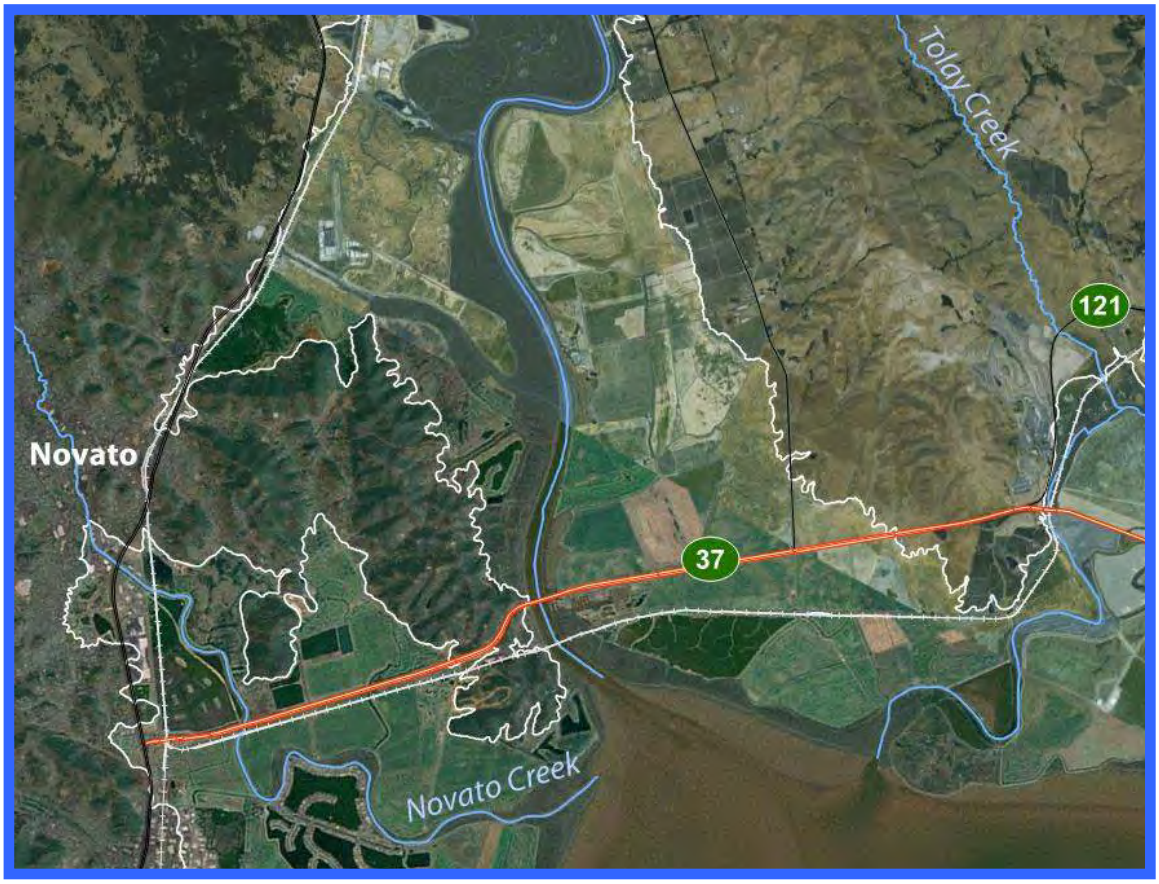
FINAL DRAFT

State Route 37 – Segment A
Sea Level Rise Corridor
Improvement Study

June 18, 2018



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For:

TAM
Transportation Authority of Marin

Executive Summary

Background

Prior studies of State Route 37 have provided analysis of the severe congestion and temporary flooding that this corridor is experiencing. In addition, the forecasted sea level rise (SLR) and its future impacts on the corridor has been an important part of the analysis. Prior studies divided the corridor into segments A, B and C extending across the three counties; Marin, Sonoma and Solano.

In response to the findings from recent studies of the corridor, TAM engaged HNTB to provide technical assistance and to prepare a study including conceptual plans for long-term integrated solutions to the anticipated SLR affecting Segment A. As such, the study concepts would provide for future integration of restoration, as opposed to preclude them; however, restoration projects are not being evaluated or proposed in this study. As prior studies stated, the roadway is relatively low-lying, about 2-6 feet NAVD88 for most of the portion except between Atherton Ave and Petaluma Bridge and transitions to rolling terrain and upland along the eastern end near the SR 37/SR 121 junction. Portion of the road relies on unengineered levees and berms along Novato Creek, the Petaluma River and landward levees of the Sonoma Baylands not originally designed to protect the road but to reclaim lands for agricultural use.

Sea Level Rise

The single most important design criteria for this study was to establish a conservative design elevation for the roadway surface to protect against flooding for expected SLR in the year 2100.

The roadway elevation was developed based on current understanding of SLR criteria for year 2100. The roadway elevation is made up of the storm surge return periods, wave runup, SLR and freeboard. Conservatively, the calculated SLR elevation for 2100 includes the 100-year wave height (3 feet) and a freeboard of 2 feet per Caltrans guidelines. Wave runup was included in the overall SLR calculation since it is unknown where the ultimate shoreline will be and where marshland and mudflat will be between the proposed structure and the Bay.

The calculated minimum roadway elevation is 21.8 feet (NAVD88 Survey Datum) and is the basis for the alternatives development in this study.

Design Considerations and Alternatives Development

In addition to establishing a SLR elevation, the alternatives design developments were informed by the historical, present and future conditions within segment A. The historical Novato Creek baylands were low-elevation areas subject to regular tidal influence. Over the past 150 years, diking and filling for flood control and land reclamation purposes have eliminated most of the historical baylands. As such, during the alternatives analysis, the historical baylands boundary was used to determine the limits of causeway versus embankment. It is assumed that the ultimate condition would restore the marshland and mudflats to the historic conditions.

The roadway cross section assumed for this study is an expressway type roadway per the Caltrans Highway Design Manual. In addition, a multiuse path is provided along the EB direction only. The roadway section consists of:

- Two 12 feet wide lanes in each direction
- Standard shoulder widths – Minimum 5 feet left shoulder and 10 feet right shoulder
- A 12-foot-wide multi-use path located along the EB direction only

The following is a description of the conceptual alternatives developed for this the study.

Alternative 1

This option proposes to raise SR 37 on a causeway between US 101 and SR 121. The limits of improvements were dependent on the existing ground elevation compared to the calculated roadway elevation needed to meet for SLR. Lakeville Rd and Reclamation Rd will be elevated on embankment to conform to the proposed elevated SR 37. Proposed improvements to SR 37 between US101 and Lakeville Rd will be on causeway. Where the existing roadway is above the calculated SLR elevation, the design only proposes to widen for the 12 feet multi-use path.

The preliminary planning cost estimate for Alternative 1 is:

- $1.832 Billion - Year 2018 ($842 Million in Marin County and $990 Million in Sonoma County)
- $2.634 Billion (15 years escalation)

Alternative 2

This option is a hybrid option in which segment A will be a combination of embankment and causeway structure. The limits of the roadway on embankment was determined from the historic baylands boundary. It is assumed that the goal is to restore the surrounding environment back to its historic condition. As such, any of the current roadway below the projected SLR elevation will be elevated using a combination of a causeway structure and embankment. Where the existing roadway is above the projected SLR elevation, the design only proposes to widen for the 12 feet multi-use path.

The preliminary planning cost estimate for Alternative 2 is:

- $1.358 Billion - Year 2018 ($570 Mill in Marin County and $788 Mill in Sonoma County)
- $1.944 Billion (15 years escalation)

Alternative 3

This option proposes to only raise the roadway between US 101 to just past Novato Creek to be above the projected SLR elevation. This segment was determined to be on a causeway structure as it falls within the historical baylands boundary and hydraulic connectivity between the north and south sides of SR 37 is easily achieved.

The preliminary planning cost estimate for Alternative 3 is:

- $364 Million - Year 2018 (Marin County only)
- $522 Million (15 years escalation)

US 101/SR 37 Interchange

For each of the three alternatives described above the US 101/SR 37 interchange was reviewed for SLR impacts but no detailed analysis was completed due to schedule limitations of this study. However, based on the historical baylands boundary, the existing US 101/SR 37 interchange will be inundated by water as the existing US 101 roadway elevation is below the projected SLR elevation. To provide an ultimate solution, the interchange will need to be elevated along with the off- and on-ramps to raise above the projected SLR. The preliminary costs to upgrade the interchange is expected to be in the $75 to $120 million range.

Intermodal Considerations

Accommodations for Bike and Pedestrian Users

The proposed cross section allows for a 12-foot-wide multi-use path. This multi-use path is proposed to connect to the existing Bay Trail currently located between Railroad Ave and Reclamation Road. Connecting the Bay trail will follow the guidance provided in the recent Caltrans' Transportation Concept Report for SR 37.

Accommodation for Transit

Currently there are no bus transit routes along SR 37. There is potential for implementing bus transit routes with dedicated bus stops and park and ride facilities along the highway.

Consideration for express busses using the roadway shoulder as dedicated bus lanes could also be an option. As SMART has started its revenue service, busses could link up to a SMART train stations in Novato as an option for travelers wanting to go north or south.

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Introduction

Prior studies of the SR 37 have provided analysis of the severe congestion and temporary flooding that this corridor is experiencing. In addition, the forecasted sea level rise (SLR) and its future impacts on the corridor has been an important part of the analysis. Prior studies divided the corridor into segments A, B and C extending across the three counties; Marin, Sonoma and Solano.

In response to the findings in a recent study by MTC, the "SR 37 Transportation and Sea Level Rise Corridor Improvement Plan" dated September 2017, TAM requested HNTB's technical assistance in preparing conceptual alternatives for long-term integrated solutions, that address both highway vulnerabilities and facilitate the restoration of surrounding Baylands, in conjunction with the anticipated sea level rise affecting Segment A. However, no restoration projects are being evaluated or proposed as part of this study.

Segment A extends from US 101 in Marin County for 3.4 miles and continues for 3.9 miles in Sonoma County to the SR 121 junction. The segment is designated a 4-lane expressway with bridges over Novato Creek, Simmons Slough Creek, Petaluma River, Atherton Ave, an inter-change at Highway 101 and Atherton Ave and an at-grade intersection at Lakeville Road and SR 121. There are three minor access roads/driveways connecting to SR 37 along the westbound lanes near Novato Creek towards Simmons Slough. Suggested realignments of these access roads have been depicted on the engineering plans. The Sonoma-Marin Area Rail Transit (SMART) is also located south of SR 37 and runs parallel between US 101 and Atherton Ave.

The roadway is relatively low-lying, about 2-6 feet NAVD88 for most of the portion except between Atherton Ave and Petaluma Bridge and transitions to rolling terrain and upland along the eastern end near the SR 37/SR 121 junction. Portion of the road relies on unengineered levees and berms along Novato Creek, the Petaluma River and landward levees of the Sonoma Baylands not originally designed to protect the road but to reclaim lands for agricultural use. This study focused on developing three highway raising alternatives as listed below and described in more detail in the Alternative Analysis section of this report:

1. An all bridge/causeway alternative between US 101 to SR 121
2. A hybrid option (bridge/causeway and embankment) between US 101 to SR 121
3. A causeway between US 101 to Novato Creek only

These alternatives being reviewed would provide for a future integration of restoration, as opposed to preclude them. However, restoration projects are not being evaluated or proposed in this technical evaluation.

Prior to developing alternatives, the design team met with key stakeholders, land owners and interest groups along the corridor to understand the current and future for restorations, land uses and the environmental conditions. Attachment A provides a summary map of findings from these discussions.

Environmental Conditions

The single most important design criteria for this study was to establish a conservative design elevation for the roadway surface to protect against flooding for expected SLR in the year 2100. The following text describes in more detail how the design elevation was established.

Tides

The Bay has mixed semi-diurnal tides, meaning that there are two unequal high tides and two unequal low tides during each day. The average elevation of the highest daily tide is called Mean Higher High Water (MHHW); the average elevation of the lowest low water is called Mean Lower Low Water (MLLW). The difference between MHHW and MLLW is the tide range. The tides are caused by the gravitational pull of the moon and the sun and are very predictable. The highest astronomical tides are called Perigean Spring Tides that occur a few times per year. These very high tides are an early indication of what future typical tides may inundate with sea level rise on a daily basis.

Storm Surges

In addition to the regular astronomical tides, the Bay experiences El Niño, storm surge and waves, and depending on location, freshwater discharge from rivers during storm events. Alone, or in combination, these factors result in temporary higher water levels, referred to as extreme water levels. Storm surges in the Bay are limited to about 3.5 feet above normal tide levels. Extreme water levels are usually characterized in terms of probability: a 1-percent-annual-chance tide (or 100-year extreme water level) is the water level elevation in the Bay that has a 1% chance of being reached (or exceeded) in any given year. Waves are similarly characterized by probability.

For Petaluma River and Novato Creek the tidal datums and 100-year extreme water level have been calculated by FEMA as part of their recent remapping of the Bay (AECOM 2016):

	Elevation ft. NAVD88
100-year extreme water level	9.9
Mean Higher High Water (MHHW)	6.3
Mean Sea Level (MSL)	3.4
Mean Lower Low Water (MLLW)	0.1

Table 1: Present (2000) tidal datum and extreme water surface elevations for Petaluma River and Novato Creek.

Waves

While the Bay is sheltered from oceanic waves, local winds blowing over relatively long fetches do generate waves in San Pablo Bay. Waves cause both flooding due to runup and overtopping, and also the erosion of levees. The wave height at a structure depends on its location on the shoreline and how much marsh and mudflat is (or expected to be) between the structure and the Bay. For Petaluma River and Novato Creek, the 100-year wave height is about 3 ft. (AECOM 2016). Wave runup depends on the elevation, slope, porosity, and roughness of the structure as well as the wave conditions. For a 3-ft. wave at the Petaluma River or Novato

Creek, wave runup might reach 13ft NAVD88 or more depending on the structure and its location relative to the shoreline.

Sea Level Rise

Sea level rise will increase the elevation of mean water level and there will be a commensurate increase in the elevation of extreme water levels. Sea-level rise guidance for California has recently been drafted, following updates in projections, but these have yet to be adopted by Caltrans (CNRA-OPC 2017). The draft guidance provides probabilistic decadal projections of sea-level rise, with respect to a baseline of the year 2000, based on high and low emission scenarios, and location on the California coast. The recommended projections for San Francisco are shown in the red boxes in Table 2 below.

