	SAWCUT AND MATCH EXISTING

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	GABIONS - BANK PROTECTION	CY	13,000
2	EARTHWORK / FILL - BANK PROTECTION	CY	1,033



LEGEND

EXISTING FLOODPLAIN LIMITS

ALTERNATIVE B

Call at least two full working days before you begin excavation.
ARIZONA 811 Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

80 0 80 160 240
SCALE: 1" = 80'

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BANK PROTECTION

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

NORTH VALLEY PARKWAY
SKUNK CREEK BRIDGE EVALUATION
ST85110173-1

DR: DR	DES: RH,DR	CK: JB	SHEET NO:	TOTAL SHEETS	AS BUILT
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REVISION BY CITY OF PHOENIX

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APPENDIX B –SHORT AND LONG BRIDGE ALTERNATIVE COST ESTIMATES

ALTERNATIVE 1 - SHORT BRIDGE SPANNING FLOODWAY

ST85100173 -1 NORTH VALLEY PARKWAY BRIDGE CROSSING SKUNK CREEK

Item Description	Unit of Measure	Quantity	Unit Price or Cost	Sub Total Amount
REMOVE EXISTING ASPHALT PAVEMENT	SY	201	$ 6.00	$ 1,206
REMOVE EXISTING CONCRETE HEADWALL FOR EXISTING 54" CULVERT	EA	1	$ 1,500.00	$ 1,500
FILL (BORROW) MATERIAL FOR ROADWAY**	CY	35,550	$ 12.00	$ 426,600
FILL (BORROW) MATERIAL FOR DRAINAGE**	CY	13,200	$ 15.00	$ 198,000
SUBGRADE PREPARATION	SY	29,135	$ 12.00	$ 349,621
NEW PAVEMENT SECTION (ASSUMING 5" AC ON 12" ABC)	SY	29,135	$ 40.00	$ 1,165,404
CONCRETE CURB AND GUTTER	LF	8,904	$ 14.00	$ 124,656
CONCRETE SINGLE CURB	LF	4,337	$ 15.00	$ 65,055
CONCRETE SIDEWALK (INCL. RAMPS)	SF	36,563	$ 6.00	$ 219,378
CONCRETE RETAINING WALL	LF	1,424	$ 400.00	$ 569,600
42" CONCRETE HALF BARRIER	LF	1,424	$ 125.00	$ 178,000
SAFETY RAIL	LF	1,424	$ 40.00	$ 56,960
GABION GRAVITY RETAINING WALL	CY	14,700	$ 200.00	$ 2,940,000
NEW 24" RGRCP PIPE CULVERT	LF	170	$ 175.00	$ 29,750
NEW CONCRETE HEADWALL FOR 24" PIPE CULVERT	EA	2	$ 2,500.00	$ 5,000
EXTEND EXISTING 54" PIPE CULVERT	LF	223	$ 350.00	$ 78,050
NEW CONCRETE HEADWALL FOR 54" CULVERT	EA	1	$ 4,500.00	$ 4,500
NEW MANHOLE FOR 54" CULVERT EXTENSION	EA	2	$ 3,500.00	$ 7,000
REMOVE AND REPLACE TRAFFIC SIGNAL	L. SUM	1	$ 400,000.00	$ 400,000
CONTRACTOR QUALITY CONTROL	L. SUM	1	$ 100,000.00	$ 100,000
CONSTRUCTION SURVEYING AND LAYOUT	L. SUM	1	$ 50,000.00	$ 50,000
			SUBTOTAL:	**$ 6,970,281**