		Probabilistic Projections (in feet) (based on Kopp et al. 2014)					H++ scenario (Sweet et al. 2017) *Single scenario
		Median *50% probability sea-level rise meets or exceeds…*	Likely range *67% probability sea-level rise is between…*		1-in-20 chance *5% probability sea-level rise meets or exceeds…*	1-in-200 chance *0.5% probability sea-level rise meets or exceeds…*	
				Low-risk Aversion		Medium - High risk Aversion	Extreme-risk Aversion
High emissions	2030	0.4	0.3 -	0.5	0.6	0.8	1.0
	2040	0.6	0.5 -	0.8	1.0	1.3	1.8
	2050	0.9	0.6 -	1.1	1.4	1.9	2.7
Low emissions	2060	1.0	0.6 -	1.3	1.6	2.4	
High emissions	2060	1.1	0.8 -	1.5	1.8	2.6	3.9
Low emissions	2070	1.1	0.8 -	1.5	1.9	3.1	
High emissions	2070	1.4	1.0 -	1.9	2.4	3.5	5.2
Low emissions	2080	1.3	0.9 -	1.8	2.3	3.9	
High emissions	2080	1.7	1.2 -	2.4	3.0	4.5	6.6
Low emissions	2090	1.4	1.0 -	2.1	2.8	4.7	
High emissions	2090	2.1	1.4 -	2.9	3.6	5.6	8.3
Low emissions	2100	1.6	1.0 -	2.4	3.2	5.7	
High emissions	2100	2.5	1.6 -	3.4	4.4	6.9	10.2
Low emissions	2110	1.7	1.2 -	2.5	3.4	6.3	
High emissions	2110	2.6	1.9 -	3.5	4.5	7.3	11.9
Low emissions	2120	1.9	1.2 -	2.8	3.9	7.4	
High emissions	2120	3	2.2 -	4.1	5.2	8.6	14.2
Low emissions	2130	2.1	1.3 -	3.1	4.4	8.5	
High emissions	2130	3.3	2.4 -	4.6	6.0	10.0	16.6
Low emissions	2140	2.2	1.3 -	3.4	4.9	9.7	
High emissions	2140	3.7	2.6 -	5.2	6.8	11.4	19.1
Low emissions	2150	2.4	1.3 -	3.8	5.5	11.0	
High emissions	2150	4.1	2.8 -	5.8	7.7	13.0	21.9

Table 2: Projected Sea-Level Rise (in feet) for San Francisco (Table 1, p18, CNRA-OPC 2017). The red boxes show the projections recommend for use by CNRA-OPC (2017) in low, medium-high and extreme risk aversion decisions.

Assuming medium to high-risk aversion, the projected sea level rise in San Francisco Bay, between the year 2000 and 2100, is 5.7 to 6.9 feet shown in blue box in Table 2. Assuming a high emission scenario, the minimum roadway elevation is projected to be as shown in Table 3.

Minimum Roadway Elevation based on 2100 SLR Projection	Novato	Petaluma
	NAVD (ft.)	NAVD (ft.)
Mean Lower Low Water (MLLW)	0.1	0.1
+ Mean Sea Level (MSL)	3.4	3.4
+ Mean High Water (MHHW)	6.2	6.3
+ 1:100-year storm surge of 3.6 ft.	9.8	9.9
+ SLR of 6.9 ft.	16.7	16.8
+ Waves of 3 ft.	19.7	19.8
+ Freeboard (assume 2 feet)	2	2
Projected Minimum Roadway Elevation	**21.7**	**21.8**

Table 3: Minimum Roadway Elevation - Future (2100) tidal datum and extreme water surface elevations for Petaluma River and Novato Creek.

Historical and Present Landscape of Novato Creek

The alternatives design criteria were also informed by the historical and present landscapes along SR 37. The historical Novato Creek baylands were low-elevation areas subject to regular tidal influence (Figure 1).

Over the past 150 years, diking and filling for flood control and land reclamation purposes have eliminated most of the historical baylands. Levee construction along lower Novato Creek and the rerouting of Arroyo San Jose and Pacheco Creek (which entered the baylands from the south) began in the late 19th century and was completed by the early 1920s (SFEI 2015). The result has been the confining of fluvial and tidal flows, which resulted in sediment accumulation within mainstem Novato Creek, the elimination of the historical tidal channel network that connected lower Novato Creek to its surrounding baylands, and the elimination of the sediment supply that helped maintain and sustain the elevation of the baylands.

SR 37 runs northeast-southwest through the middle of the former well-drained tidal marsh of area A. The road bisects numerous small historical channels and both Novato Creek and Simmons Slough. The former marshes have subsided by several feet below MHHW, and the whole area is dependent upon levees and pumping to prevent flooding. If the levees did fail then large parts of Area A would be inundated on each tide. The Novato Sanitary District operates a series of wastewater treatment ponds to the north, and sprayfields to the south of SR 37.

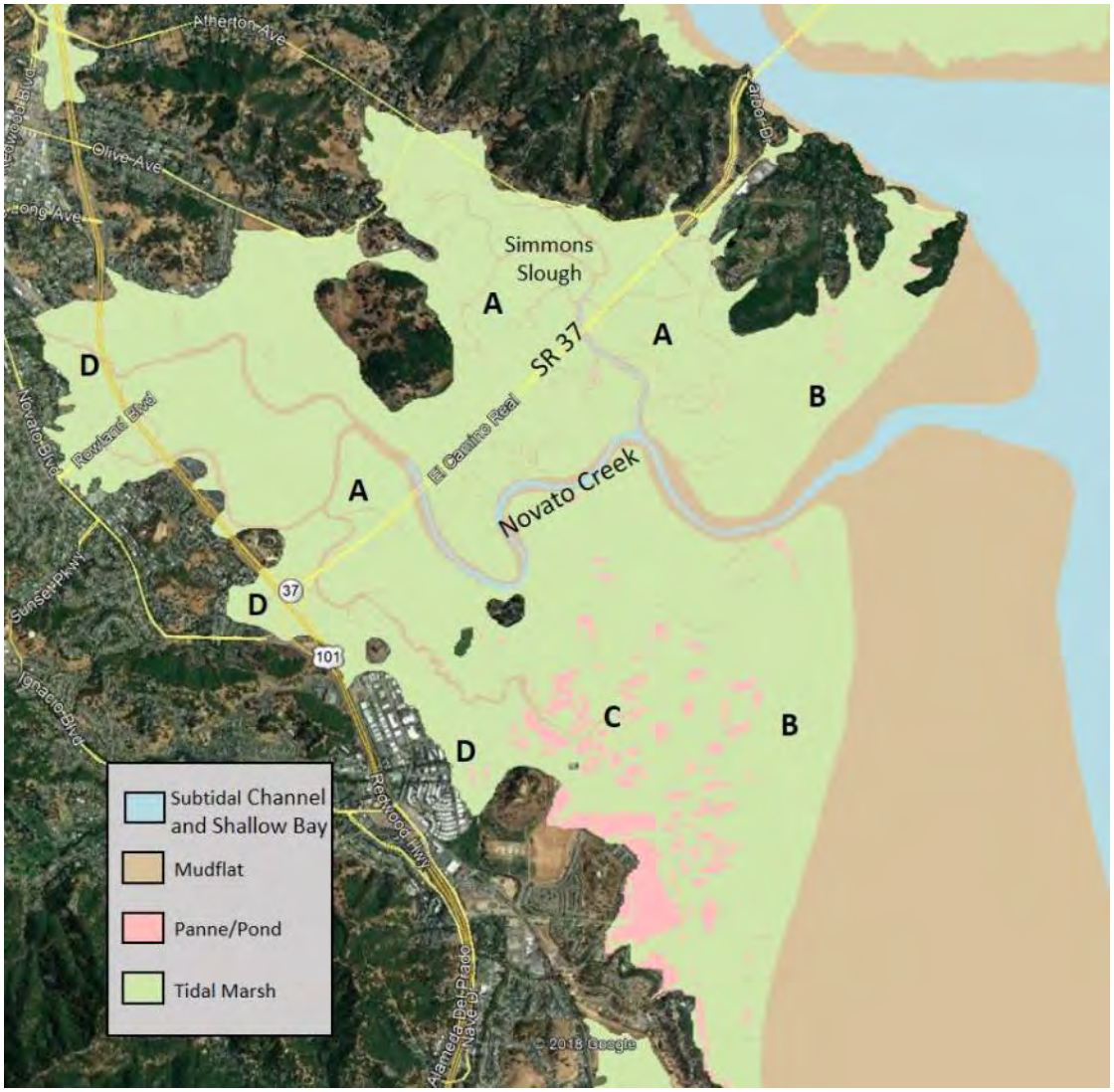


Figure 1: Map of Novato Creek showing historical wetland habitat types and the present alignment of SR 37.

Historical and Present Landscape of Petaluma River

Historically, tidal wetlands occupied about 16,000 acres along the lower Petaluma River (Figure 2). The tidal wetlands were composed of a range of estuarine habitat types including tidal marsh, intertidal flats, subtidal channels, and marsh ponds/pannes (SFEI 2018). The Petaluma River entered the estuary near present-day Payran Street in Petaluma, and followed a sinuous course for 17 miles to its mouth at San Pablo Bay, influenced both by tidal flux and by freshwater input from the Petaluma River, San Antonio Creek, and other tributaries.

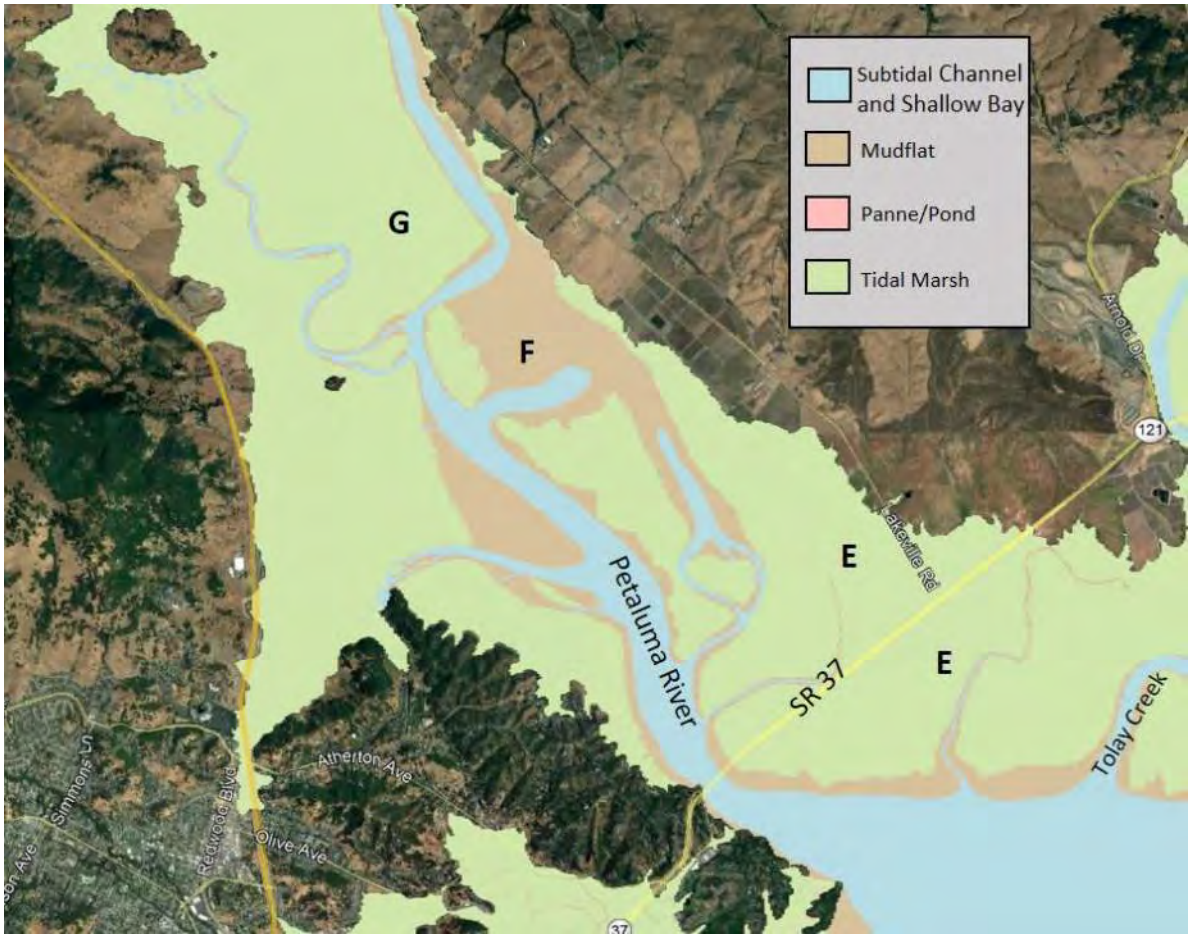


Figure 2: Map of Petaluma River showing historical wetland habitat types and the present alignment of SR 37.

Beginning in the late 19th century, thousands of acres of tidal marsh were diked and drained to reclaim lands for agricultural use. The extent of tidal wetland has decreased by about 70% (SFEI 2018). Despite this substantial loss of tidal wetland habitats, the Petaluma Marsh remains the largest contiguous expanse of historical tidal marsh in San Pablo Bay. Restoration efforts in recent decades have begun to reverse the decline in tidal wetland extent.

SR 37 runs northeast-southwest from Black Point northeastward the middle of the former well-drained tidal marsh of area E. The road bisects a large number of small historical channels although the main drainage is parallel to SR 37 towards the Petaluma River. The diking and draining along the East Bank to the north of SR 37 reclaimed low marsh, mudflat and shallow subtidal areas of False Bay (SFEI 2018). The land elevations were low in this area before any subsidence and so is now many feet below MHHW, and the whole area is dependent upon levees and pumping to prevent flooding. If the levees fail, large parts of Area F and E would be inundated on each tide. The levees on the eastern bank of the Petaluma River are in particularly poor shape.

Future Changes

With significant sea level rise projected in San Francisco Bay by 2100 under existing emissions trajectories (CNRA-OPC 2017), existing wetlands in the Petaluma Marsh are at risk and land uses in low-lying surrounding areas are jeopardized. Levee overtopping will likely become more frequent in diked, subsided baylands, while the increased frequency of inundation may accelerate bank erosion and habitat conversion in tidal wetlands (Goals Project 2015). Climate change will also alter streamflow patterns and vegetation distribution throughout the watershed; countywide, climate change is projected to increase the severity of flood events, the frequency and severity of droughts, and the frequency of extreme heat events.

Of particular concern, is the potential increase in flow rates along the tidal channels of Petaluma River and Novato Creek as tidal action is restored to diked areas, either by design through restoration projects or by accident due to erosion and breaching of levees. The presently diked baylands are very large areas of subsided land which, since they lie within the tidal range, will fill and empty on each tide if their levees are breached. The volume of water that enters the marshes and any subsided land on the flood and leaves on the ebb is called the tidal prism. The tidal prism is conveyed to and from the marsh by the tidal channels. The present tidal prism is relatively small, since most areas are protected by levees, and so many of the channels have been filling in. If the tidal prism increases due to breaching then these channels will erode to a size that allows them to convey the increased volume of water. Erosion of the channels to convey water may result in erosion of levees and scouring around bridge piles. It is therefore essential to estimate the future widths of the main channels that SR 37 crosses to ensure that the bridges spanning them are long enough to avoid scouring.

The relationship between channel size at a particular cross-section of a tidal channel and the tidal prism upstream of that cross-section is known as hydraulic geometry and has been investigated by Williams et al (2002) for marshes in San Francisco Bay. The future width of Petaluma River, Novato Creek and Simmons Slough were calculated using hydraulic geometry assuming all the diked baylands upstream of the crossings would be restored, either deliberately or accidently, to tidal action. These dimensions were incorporated in the design described in the next section “Design Criteria and Considerations”.

Design Criteria and Considerations

Based on the historical, present and future conditions within segment A design criteria were developed.

Roadway Cross Section

The historical Baylands Boundary was used to determine the limits of causeway versus embankment. It is assumed that the ultimate condition would restore the marshland and mudflats to the historic conditions as shown in Attachment A.

The roadway cross section assumed for this study is an expressway type per the Caltrans Highway Design Manual. In addition, a multiuse path is provided along the EB direction only. The roadway section consists of:

- Two 12 feet wide lanes in each direction
- Standard shoulder widths - 5 feet left shoulder and 10 feet right shoulder
- A 12-foot-wide multi-use path located along the EB direction only

It should be noted that the roadway section is consistent with the UC Davis Study that was coordinated with Caltrans in 2015.

Pavement Section

The roadway pavement section (on embankment) will consist of 8 inches of asphalt concrete (AC) and 20 inches of compacted aggregate base (AB) for a traffic index (TI) equal to 12 for a 20-year pavement design. This pavement section was assumed based on previous work done by Ducks Unlimited in coordination with Caltrans during Segment B deceleration lane construction.

For proposed access roads and frontage roads, it was assumed to match the pavement section to the existing SR 37 condition. The pavement section will be 0.5 feet HMA (hot mix asphalt) and 0.75 feet AB. This pavement section is based on the AECOM/UC Davis study.

Roadway Elevation

The roadway elevation was developed based on current understanding of sea level rise criteria for year 2100 as described previously. The roadway elevation is made up of the storm surge return periods, wave runup, sea level rise and freeboard. Conservatively, the calculated sea level rise elevation for 2100 includes the 100-year wave height (3 feet) and a freeboard of 2 feet per Caltrans guidelines. Wave runup was included in the overall sea level rise calculation since it is unknown where the ultimate shoreline will be and where marshland and mudflat will be between the proposed structure and the Bay.

The calculated minimum roadway elevation is 21.8 feet as previously depicted in Table 3.

Other Design Considerations

At the onset of the study, TAM and the project team met with local stakeholders to discuss and to obtain relevant information the study. The local stakeholder group included Marin County Department of Water, Sonoma County Transportation Authority, Caltrans, SMART and the City of Novato Public Works.

Information was also gathered from stakeholders, landowners and interest groups during an information gathering meeting hosted by the design team. The meeting was attended by:

- Sonoma Land Trust
- Ducks Unlimited
- Marin County Flood Control and Water Conservation District
- Caltrans
- Marin Audubon Society

- UC Davis
- US Fish & Wildlife Services

Refer to Attachment A for notes gathered from the meeting.

In addition, the design team coordinated with Marin County Flood Control and Water Conservation District on a study ("California Highway 37 Bridge Configuration at Novato Creek for Future Sea Level Rise") for the Novato Creek Bridge improvements related to sea level rise. This study was utilized for the design of Alternative 2 and 3.

Alternatives Study

For each of the three alternatives described below the US 101/SR 37 interchange was reviewed for SLR impacts but no detailed analysis was completed due to schedule limitations of this study. However, based on the historical Baylands boundary outline (shown in Attachment E), the existing US 101/SR 37 interchange will be inundated by water as the existing US 101 roadway elevation is below the projected sea level rise elevation (calculated to be 21.8'). To provide an ultimate solution, the interchange will need to be elevated along with the off- and on-ramps to raise above the projected sea level rise.

Alternative 1- Elevated Structure Design form US 101 to Sears Point

Figure 4 illustrates the location of causeway/bridge structure proposed in Alternative 1 along SR37 between US 101 and SR 121.

Figure 4 – Alternative 1

This option proposes to raise SR 37 on a causeway between US 101 and SR 121. The limits of improvements were dependent on the existing ground elevation compared to the calculated roadway elevation needed to meet for sea level rise. Lakeville Rd and Reclamation Rd will be elevated on embankment to conform to the proposed elevated SR 37. Proposed improvements to SR 37 between US101 and Lakeville Rd will be on causeway. See figure 4 below for illustration of elevated causeway structure and restored marshland.

Where the existing roadway is above the calculated sea level rise elevation, the design only proposes to widen for the 12 feet multi-use path. See Attachment B for Alternative 1.

Figure 5 – SR 37 – Elevated Causeway and Restored Marshland

Alternative 2: Hybrid Design from US 101 to Sears Point

Figure 6 illustrates the locations of causeway/bridge structures and embankment sections proposed in Alternative 2 along SR37 between US 101 and SR 121.

Figure 6 – Alternative 2

This option is a hybrid option in which segment A will be a combination of embankment and causeway structure. The section of roadway between US 101 and Atherton Ave is on a causeway at Novato Creek and Simmons Slough and embankment everywhere else. The bridge

length for the Novato Creek Bridge and Simmons Slough is based on the historic tidal prism and consideration for marshland land which will act as a wildlife corridor for the future marshes. The section of roadway from the Petaluma River to Lakeville road will be on a combination of bridge and causeway. The roadway section east of Lakeville Rd will be on embankment. Lakeville Rd and Reclamation Rd will also be elevated to conform to the proposed elevated SR 37. See figure 7 below for illustration.

Where the existing roadway is above the projected sea level rise elevation the design only proposes to widen for the 12 feet multi-use path. See Attachment C for Alternative 2.

Figure 7 – Proposed SR 37 at Lakeville Hwy/Reclamation Rd -Hybrid Option

Alternative 3: Elevated Structure Design from US 101 to East of Novato Creek

Figure 8 illustrates the locations of causeway structure proposed in Alternative 3 along SR37 between US 101 and Novato Creek.

Figure 8 – Alternative 3

This alternative proposes to only raise the roadway between US 101 to Novato Creek to be above the projected sea level rise elevation. This segment was determined to be on a causeway structure as it falls within the historic Baylands Boundary and hydraulic connectivity between the north and south sides of SR 37 is easily achieved. See Attachment D for Alternative 3.

Local Circulation Consideration Common to all Alternatives

Local roadway access currently connecting to SR 37 will either be raised to conform to the proposed SR 37 or a new frontage road will be provided for circulation.

- Hanna Ranch Road and Marsh Drive will be improved to conform to the elevated SR 37. These roadways are currently at low elevations and are at risk to be inundated by sea level rise. It is assumed that these roadways will not be needed in a marshland environment.
- Renaissance Rd/Atherton Ave will remain an underpass. The on- and off-ramps from Atherton Ave to SR 37 will need to be improved to conform to the elevated SR 37. Atherton Ave's current elevation is also below projected sea level rise. The study did not evaluate the impacts associated to raising Atherton Ave.
- Railroad Ave will not be improved. A frontage road will be proposed from Lakeville Rd and Reclamation Rd to connect to Railroad Ave to provide adjacent property owners access. The proposed frontage road will also provide connectivity for the multi-use path to connect existing Bay Trail. This solution would provide a safer access point for local landowners compare to the existing condition. Railroad Ave's current elevation is also below projected sea level rise. It is assumed that this roadway will not be needed in a marshland environment.

Structures

For the three build alternatives considered as part of the study, the total elevated structure or causeway lengths for each alternative are:

- Alternative 1: 5.7 miles
- Alternative 2: 3.0 miles
- Alternative 3: 1.0 miles

To develop a recommendation for the most ideal structure and type along SR 37, these criteria were considered:

- Terrain, underlaying soils
- Construction Methods
- Total Cost

Construction schedule, construction staging, detailed construction steps, optimized span arrangement, context and aesthetics of structure types were not evaluated in detail and are not discussed here.

Superstructure Considerations

The constraints explained in previous sections highlight the need for building a structure type that will attempt to minimize impact to the surrounding soil, consider the context where the bridge is being built recognizing the visual impacts and the possibilities that a continuous viaduct will have on the existing landscape. These constraints also informed and served as input to develop the order of magnitude of initial construction costs. Construction costs were evaluated under these general assumptions:

- The bridge soffit (bottom of bridge) is 2 feet over the maximum expected sea level rise elevation
- For the typical causeway bridge, the bridge spans (spacing between bents, columns, or piles) range from 80-150 ft.
- The existing Petaluma River bridge is replaced with either a long span balanced cantilever structure or a cable supported structure. Detailed type selection is not part of this report.
- Complete Replacement of the Petaluma River Bridge represents the highest dollar value and future investment anticipated. Per the available bridge plans, the Petaluma Bridge was constructed in 1956. This means that this bridge will exceed its design life by the year 2031. The “design life” is the target life in years set at the initial design of the bridge. This is typically 75 years. This does not mean that the bridge isn’t usable. It is conceivable that with continuous inspections and potentially increased regular maintenance and rehabilitation of bridge elements, the bridge can still be in service beyond its “design life.” Some examples are the Golden Gate Bridge, Brooklyn Bridge, etc. However, recommending a full replacement addresses these items:

- No significant upgrades to the existing concrete bridge deck are noted. It is probable that deck replacement will be required in the future.
- The bridge width does not meet current shoulder & emergency lane standards.
- The bridge approach grades (slopes) exceed the max allowed ADA requirements for comfortable usage by pedestrians and cyclists. The installation of a dedicated multi use bike/pedestrian will require a separate, lower profile structure constructed with a lower profile that will potentially interfere with the current vertical navigational channel.
- If it is desired to span/clear the future widened channel due to SLR and supports for the bridge within the channel are precluded from being installed, then replacement of the existing bridge should be considered.

- The total cost for all alternatives is based on a dollar per square foot cost ($/ft^2).
- Two types of superstructure or bridge types are considered. "Conventional" or "routine" structures, and "unconventional" types. These labels generally refer to the most common methods of construction typically employed in California. However, investigation of the application of "unconventional types" is recommended since there are significant advantages such as quality, life-span, construction duration, etc. that should be considered in future studies. see table 5 below.

STRUCTURAL SECTION	COMMON SPAN RANGE (ft.)	REMARKS
CONVENTIONAL		
CIP/PS Box girders (Cast-in-Place prestressed concrete girder)	110-350	This bridge type accounts for approximately 65% of all bridges built on CA state highways.
PC/PS I girders – (Precast Prestressed concrete girder)	95-150 (Bulb girder) 80-180 (Wide flange)	No Falsework Required (temporary scaffolding)
PC/PS I girders – ABC - (Precast Prestressed concrete girder – ABC – Accelerated Bridge Construction	50-120	No falsework required (temporary scaffolding). Rapid construction No subsequent deck installation.
Steel Plate Girder	60-300	No Falsework required (temporary scaffolding)
UNCONVENTIONAL		
Segmental Box girders	CIP Cantilever – 300 to 800 CIP Incremental Launch -200-500 PC Cantilever– up to 350ft PC Span by Span 120 -150	No falsework required Rapid construction Requires large staging area for pre-casting yard
Cable Stayed Bridge	450 – 1500	Long span structure

Table 5 – Structure Types

Substructure Considerations

The soft clayey conditions of the existing soil underlying the proposed causeway alignment guide the type of bridge supporting foundations. Considerations for construction access, over water construction, soft compressible soils, and minimizing disturbance to surroundings are generally considered.

Based on general reviews of the site soils, steel pipe piles, large diameter pipe piles appear to be most appropriate foundation type at this site. The number of piles per bent is not explicitly captured within the total cost but it is worth noting that this factor will influence the total structures cost.

Issues to consider during the foundation type selection (not evaluated as part of this study) are:

- Site seismicity
- Total Vertical and lateral loads, which are dependent on span length
- Installation Method which considers noise and speed on installation.
- Desired Longevity
- Site Specific Corrosion Concerns

There are additional items that need to be considered and that will influence the cost and final bridge type selection. These are bridge maintenance and aesthetics and they are briefly discussed below.

Maintenance Considerations

An additional topic that must be discussed and considered in the future is the maintenance of the new infrastructure. These items need to be considered during type selection report as they may also influence the type and cost of the proposed structure. The following are typical intervals of anticipated maintenance for a typical bridge:

1. Cast in place deck slab (35 and 70 years)
2. Deck wearing surface (30, 60 and 90 years)
3. Painting of steel (75 years with biennial inspection)
4. Elastomeric bearings (40 and 80 years)
5. Expansion joints (25, 50, and 75 years)
6. Drainage System (60 years)
7. Cables (for cable supported structures) – 75 years

Bridge Aesthetic Considerations

The public is becoming more aware of the effects that the appearance of large structures and bridges have in their communities. Bridges function not only as a transportation element. In the right context bridges can act as visual and symbolic elements of their communities. With that in mind, the bridge type and its final shape needs to be considered during the preliminary and final evaluation of structure types. During these studies, the shapes and sizes of the structural elements are considered to develop an “aesthetically pleasing” structure. Although this is a very subjective topic, simple criteria such as simplicity of forms, good proportions

emphasizing thinness, a clear visual demonstration of how the structure behaves, and how the structure fits its context and surroundings can result in a successful bridge for the site.

Cost Estimates

Costs do not include removal of old bridge or existing bridge modifications.

Additional assumptions for construction costs are:

1. Bridges will be designed for a 100-year life.
2. Estimates are limited to structural cost only.
3. Costs/SQFT are based on averaging out high end and low-end costs per sq. ft.
4. Estimates are based on 2018 dollars.

For cost estimates and summaries see attachments B, C, D.

Cost Comparison of Recent Studies in the Corridor

In October of 2015 the "State Route 37 Integrated Traffic, Infrastructure and Sea Level Rise Analysis" (UC Davis/AECOM) was published proposing structure/causeway alternatives and a levee/embankment alternative. Costs for these alternatives were estimated using the Caltrans 11-page cost estimate template. Kimley Horn recently completed the "SR 37 Transportation and Sea Level Rise Corridor Improvement Plan" February 2018, analyzing similar alternatives. However, limited cost data was available for comparison purposes (a Caltrans cost estimate template was not published as part of the report). Attachment G provides a summary of previous alternatives in comparison with alternatives developed as part of this study report.

A cost comparison table (Attachment H) of the UC Davis/AECOM structure/causeway alternative and Alternative 1 - structure/causeway in this study report was developed to evaluate the cost differences between these two similar alternatives. The comparison was based on the Caltrans 11-page cost estimate template developed for both alternatives. Key differences included:

- TAM/HNTB alternative includes more square foot of bridge construction.
- TAM/HNTB bridge cost (SF) is in the medium to high range per Caltrans cost data.
- AECOM/UC Davis bridge cost (SF) is at the low-end range per Caltrans cost data.
- Mobilization and Contingency costs are different, higher for the TAM/HNTB alternative.
- 101 Ramp re-construction included in the TAM/HNTB alternative, no improvements shown in the AECOM/UC Davis Study.
- Petaluma Bridge is included as full replacement in the TAM/HNTB alternative, UC Davis/AECOM alternative includes widening only.

Intermodal Considerations

Accommodations for Bike and Pedestrian Users

The proposed cross section allows for a 12-foot-wide multi-use path. This multi-use path is proposed to connect to the existing Bay Trail currently located between Railroad Ave and Reclamation Road. A frontage road is proposed between Railroad Ave and Reclamation Rd with access from Reclamation Rd to connect to the multi-use path proposed by the study to the existing Bay Trail. Connecting the Bay trail will follow the guidance provided in the recent Caltrans' Transportation Concept Report for SR 37.

Accommodation for Transit

Currently a bus transit routes along SR 37 does not exist. There is potential for implementing bus transit routes with dedicated bus stops and park and ride facilities along the highway. Natural locations for park and ride facilities would be Sears Point junction (SR 37/SR 121) and at Atherton Rd/SR 37 (park and ride currently exist at this location).

Consideration for express busses using the roadway shoulder as dedicated bus lanes could be an option. A consideration for bus transit could be to have a transfer point at a SMART train station in Novato for riders wanting to go north or south.