BRIDGE STRUCTURE ITEMS

Item Description	Unit of Measure	Quantity	Unit Price or Cost	Sub Total Amount
STRUCTURAL CONCRETE (CLASS S) (F'C = 4,500)	CU.YD.	1,579	$ 470.00	$ 742,192
STRUCTURAL CONCRETE (CLASS S) (F'C = 3,500)	CU.YD.	1,719	$ 620.00	$ 1,066,089
COMBINATION PEDESTRIAN-TRAFFIC RAILING	L.FT.	850	$ 600.00	$ 510,000
APPROACH SLAB	SQ FT	4,599	$ 24.00	$ 110,370
REINFORCING STEEL	LB.	814,852	$ 1.20	$ 977,823
BT58 PRECAST BEAM	L.FT.	5,525	$ 350.00	$ 1,933,687
EXPANSION JOINT	L.FT.	457	$ 300.00	$ 136,950
60" DRILLED SHAFT	L.FT.	1,085	$ 630.00	$ 683,550
84" DRILLED SHAFT	L.FT.	1,275	$ 1,230.00	$ 1,568,250
			BRIDGE SUBTOTAL:	**$7,728,911**
			TOTAL BRIDGE SQUARE FOOTAGE:	49,483
			BRIDGE COST/SF =	**$156.19**
			SUBTOTAL:	**$ 14,699,192**
			SUBTOTAL W/ 4% ESCALATION RATE:	**$ 15,287,159**
MOBILIZATION	COST	5%		$ 764,358
TRAFFIC CONTROL & PAVEMENT MARKING	COST	2%		$ 305,743
EROSION CONTROL	L. SUM	1	$ 40,000.00	$ 40,000
PUBLIC RELATIONS	L. SUM	1	$ 10,000.00	$ 10,000
			SUBTOTAL:	**$ 16,407,261**
UNACCOUNTED ITEMS	COST	15%	$2,461,089	$ 2,461,089
UTILITY RELOCATIONS	L. SUM	1	$350,000	$ 350,000
CONSTRUCTION ENGINEERING	COST	10%		$ 1,640,726
CONSTRUCTION CONTINGENCY	COST	5%		$ 820,363
			TOTAL*:	**$ 21,679,439**

* Excludes R/W Acquisition Costs

** Unfactored Earthwork Values

ALTERNATIVE 2 - LONG BRIDGE SPANNING FLOODPLAIN

ST85100173 -1 NORTH VALLEY PARKWAY BRIDGE CROSSING SKUNK CREEK

Item Description	Unit of Measure	Quantity	Unit Price or Cost	Sub Total Amount
REMOVE EXISTING ASPHALT PAVEMENT	SY	12,742	$ 6.00	$ 76,450
REMOVE EXISTING CONCRETE SINGLE CURB/CURB & GUTTER	LF	4,620	$ 5.00	$ 23,100
REMOVE EXISTING CONCRETE SIDEWALK/DRIVEWAY	SF	20,149	$ 3.00	$ 60,447
REMOVE EXISTING CONCRETE HEADWALL FOR EXISTING 54" CUL\	EA	1	$ 1,500.00	$ 1,500
FILL (BORROW) MATERIAL FOR ROADWAY**	CY	59,500	$ 12.00	$ 714,000
FILL (BORROW) MATERIAL FOR DRAINAGE**	CY	1,050	$ 15.00	$ 15,750
SUBGRADE PREPARATION	SY	44,883	$ 12.00	$ 538,593
NEW PAVEMENT SECTION (ASSUMING 5" AC ON 12" ABC)	SY	44,883	$ 40.00	$ 1,795,311
CONCRETE CURB AND GUTTER	LF	12,730	$ 14.00	$ 178,220
CONCRETE SINGLE CURB	LF	4,902	$ 15.00	$ 73,530
CONCRETE SIDEWALK (INCL. RAMPS)	SF	56,919	$ 6.00	$ 341,514
CONCRETE RETAINING WALL	LF	2,134	$ 400.00	$ 853,600
42" CONCRETE HALF BARRIER	LF	2,134	$ 125.00	$ 266,750
SAFETY RAIL	LF	2,134	$ 40.00	$ 85,360
GABION GRAVITY RETAINING WALL	CY	13,000	$ 200.00	$ 2,600,000
EXTEND EXISTING 54" PIPE CULVERT	LF	223	$ 350.00	$ 78,050
NEW CONCRETE HEADWALL FOR 54" CULVERT	EA	1	$ 4,500.00	$ 4,500
NEW MANHOLE FOR 54" CULVERT EXTENSION	EA	2	$ 3,500.00	$ 7,000
REMOVE AND REPLACE TRAFFIC SIGNAL	L. SUM	1	$ 400,000.00	$ 400,000
CONTRACTOR QUALITY CONTROL	L. SUM	1	$ 100,000.00	$ 100,000
CONSTRUCTION SURVEYING AND LAYOUT	L. SUM	1	$ 50,000.00	$ 50,000
			SUBTOTAL:	**$ 8,263,675**