Other Corridor Considerations

In addition to the proposed design, the design team considered the following issues that would need to be addressed as part of an overall solution for the corridor.

Geotechnical Consideration

Geotechnical investigations were not performed for this study. Geotechnical information was supplement by the Geotechnical Report provided by Ducks Unlimited for work completed in Segment B.

Based on review of this report, it is assumed that the corridor "is underlain by soft to stiff clays and silts that have relatively low strength and are highly compressible." The project is also within a "seismically active region".

The design assumes that the embankment section will be filled with dirt. The calculated earthwork quantity is approximately 1.1 million cubic yards of dirt. This is an enormous amount of dirt to import to the project site and as such, would need to be investigated in detail during the environmental documentation phase. For example, to offset the dirt quantity, alternative materials to investigate are cellular concrete and geofoam. These materials were not quantified or studied for applicability for this project.

Staging

The study has not evaluated any staging concepts for each of the alternatives. Although alternatives are currently following the existing alignment of SR 37 there are opportunities for adjustments to the north where the ROW is more generous. The natural sequencing would be

to shift traffic to one side of SR 37 while constructing the other side including temporary detours that provide connections to intersecting roads. Any staging concepts must assume that 2 lanes in each direction be kept operational during construction.

Elevating Sonoma-Marin Area Rail Transit (SMART) Rail

The existing SMART rail line located just south of SR 37 is currently below the projected sea level rise for 2100. If a project is funded to elevate SR 37, but does not include accommodation for the SMART rail alignment, the rail will be inundated in the future and compromise the railroad line.

Additional coordination with SMART would be required to determine the usage of the existing rail line in the future.

Improving Sears Point Levee

The existing Sears Point levee located south of SR 37 between Lakeville Rd and SR 121 was recently constructed by Ducks Unlimited. This levee was designed to sea level rise criteria available at the time (2014). The levee was overbuilt with additional backslope such that it can go up by 7 feet in elevation if necessary to accommodate future sea level rise. Such improvement could eliminate the need for elevating the segment of SR 37 east of Lakeville Rd. SR 37 would be proposed to be elevated just past Lakeville Rd and descend quicker to conform to the existing roadway. Lakeville Rd and Reclamation Rd will still need to be elevated to meet the projected SLR. The cost of raising the existing Sears Point levee was not consider as part of this study.

Realigning Lakeville Road

In lieu of raising Lakeville Rd to connect to the proposed SLR elevation of SR 37, an alternative would be to realign Lakeville Rd to follow along the historic Baylands Boundary and thereby stay outside the area affected by SLR. It is unknown what kind of environmental or right of way impacts there would be. This study did not analyze this.

Raising Atherton Ave

Based on the historic Baylands Boundary, existing Atherton Ave will be inundated with water in year 2100. To mitigate this, it is recommended to further investigate options such as raising Atherton Ave to create an interchange at this location or realigning Atherton Ave to the east to be located outside of the historic Baylands Boundary shown in Attachment E. This study did not evaluate Atherton Ave beyond what is included in the alternative analysis.

US 101

Based on Historic Baylands Boundary, 2.5 miles of the existing US 101 mainline will be inundated with water in year 2100. This section of roadway below sea level rise is along US 101 between De Long Ave to the US 101 SB on-ramp from Novato Blvd. To mitigate this, it is recommended to further investigate options such as raising the section of US 101 mainline that is below sea level rise or construct a levee to protect the freeway. Elevating the US 101 mainline will also require reconstruction of the existing overpass connecting to SR 37.

To reconstruct the interchange to protect for future SLR, the cost is expected to be in the $75 to $120 million range.

Right of Way

Right of way was roughly evaluated for this study based on the engineering needs required to construct the proposed roadway. Additional evaluation and right of way analysis would be required to determine overall impacts to the surrounding properties. In addition, access rights to existing properties along SR 37 will be impacted by the design and will require future discussions.

Conclusion

Along the SR 37 corridor Segment A is lower in elevation compared with segments B and C. If no measures are taken to protect Segment A from SLR, the roadway will be inundated and closed to traffic in the future. This will effectively break the connectivity between Marin and Sonoma County and connectivity to eastbound I-80/Sacramento/Tahoe and force drivers to use alternative routes already congested during peak commute times or deficient to handle additional capacity.

A holistic approach to solve congestion, SLR and ecological consideration is recommended for the entire corridor to provide a solution that will serve all users and stakeholders equally; however, locations such as Port Sonoma and Novato creek is already under threat today during 5-year and 25-year storms requiring immediate attention through specific project identification and environmental clearance.

Attachments

Attachment A – Meeting Notes from 2018/1/11 Meeting
Attachment B – Alternative 1 (Typical Sections, Plan, Profile and Cost Estimate)
Attachment C - Alternative 2 (Typical Sections, Plan, Profile and Cost Estimate)
Attachment D - Alternative 3 (Typical Sections, Plan, Profile and Cost Estimate)
Attachment E – Historic Baylands Boundary
Attachment F – Cost Estimate Assumptions
Attachment G – Summary Table - SLR Studies for Segment A
Attachment H – Structure Cost Comparison Table

References

AECOM. 2016. “San Francisco Bay Tidal Datums and Extreme Tides Study.” BCDC.

BEHGU. 2015. “Complete Report: Baylands Ecosystem Habitat Goals Science Update.” BEHGU.

CNRA-OPC. 2017. “DRAFT State of California Sea-Level Rise Guidance: Update 2018.” California Natural Resources Agency and Ocean Protection Council.

SFEI. 2015. “Novato Creek Baylands Vision: Integrating Ecological Functions and Flood Protection within a Climate-Resilient Landscape.” Publication #764. San Francisco Estuary Institute-Aquatic Science Center.

SFEI. 2018. “Petaluma Valley Historical Hydrology and Ecology Study.” Publication #nnn. San Francisco Estuary Institute-Aquatic Science Center.

Williams, Philip B., Michelle K. Orr, and Nicholas J. Garrity. 2002. “Hydraulic Geometry: A Geomorphic Design Tool for Tidal Marsh Channel Evolution in Wetland Restoration Projects.” *Restoration Ecology* 10 (3):577–90.

Fraser Shilling, Joy Villafranca, PE, Kris May, PE, Justin Vandever, PE. 2015. “State Route 37 Integrated Traffic, Infrastructure and Sea Level Rise Analysis.” UCDAVIS and AECOM

HDR. 2014 “Cullinan Ranch Restoration Phase III”. Ducks Unlimited

Caltrans. 2015 “Transportation Concept Report State Route 37”. Caltrans

CA Hwy 37 Bridge Configuration at Novato Creek for future Sea Level Rise study. Marin County Flood Control and Water Conservation District

Owner Unknown

Petaluma River

Tolay Creek

Restored to tidal mars - transferred to Dept of Fish and Wildlife (DFW)

Horse Ranch

gets up to 1' to the top

ABS

unknown area for future restoration (this area is subject to flooding)

DFW

Audubon Society (ABS)

Sanitary District - looking to restore area

Privately own (Bird Holdings) - It is a non-functioning Marina

this area stays agricultural

SD pump

Proposed roadway on pile structure (causeway) because it will flood on north side

LP Elev @ 8.5'

Sonoma Baylands owned by Sonoma Land Trust - Recently restore to tidal wetland

Land recently restored by Sonoma Land Trust (approximately 1000 acres) - basin approximately 7' deep

SD pump

Existing levee can hold up to 3' of water (design to SLR elevation that was current at the time), top of levee elev = 15'/16'

Sanitary District

DFW

Marin Flood Control District studying bridge

breach added for tide access

DFW owns dike land here

Novato Creek

ABS is buying parts of it and hopes to restore land to tidal action

San Pablo Bay

breach added for tide access

Bel Marin Keys - Coastal Conservancy working to build levee

State Route 37

Major Highway

Railroad

Historical Baylands Boundary

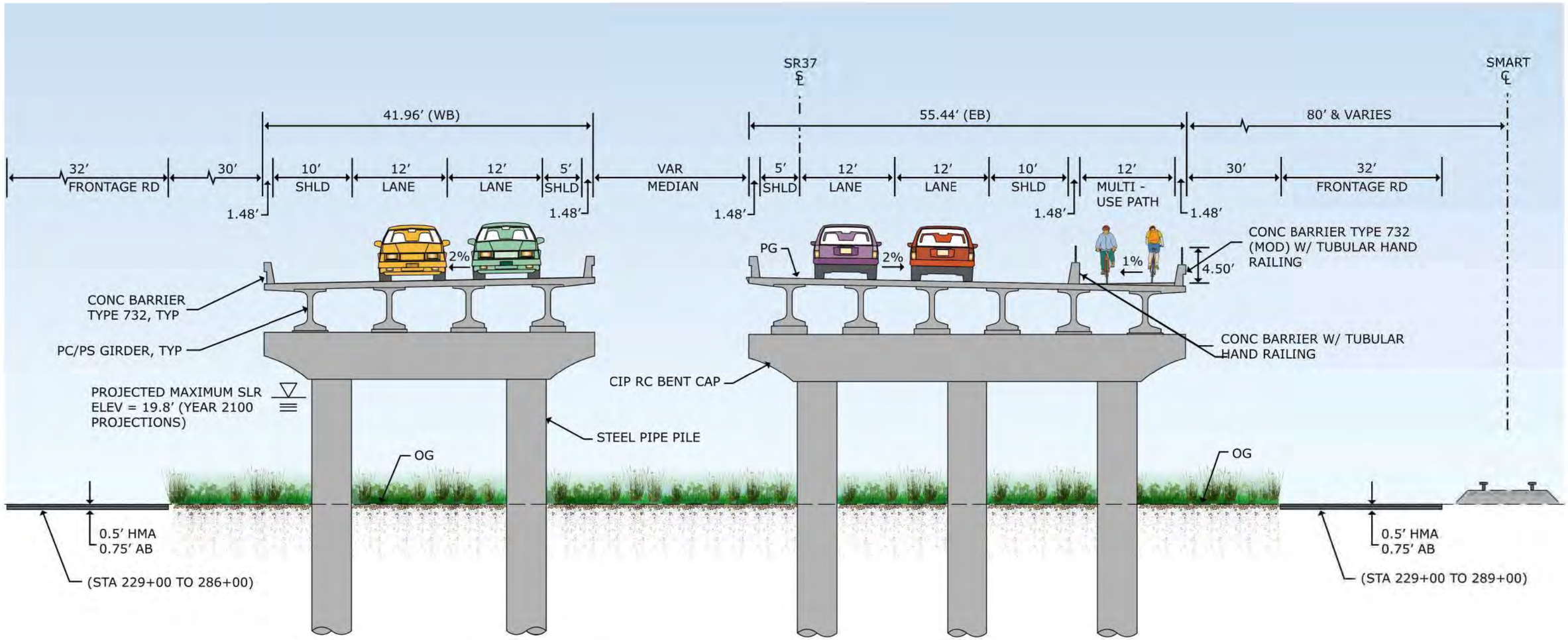
0 1 Mile

Notes from meeting held on 1/17/18

SFEI AQUATIC SCIENCE CENTER

ATTACHMENT A

TYPICAL CAUSEWAY SECTION
SECTION A-A

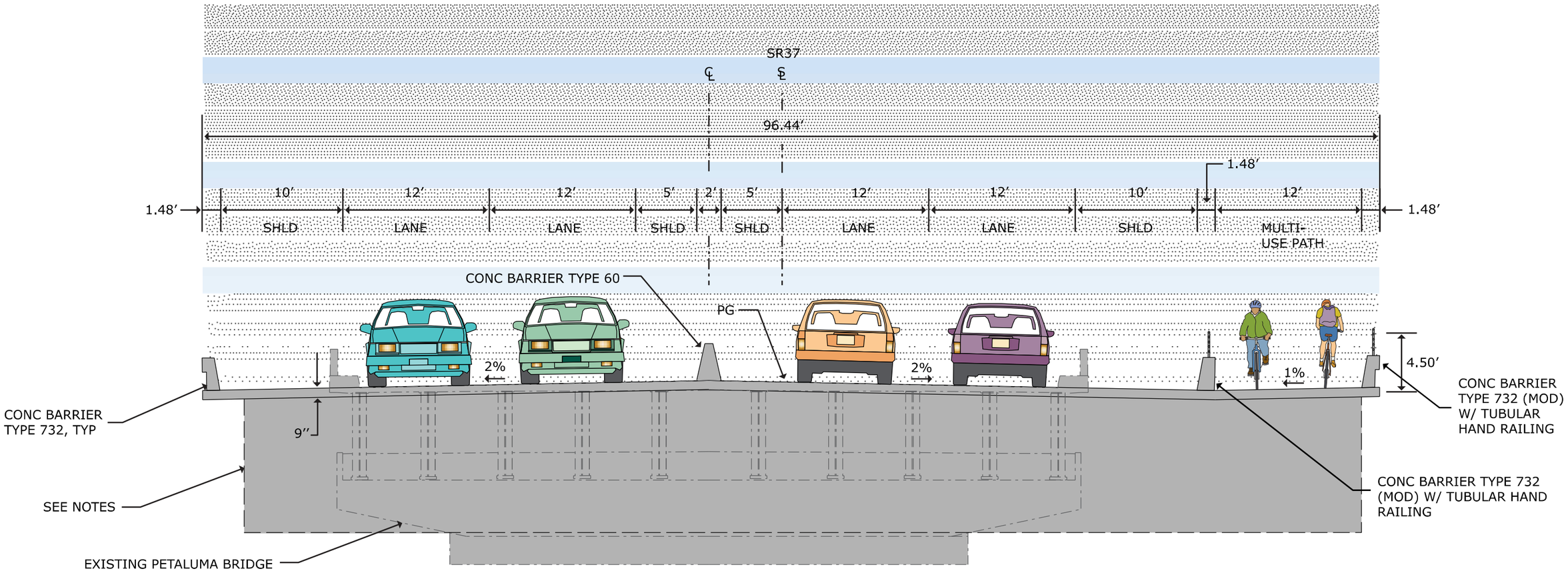


ALTERNATIVE 1: ELEVATED STRUCTURE DESIGN FROM US 101 TO SEARS POINT

X-1
SCALE: NTS

NOTE:
BRIDGE TYPE TO BE DETERMINED AT A LATER STAGE.

PETALUMA CREEK BRIDGE TYPICAL SECTION
SECTION B-B



ALTERNATIVE 1: ELEVATED STRUCTURE DESIGN FROM US 101 TO SEARS POINT

X-2
SCALE: NTS

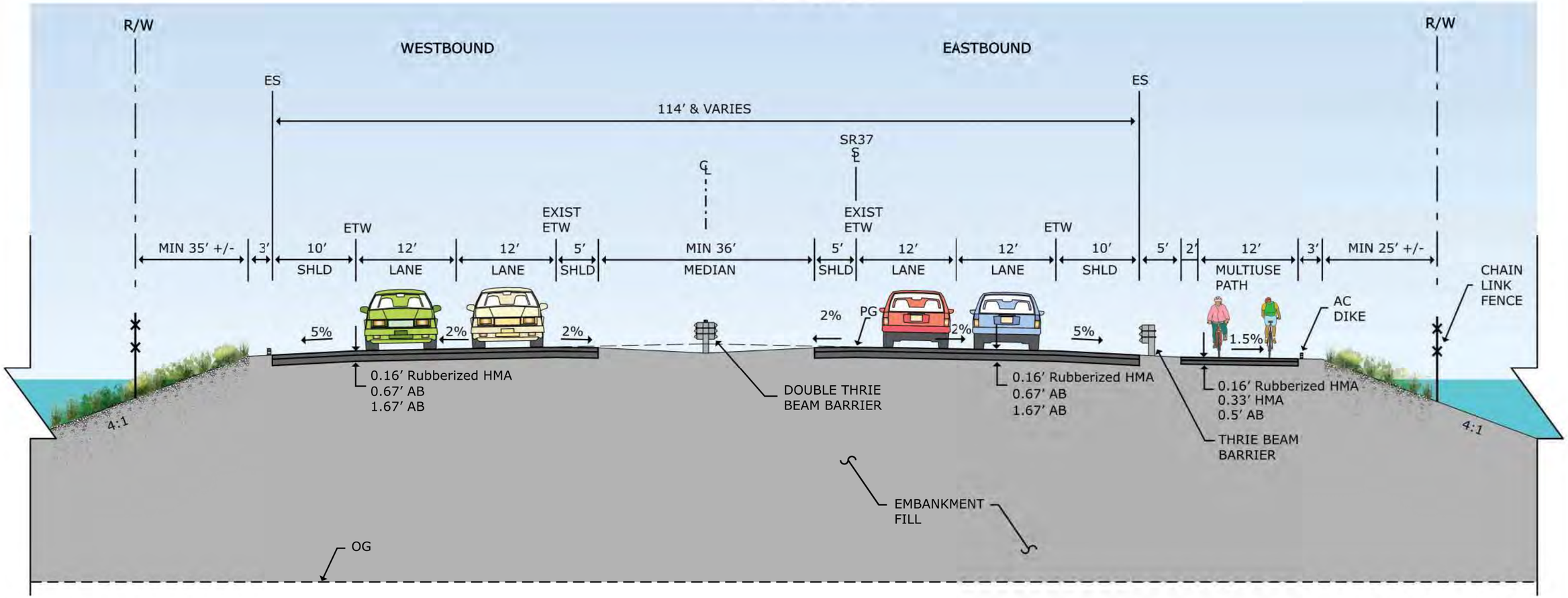
PRELIMINARY
FOR DISCUSSION ONLY

Attachment B

Transportation Authority of Marin

HNTB

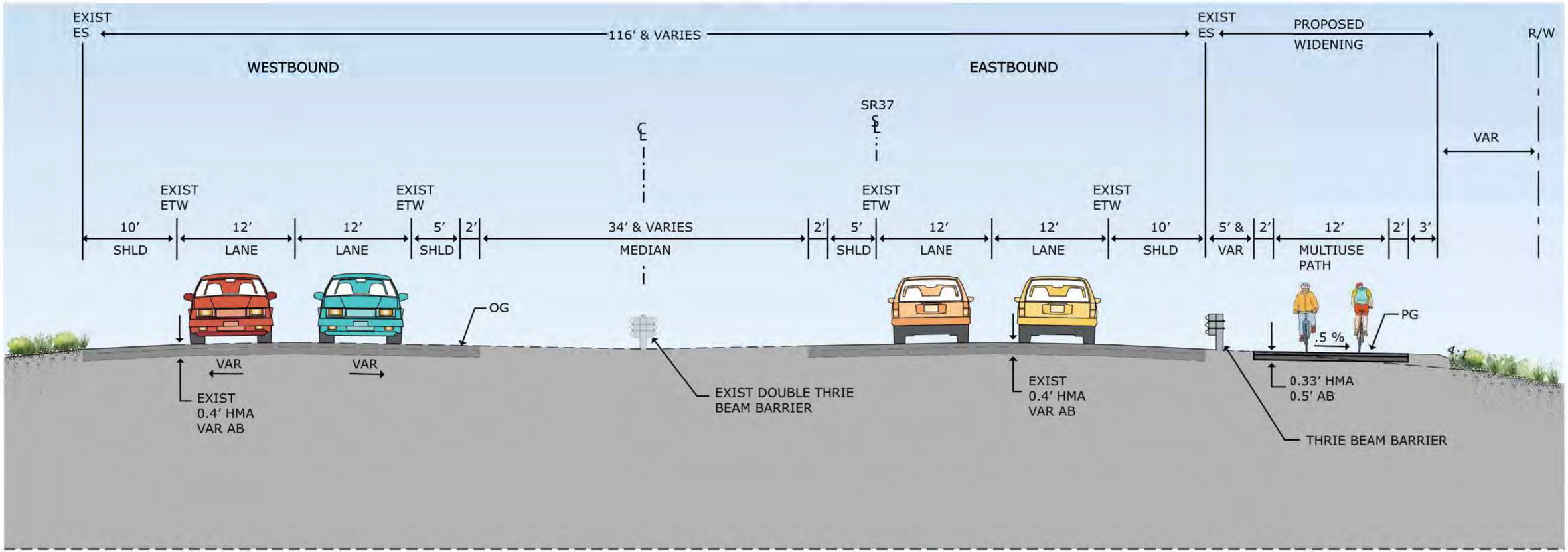
TYPICAL ROADWAY SECTION
SECTION C-C



ALTERNATIVE 1: ELEVATED STRUCTURE DESIGN FROM US 101 TO SEARS POINT

X-3
SCALE: NTS

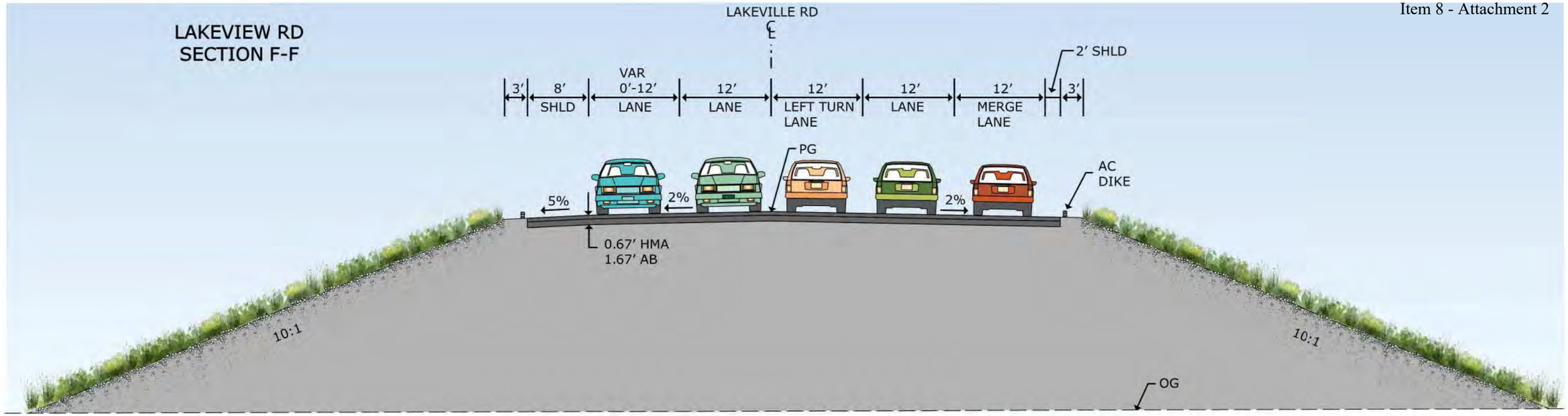
TYPICAL ROADWAY WIDENING SECTION
SECTION D-D



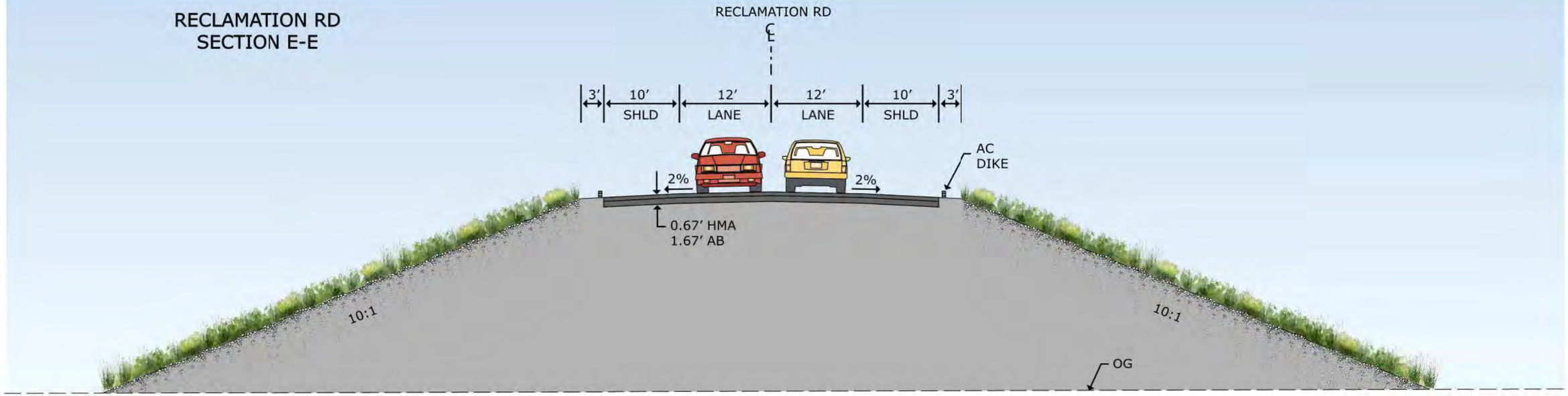
ALTERNATIVE 1: ELEVATED STRUCTURE DESIGN FROM US 101 TO SEARS POINT

X-4
SCALE: NTS

LAKEVIEW RD SECTION F-F



RECLAMATION RD SECTION E-E



ALTERNATIVE 1: ELEVATED STRUCTURE DESIGN FROM US 101 TO SEARS POINT

X-5
SCALE: NTS

PRELIMINARY
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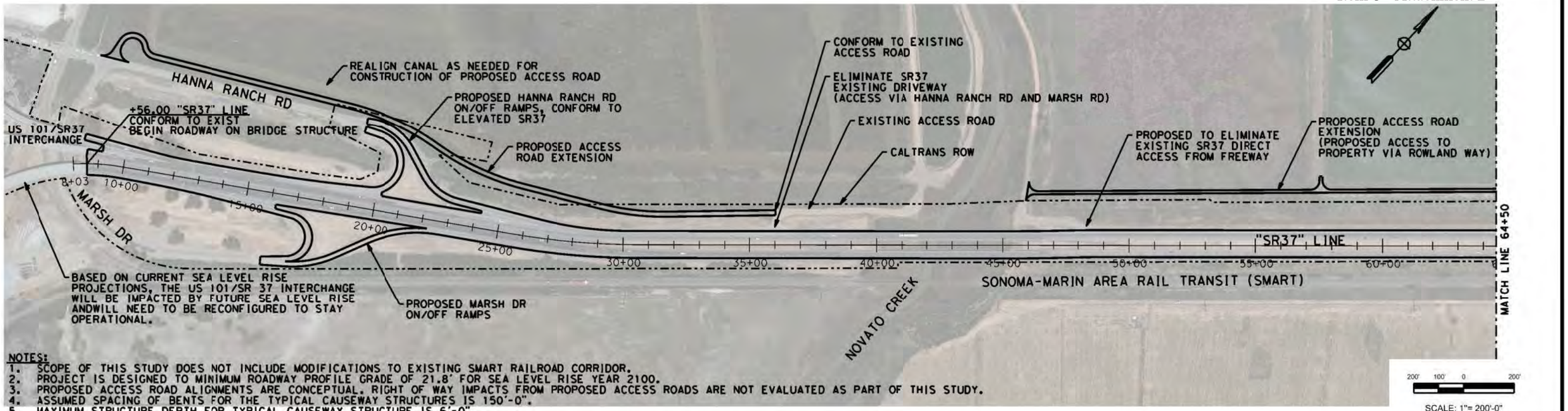
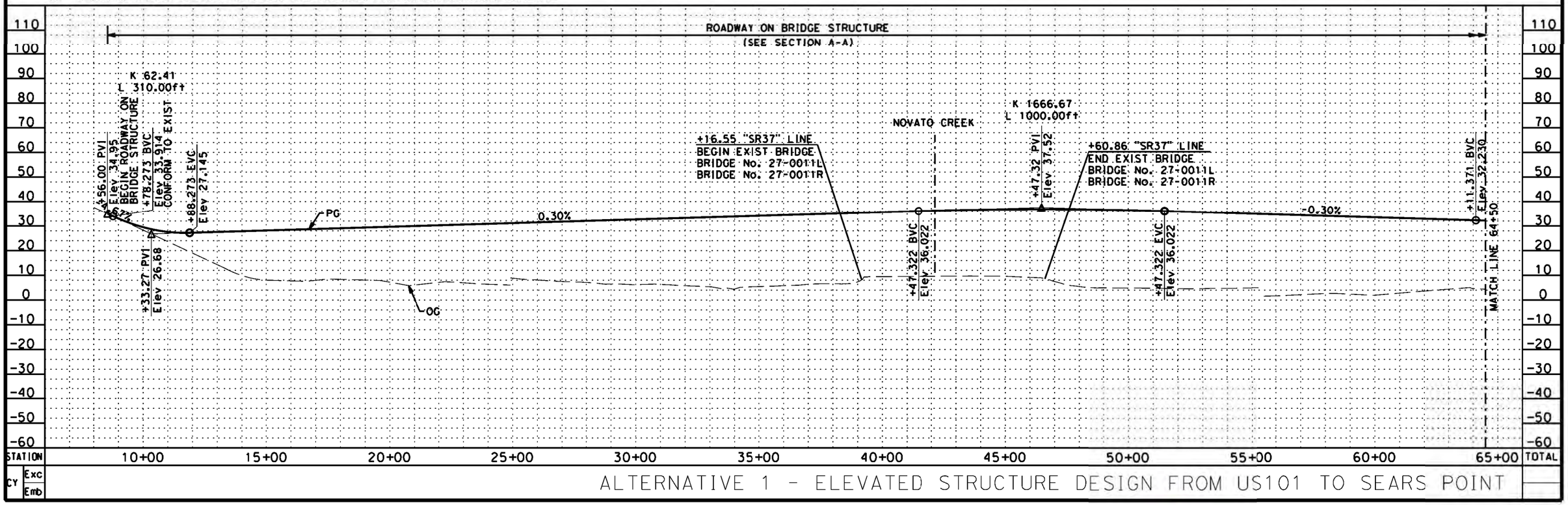
Attachment B

TAM Transportation Authority of Marin

HNTB



NOTES:
1. SCOPE OF THIS STUDY DOES NOT INCLUDE MODIFICATIONS TO EXISTING SMART RAILROAD CORRIDOR.
2. PROJECT IS DESIGNED TO MINIMUM ROADWAY PROFILE GRADE OF 21.8' FOR SEA LEVEL RISE YEAR 2100.
3. PROPOSED ACCESS ROAD ALIGNMENTS ARE CONCEPTUAL. RIGHT OF WAY IMPACTS FROM PROPOSED ACCESS ROADS ARE NOT EVALUATED AS PART OF THIS STUDY.
4. ASSUMED SPACING OF BENTS FOR THE TYPICAL CAUSEWAY STRUCTURES IS 150'-0".
5. MAXIMUM STRUCTURE DEPTH FOR TYPICAL CAUSEWAY STRUCTURE IS 6'-0".
6. LARGE DIAMETER STEEL PIPE PILES ARE ASSUMED FOR SUPERSTRUCTURE SUPPORT.