BRIDGE STRUCTURE ITEMS

Item Description	Unit of Measure	Quantity	Unit Price or Cost	Sub Total Amount
STRUCTURAL CONCRETE (CLASS S) (F'C = 4,500)	CU.YD.	3,323	$ 470.00	$ 1,561,977
STRUCTURAL CONCRETE (CLASS S) (F'C = 3,500)	CU.YD.	2,843	$ 620.00	$ 1,762,946
COMBINATION PEDESTRIAN-TRAFFIC RAILING	L.FT.	1,750	$ 600.00	$ 1,050,000
APPROACH SLAB	SQ FT	3,930	$ 24.00	$ 94,320
REINFORCING STEEL	LB.	1,571,686	$ 1.20	$ 1,886,023
BT58 PRECAST BEAM	L.FT.	11,529	$ 350.00	$ 4,035,101
EXPANSION JOINT	L.FT.	542	$ 300.00	$ 162,648
60" DRILLED SHAFT	L.FT.	930	$ 630.00	$ 585,900
84" DRILLED SHAFT	L.FT.	2,975	$ 1,230.00	$ 3,659,250
			BRIDGE SUBTOTAL:	**$14,798,165**
			TOTAL BRIDGE SQUARE FOOTAGE:	108,094
			BRIDGE COST/SF =	**$136.90**
			SUBTOTAL:	**$ 23,061,841**
			SUBTOTAL W/ 4% ESCALATION RATE:	**$ 23,984,314**
MOBILIZATION	COST	5%		$ 1,199,216
TRAFFIC CONTROL & PAVEMENT MARKING	COST	2%		$ 479,686
EROSION CONTROL	L. SUM	1	$ 40,000.00	$ 40,000
PUBLIC RELATIONS	L. SUM	1	$ 10,000.00	$ 10,000
			SUBTOTAL:	**$ 25,713,217**
UNACCOUNTED ITEMS	COST	20%	$5,142,643	$ 5,142,643
UTILITY RELOCATIONS	L. SUM	1	$500,000	$ 500,000
CONSTRUCTION ENGINEERING	COST	15%		$ 3,856,982
CONSTRUCTION CONTINGENCY	COST	5%		$ 1,285,661
			TOTAL*:	**$ 36,498,503**

* Excludes R/W Acquisition Costs

** Unfactored Earthwork Values

APPENDIX C –SHORT AND LONG BRIDGE ALTERNATIVES DRAINAGE WORK MAPS

Carefree Highway

Extend Existing Culvert

UPSTREAM LIMIT OF STUDY

16.66

Existing FP=1669.46'
Proposed FP = 1669.46'

SKUNK CREEK
Q = 26,700 cfs

16.47

Existing FP=1660.74'
Proposed FP = 1660.74'

I-17

4-SPAN BRIDGE

16.345

36" Culvert

Existing FP=1655.12'
Proposed FP = 1654.23'

16.29

Existing FP=1655.92'
Proposed FP = 1657.01'

16.25

Existing FP = 1652.76'
Proposed FP = 1652.76'

North Valley Parkway

16.17

Existing FP=1649.18'
Proposed FP = 1649.18'

DOWNSTREAM LIMIT OF STUDY

Legend

- FEMA Flow Line
- Proposed Roadway
- Proposed Short Bridge
- Existing Culvert
- Proposed Culvert
- Proposed Dike
- HEC-RAS Cross Section
- Skunk Creek Proposed Floodplain
- Regulatory Floodplain
- Contour Interval (1.0 ft)

City of Phoenix

North Valley Parkway Crossing Skunk Creek

Short Bridge Workmap

N

0 300 600 Feet

T·Y·LIN INTERNATIONAL

Carefree Highway

Extend Existing Culvert

UPSTREAM LIMIT OF STUDY

16.66

Existing FP=1669.46'
Proposed FP = 1669.35'

SKUNK CREEK
Q = 26,700 cfs

16.47

Existing FP=1660.74'
Proposed FP = 1660.90'

I-17

8-SPAN BRIDGE

16.25

Existing FP = 1652.76'
Proposed FP = 1654.43'

16.17

North Valley Parkway

Existing FP=1649.18'
Proposed FP = 1649.18'

16.05

Existing FP=1643.75'
Proposed FP = 1643.75'

DOWNSTREAM LIMIT OF STUDY

Legend

- FEMA Flow Line
- Proposed Roadway
- Proposed Long Bridge
- Proposed Culvert
- Existing Culvert
- HEC-RAS Cross Section
- Skunk Creek Proposed Floodplain
- Regulatory Floodplain
- Contour Interval (1.0 ft)

City of Phoenix

North Valley Parkway Crossing Skunk Creek

Long Bridge Workmap

N

0 400 800 Feet

T·Y·LIN INTERNATIONAL