ALTERNATIVE 1 - ELEVATED STRUCTURE DESIGN FROM US101 TO SEARS POINT

PRELIMINARY
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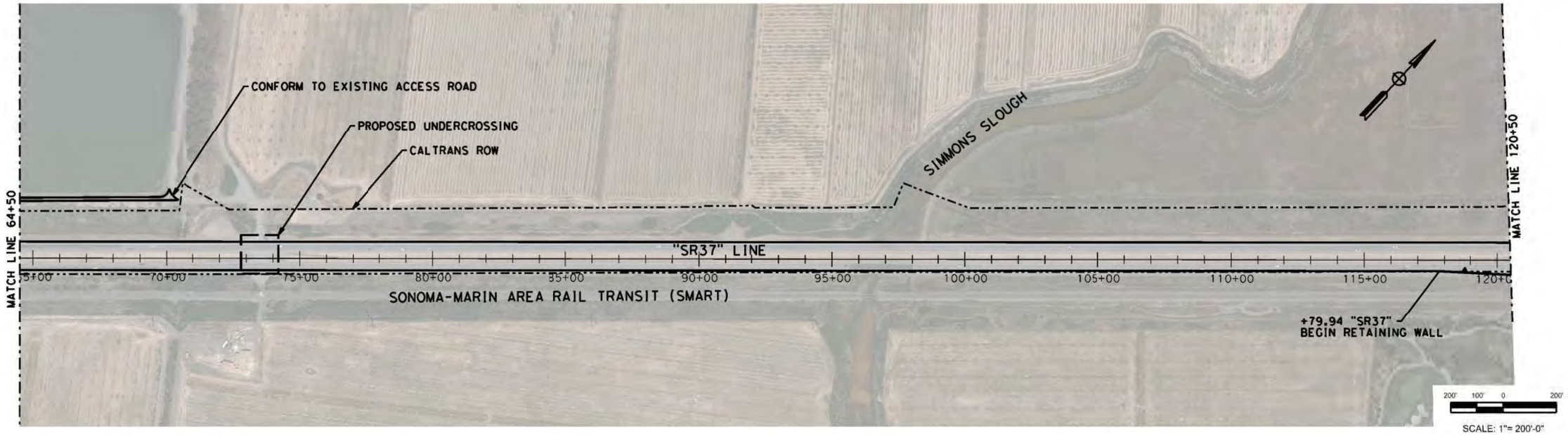
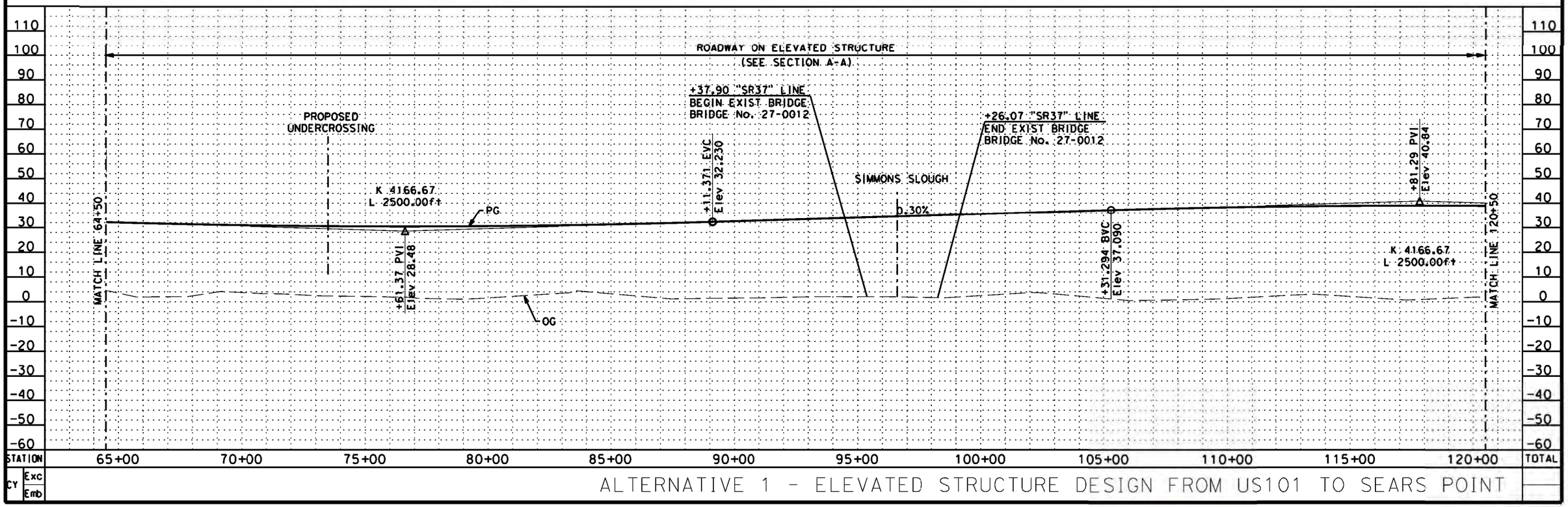
Attachment B

Transportation Authority of Marin

HNTB





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Attachment B

Transportation Authority of Marin

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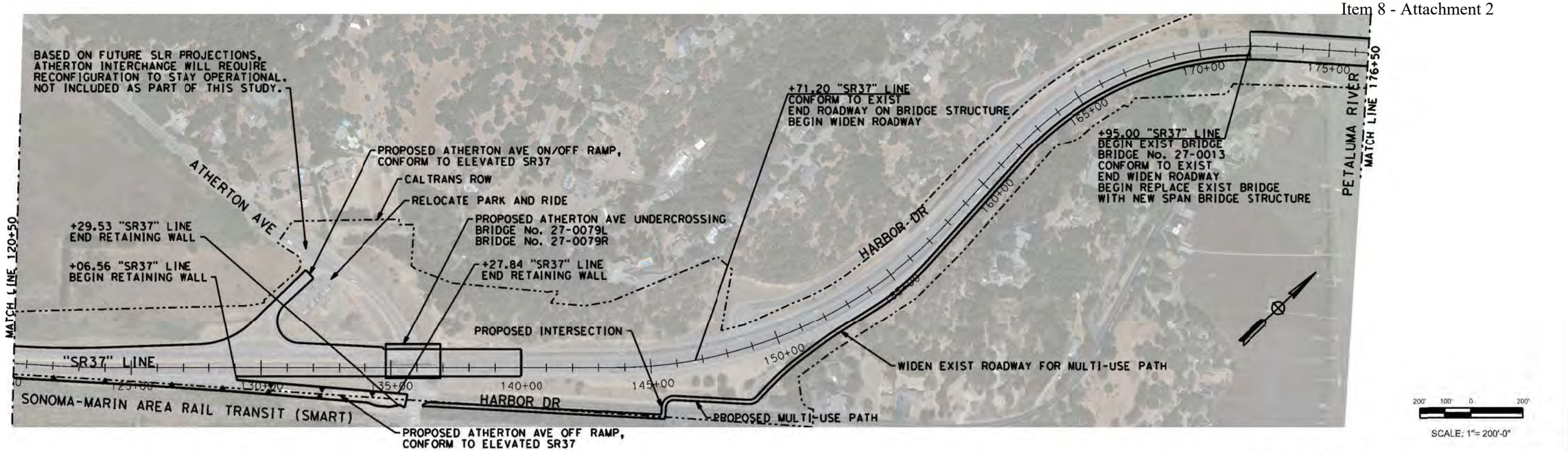
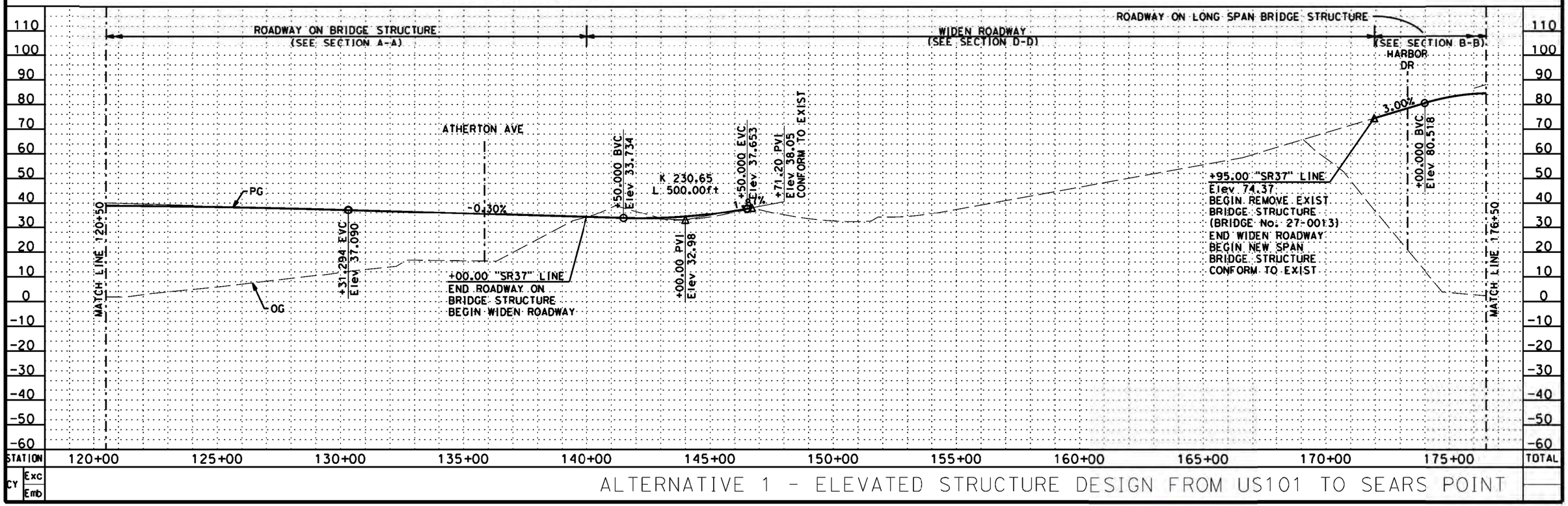
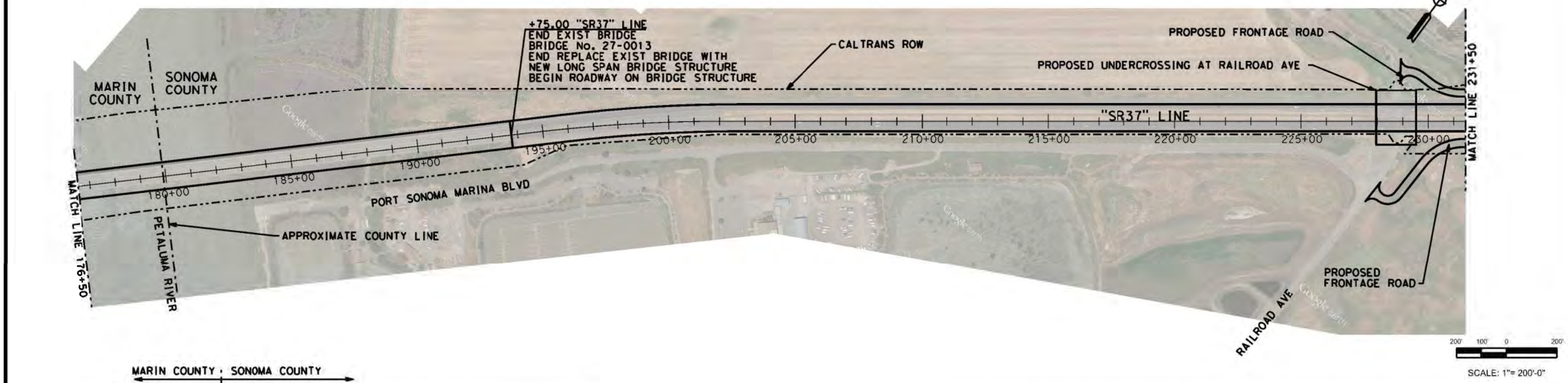


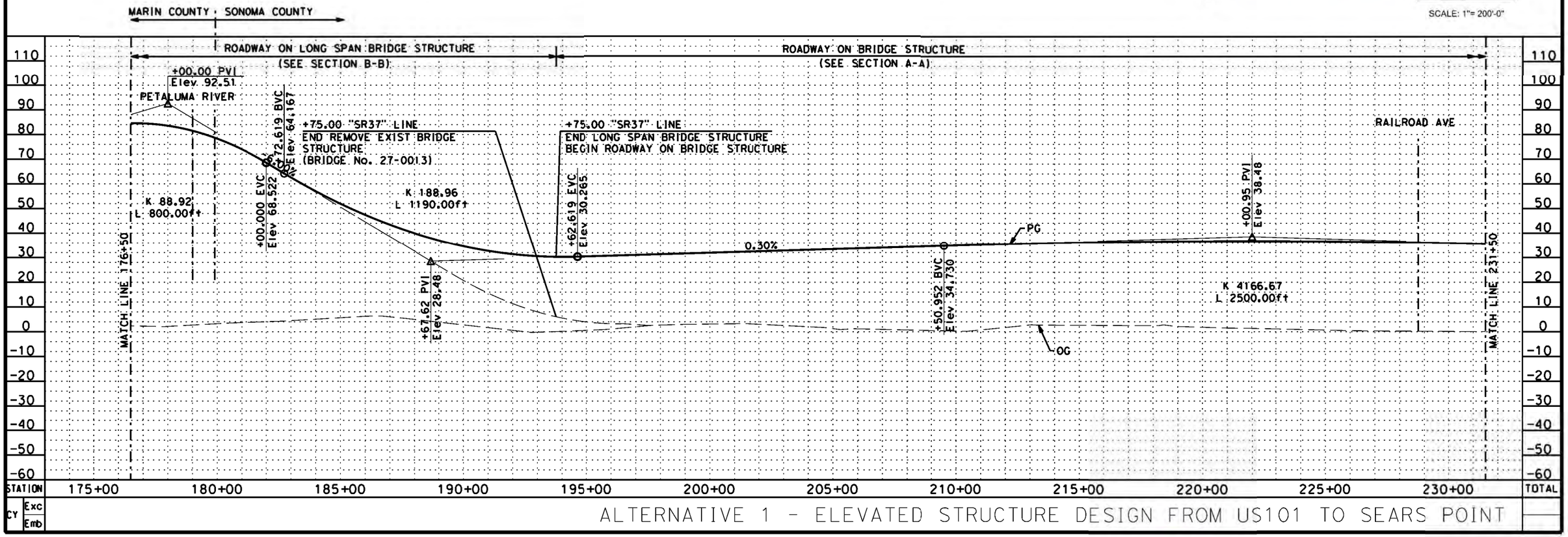


ALTERNATIVE 1 - ELEVATED STRUCTURE DESIGN FROM US101 TO SEARS POINT

PRELIMINARY
FOR DISCUSSION ONLY

Attachment B





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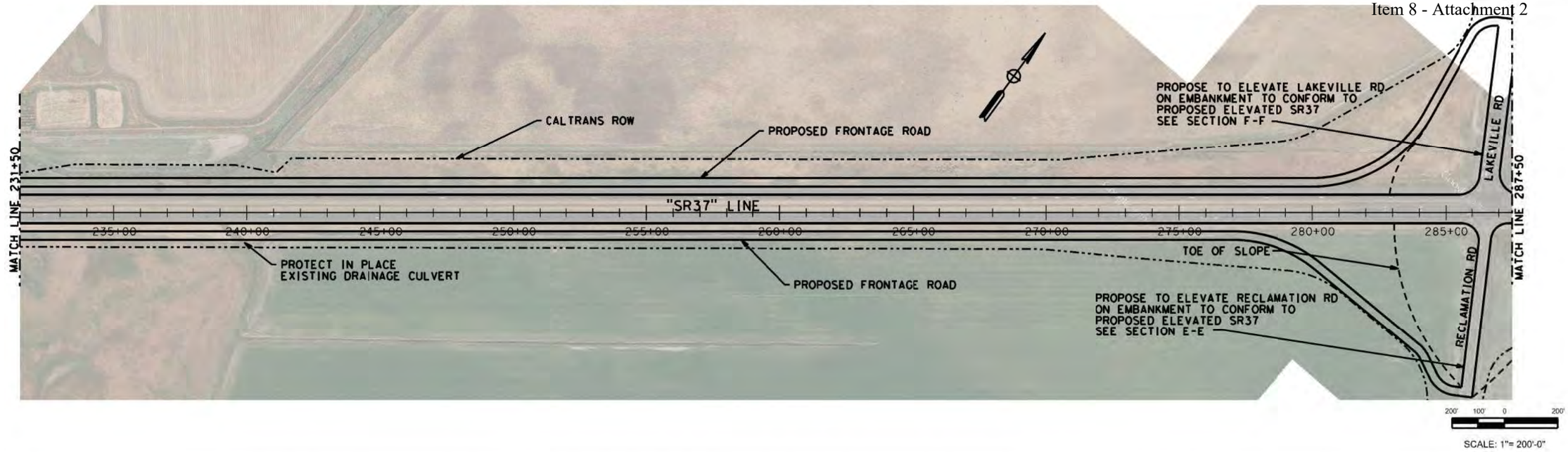

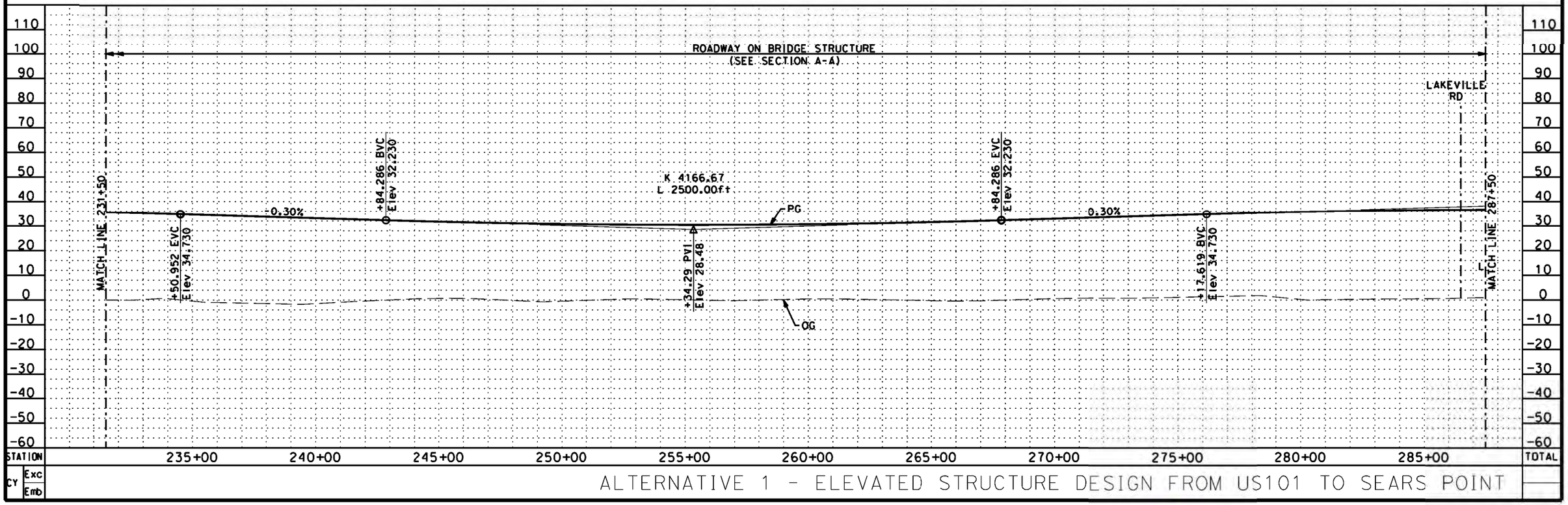

PRELIMINARY
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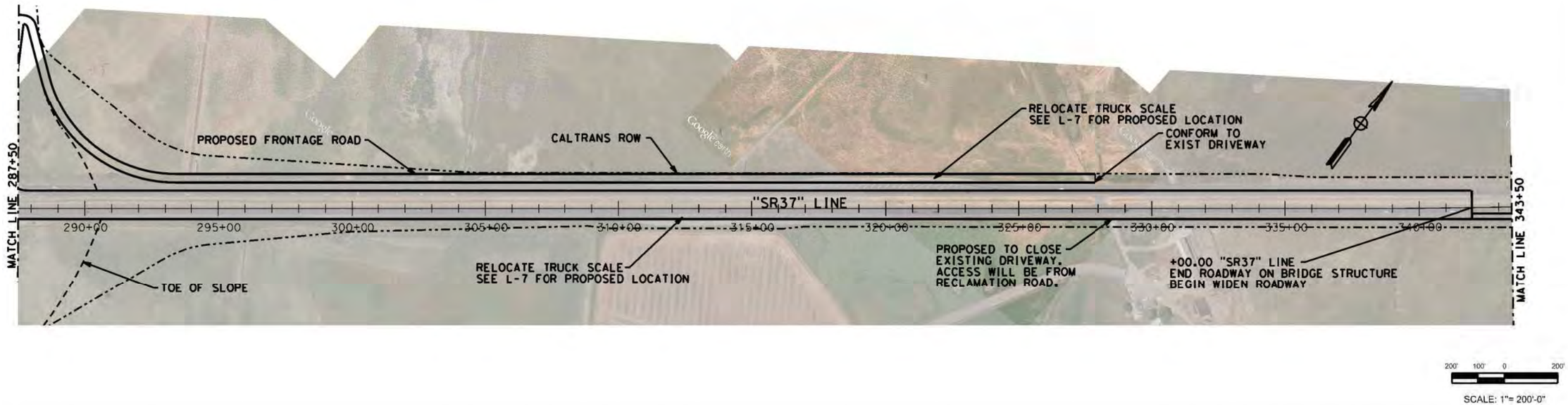
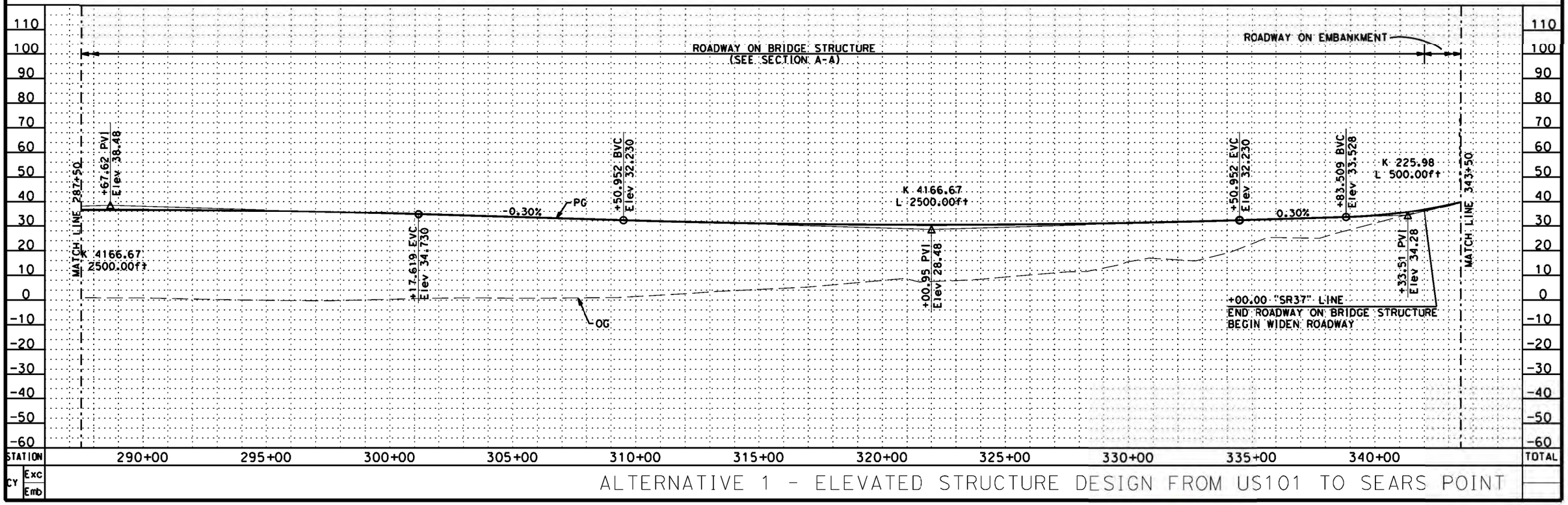


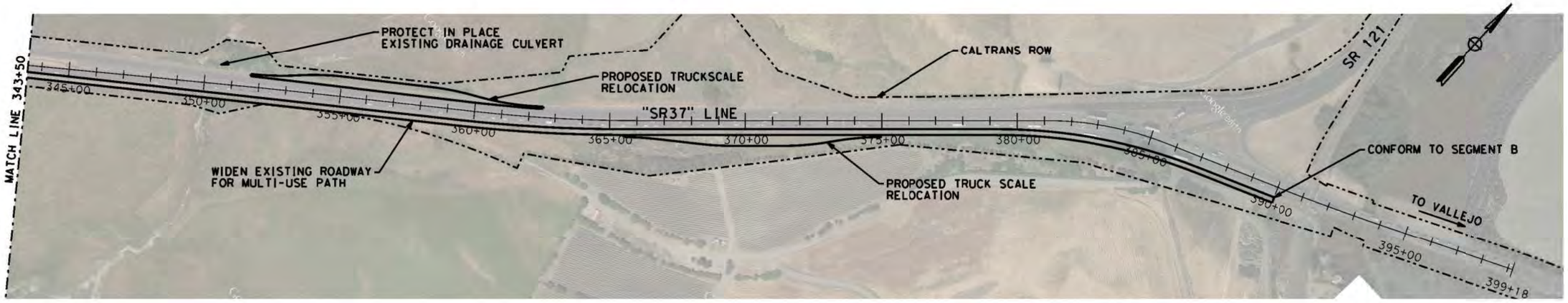


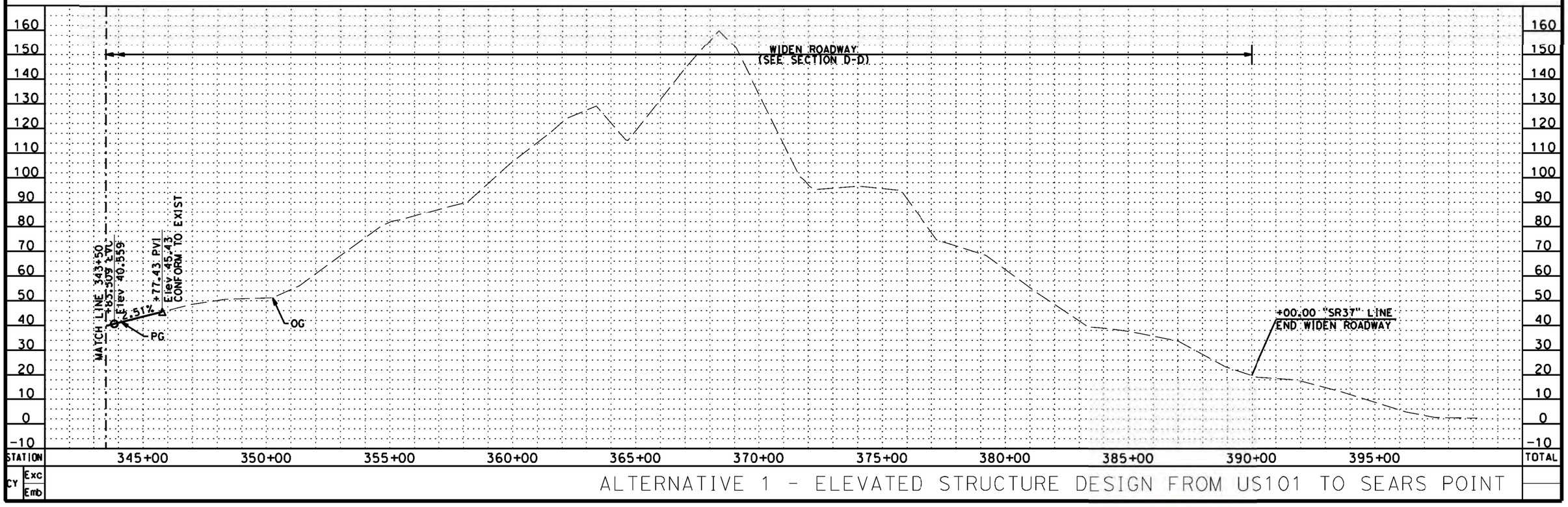
PRELIMINARY
FOR DISCUSSION ONLY

Attachment B

Transportation Authority of Marin

HNTB





PRELIMINARY
FOR DISCUSSION ONLY

Attachment B

Transportation Authority of Marin

HNTB

PROJECT

PLANNING COST ESTIMATE

EA: DS-123456 PID: DS1234567

EA: DS-123456

PID: DS1234567

District-County-Route: 04-MRN-SON-SR37

PM:

Type of Estimate : Planning Level

Program Code :

Project Limits : The project limits will be SR 37 between US 101 interchange to SR 121 junction.

Project Description: This segment extends from US 101 in Marin County for 3.4 miles and continues for 3.9 miles in Sonoma County to the SR 121 junction. Segment A is designated a 4-lane expressway with bridges over Novato Creek, Simonds Slough Creek, Petaluma River, Atherton Ave, an interchange at Highway 101 and Atherton and an at-grade intersection at Lakeville Road and SR 121. There are three minor access roads/driveways connecting to SR37. The Sonoma-Marin Area Transit (SMART) is also located south of SR 37 and runs parallel between US 101 and Atherton Ave. The roadway is relatively low-lying, about 2-6 feet NAVD88 for most of the portion except between Atherton Ave and Petaluma Bridge and transitions to rolling terrain and upload along the eastern end near the SR 37/SR 121. Portion of the road is protected by levees along Novato Creek, the Petaluma River and landward levees of the Sonoma Baylands.

Scope : This study focused on developing three alternatives as described below:
1. Alternative 1: An all bridge alternative between US 101 to SR 121.
2. Alternative 2: A hybrid option (bridge and embankment) between US 101 to SR 121.
3. Alternative 3: A raised roadway between US 101 to Novato Creek.

Alternative : Alternative 1 - Marin County Cost Only (Segment A1)

SUMMARY OF PROJECT COST ESTIMATE

	Current Year Cost	Escalated Cost
TOTAL ROADWAY COST	$ 55,081,400	$ 85,816,946
TOTAL STRUCTURES COST	$ 602,741,230	$ 939,072,198
SUBTOTAL CONSTRUCTION COST	$ 657,822,630	$ 1,024,889,143
TOTAL RIGHT OF WAY COST	$ 12,300,000	$ 12,300,000
TOTAL CAPITAL OUTLAY COSTS	$ 670,123,000	$ 1,037,190,000
PR/ED SUPPORT	$ 10,100,000	$ 10,100,000
PS&E SUPPORT	$ 53,609,840	$ 53,609,840
RIGHT OF WAY SUPPORT	$ 26,804,920	$ 26,804,920
CONSTRUCTION SUPPORT	$ 80,414,760	$ 80,414,760
TOTAL SUPPORT COST	$ 170,929,520	$ 170,929,520
TOTAL PROJECT COST	$ 842,000,000	$ 1,209,000,000

If Project has been programmed enter Programmed Amount NA

Month / Year

Date of Estimate (Month/Year) 3 / 2018

Estimated Construction Start (Month/Year) _____ /

Number of Working Days =

Estimated Mid-Point of Construction (Month/Year) _____ /

Estimated Construction End (Month/Year) _____ /

Number of Plant Establishment Days

Estimated Project Schedule

PID Approval	xx/xx/xxxx
PA/ED Approval	xx/xx/xxxx
PS&E	xx/xx/xxxx
RTL	xx/xx/xxxx
Begin Construction	xx/xx/xxxx

Reviewed by District O.E. or Cost Estimate Certifier

xx/xx/xxxx (xxx) xxx-xxxx

Office Engineer / Cost Estimate Certifier **Date** **Phone**

Approved by Project Manager

xx/xx/xxxx (xxx) xxx-xxxx

Project Manager **Date** **Phone**

I. ROADWAY ITEMS SUMMARY

	Section		Cost
1	**Earthwork**	$	36,000
2	**Pavement Structural Section**	$	2,497,700
3	**Drainage**	$	15,029,500
4	**Specialty Items**	$	5,408,800
5	**Environmental**	$	349,500
6	**Traffic Items**	$	4,404,600
7	**Detours**	$	250,000
8	**Minor Items**	$	2,797,700
9	**Roadway Mobilization**	$	3,077,400
10	**Supplemental Work**	$	1,638,700
11	**State Furnished**	$	1,231,000.00
12	**Time-Related Overhead**	$	-
13	**Roadway Contingency**	$	18,360,500.00
	TOTAL ROADWAY ITEMS	**$**	**55,081,400**

Estimate Prepared By :

Name and Title | Date | Phone

Estimate Reviewed By :

Name and Title | Date | Phone

By signing this estimate you are attesting that you have discussed your project with all functional units and have incorporated all their comments or have discussed with them why they will not be incorporated.

SECTION 1: EARTHWORK

Item code		Unit	Quantity		Unit Price ($)			Cost
190101	Roadway Excavation	CY		x		=	$	-
19010X	Roadway Excavation (Type X) ADL	CY		x		=	$	-
194001	Ditch Excavation	CY		x		=	$	-
198010	Imported Borrow	CY	0	x	11.00	=	$	-
192037	Structure Excavation (Retaining Wall)	CY		x		=	$	-
193013	Structure Backfill (Retaining Wall)	CY		x		=	$	-
193031	Pervious Backfill Material (Retaining Wall)	CY		x		=	$	-
170105	Clearing & Grubbing	ACRE	2	x	3,000.00	=	$	6,000
170101	Develop Water Supply	LS	1	x	30,000.00	=	$	30,000
210130	Duff	ACRE		x		=	$	-
XXXXXX	Some Item	Unit						

TOTAL EARTHWORK SECTION ITEMS	**$**	**36,000**

SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code		Unit	Quantity		Unit Price ($)			Cost
401050	Jointed Plain Concrete Pavement	CY		x		=	$	-
400050	Continuously Reinforced Concrete Pavement	CY		x		=	$	-
404092	Seal Pavement Joint	LF		x		=	$	-
404093	Seal Isolation Joint	LF		x		=	$	-
413117	Seal Concrete Pavement Joint (Silicone)	LF		x		=	$	-
413118	Seal Pavement Joint (Asphalt Rubber)	LF		x		=	$	-
280010	Rapid Strength Concrete Base	CY		x		=	$	-
410095	Dowel Bar (Drill and Bond)	EA		x		=	$	-
390132	Hot Mix Asphalt (Type A)	TON	4,290	x	105.00	=	$	450,450
390137	Rubberized Hot Mix Asphalt (Gap Graded)	TON	530	x	160.00	=	$	84,800
39300X	Geosynthetic Pavement Interlayer (Type X)	SQYD		x		=	$	-
260203	Class 2 Aggregate Base	CY	3,300	x	80.00	=	$	264,000
290201	Asphalt Treated Permeable Base	CY		x		=	$	-
250401	Class 4 Aggregate Subbase	CY		x		=	$	-
374002	Asphaltic Emulsion (Fog Seal Coat)	TON		x		=	$	-
397005	Tack Coat	TON		x		=	$	-
377501	Slurry Seal	TON		x		=	$	-
3750XX	Screenings (Type XX)	TON		x		=	$	-
374492	Asphaltic Emulsion (Polymer Modified)	TON		x		=	$	-
370001	Sand Cover (Seal)	TON		x		=	$	-
731530	Minor Concrete (Textured Paving)	CY		x		=	$	-
731502	Minor Concrete (Miscellaneous Construction)	CY		x		=	$	-
394073	Place Hot Mix Asphalt Dike (Type A)	LF		x		=	$	-
150771	Remove Asphalt Concrete Dike	LF		x		=	$	-
420201	Grind Existing Concrete Pavement	SQYD		x		=	$	-
782200	Obliterate Surfacing	SQYD	199,550	x	3.50	=	$	698,425
390095	Replace Asphalt Concrete Surfacing	CY		x		=	$	-
15312X	Remove Concrete	LF/CY/LS		x		=	$	-
394090	Place Hot Mix Asphalt (Miscellaneous Area)	SQYD		x		=	$	-
153103	Cold Plane Asphalt Concrete Pavement	SQYD		x		=	$	-
846051	12" Rumble Strip (Asphalt Concrete Pavement)	STA		x		=	$	-
413113	Repair Spalled Joints, Polyester Grout	SQYD		x		=	$	-
420102	Groove Existing Concrete Pavement	SQYD		x		=	$	-
390136	Minor Hot Mix Asphalt	TON		x		=	$	-
394095	Roadside Paving (Miscellaneous Areas)	SQYD		x		=	$	-
XXXXXX	Ramp & Interaction Reconstruction	LS	1	x	1,000,000.00	=	$	1,000,000

TOTAL PAVEMENT STRUCTURAL SECTION ITEMS	**$**	**2,497,700**

SECTION 3: DRAINAGE

Item code		Unit	Quantity		Unit Price ($)			Cost
15080X	Remove Culvert	EA/LF		x		=	$	-
150820	Modify Inlet	EA		x		=	$	-
155232	Sand Backfill	CY		x		=	$	-
15020X	Abandon Culvert	EA/LF		x		=	$	-
152430	Adjust Inlet	LF		x		=	$	-
155003	Cap Inlet	EA		x		=	$	-
510501	Minor Concrete	CY		x		=	$	-
510502	Minor Concrete (Minor Structure)	CY	240	x	2,720.00	=	$	652,800
5105XX	Minor Concrete (Type XX)	CY		x		=	$	-
620XXX	XX" Alternative Pipe Culvert (Type X)	LF		x		=	$	-
6411XX	XX" Plastic Pipe	LF		x		=	$	-
650014	18" Reinforced Concrete Pipe	LF	32,090	x	310.00	=	$	9,947,900
6650XX	XX" Corrugated Steel Pipe (0.XXX" Thick)	LF		x		=	$	-
68XXXX	XX" Plastic Pipe (Edge Drain)	LF		x		=	$	-
69011X	XX" Corrugated Steel Pipe Downdrain (0.XXX" Thick)	LF		x		=	$	-
70321X	XX" Corrugated Steel Pipe Inlet (0.XXX" Thick)	LF		x		=	$	-
70XXXX	XX" Corrugated Steel Pipe Riser (0.XXX" Thick)	LF		x		=	$	-
7050XX	XX" Steel Flared End Section	EA		x		=	$	-
703233	Grated Line Drain	LF		x		=	$	-
72XXXX	Rock Slope Protection (Type and Method)	CY/TON		x		=	$	-
72901X	Rock Slope Protection Fabric (Class X)	SQYD		x		=	$	-
721420	Concrete (Ditch Lining)	CY		x		=	$	-
721430	Concrete (Channel Lining)	CY		x		=	$	-
750001	Miscellaneous Iron and Steel	LB	16,360	x	6.00	=	$	98,160
XXXXXX	Additional Drainage (1% of Section 1-2 and Structure)	LS	433,063,150	x	0.01	=	$	4,330,632

TOTAL DRAINAGE ITEMS $ 15,029,500

SECTION 4: SPECIALTY ITEMS

Item code		Unit	Quantity		Unit Price ($)			Cost
080050	Progress Schedule (Critical Path Method)	LS		x		=	$	-
582001	Sound Wall (Masonry Block)	SQFT		x		=	$	-
510530	Minor Concrete (Wall)	CY		x		=	$	-
15325X	Remove Sound Wall	LF/LS		x		=	$	-
070030	Lead Compliance Plan	LS		x		=	$	-
141120	Treated Wood Waste	LB		x		=	$	-
153221	Remove Concrete Barrier	LF		x		=	$	-
150662	Remove Metal Beam Guard Railing	LF	13,815	x	15.00	=	$	207,225
150668	Remove Flared End Section	EA		x		=	$	-
8000XX	Chain Link Fence (Type XX)	LF		x		=	$	-
80XXXX	XX" Chain Link Gate (Type CL-6)	EA		x		=	$	-
832001	Metal Beam Guard Railing	LF		x		=	$	-
839302	Single Thrie Beam Barrier (Wood Post)	LF	2,230	x	40.00	=	$	89,200
839311	Double Thrie Beam Barrier (Wood Post)	LF		x		=	$	-
833088	Tubular Handrailing	LF	27,630	x	110.00	=	$	3,039,300
8395XX	Terminal System (Type CAT)	EA		x		=	$	-
839585	Alternative Flared Terminal System	EA		x		=	$	-
839584	Alternative In-line Terminal System	EA		x		=	$	-
4906XX	CIDH Concrete Piling (Insert Diameter)	LF		x		=	$	-
839XXX	Crash Cushion (Insert Type)	EA		x		=	$	-
839701	Concrete Barrier (Type 60)	LF		x		=	$	-
839717	Concrete Barrier (Type 732 MOD)	LF	13,820	x	150.00	=	$	2,073,000
839720	Concrete Barrier (Type 732)	LF		x		=	$	-
513553	Retaining Wall (Masonry Wall)	SQFT		x		=	$	-
511035	Architectural Treatment	SQFT		x		=	$	-
598001	Anti-Graffiti Coating	SQFT		x		=	$	-
203070	Rock Stain	SQFT		x		=	$	-
5136XX	Reinforced Concrete Crib Wall (Type X)	SQFT		x		=	$	-
83954X	Transition Railing (Type X)	EA		x		=	$	-
597601	Prepare and Stain Concrete	SQFT		x		=	$	-
839561	Rail Tensioning Assembly	EA		x		=	$	-
83958X	End Anchor Assembly (Type X)	EA		x		=	$	-
013341	Truck scale (Assume replace in kind)	LS	0	x	300,000.00	=	$	-

TOTAL SPECIALTY ITEMS $ 5,408,800

SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Item code		Unit	Quantity		Unit Price ($)			Cost		
	Biological Mitigation	LS	1	x	2,500.00	=	$	2,500		
130670	Temporary Reinforced Silt Fence	LF	33,000	x	9.00	=	$	297,000		
141000	Temporary Fence (Type ESA)	LF		x		=	$	-		
								Subtotal Environmental Mitigation	$	*299,500*

5B - LANDSCAPE AND IRRIGATION

Item code		Unit	Quantity		Unit Price ($)			Cost		
20XXXX	Highway Planting	LS	1	x		=	$	-		
20XXXX	Irrigation System	LS		x		=	$	-		
204099	Plant Establishment Work	LS		x		=	$	-		
204101	Extend Plant Establishment Work	LS		x		=	$	-		
20XXXX	Follow-up Landscape Project	LS		x		=	$	-		
150685	Remove Irrigation Facility	LS		x		=	$	-		
20XXXX	Maintain Existing (Irrigation or Planted Areas)	LS		x		=	$	-		
206400	Check and Test Existing Irrigation Facilities	LS		x		=	$	-		
21011X	Imported Topsoil (X)	CY/TON		x		=	$	-		
20XXXX	Rock Blanket, Rock Mulch, DG, Gravel Mulch	SQFT/SQYD		x		=	$	-		
200122	Weed Germination	SQYD		x		=	$	-		
208304	Water Meter	EA		x		=	$	-		
2087XX	XX" Conduit (Use for Irrigation x-overs)	LF		x		=	$	-		
20890X	Extend X" Conduit (Use for Extension of Irrigation	LF		x		=	$	-		
								Subtotal Landscape and Irrigation	$	-

5C - EROSION CONTROL

Item code		Unit	Quantity		Unit Price ($)			Cost		
210010	Move In/Move Out (Erosion Control)	EA		x		=	$	-		
210350	Fiber Rolls	LF		x		=	$	-		
210360	Compost Sock	LF		x		=	$	-		
2102XX	Rolled Erosion Control Product (X)	SQFT		x		=	$	-		
21025X	Bonded Fiber Matrix	SQFT/ACRE		x		=	$	-		
210300	Hydromulch	SQFT		x		=	$	-		
210420	Straw	SQFT		x		=	$	-		
210430	Hydroseed	SQFT		x		=	$	-		
210600	Compost	SQFT		x		=	$	-		
210630	Incorporate Materials	SQFT		x		=	$	-		
								Subtotal Erosion Control	$	-

5D - NPDES

Item code		Unit	Quantity		Unit Price ($)			Cost		
130300	Prepare SWPPP	LS	1	x	50,000.00	=	$	50,000		
130200	Prepare WPCP	LS		x		=	$	-		
130100	Job Site Management	LS		x		=	$	-		
130330	Storm Water Annual Report	EA		x		=	$	-		
130310	Rain Event Action Plan (REAP)	EA		x		=	$	-		
130320	Storm Water Sampling and Analysis Day	EA		x		=	$	-		
130520	Temporary Hydraulic Mulch	SQYD		x		=	$	-		
130550	Temporary Hydroseed	SQYD		x		=	$	-		
130505	Move-In/Move-Out (Temporary Erosion Control)	EA		x		=	$	-		
130640	Temporary Fiber Roll	LF		x		=	$	-		
130900	Temporary Concrete Washout	LS		x		=	$	-		
130710	Temporary Construction Entrance	EA		x		=	$	-		
130610	Temporary Check Dam	LF		x		=	$	-		
130620	Temporary Drainage Inlet Protection	EA		x		=	$	-		
130730	Street Sweeping	LS		x		=	$	-		
								Subtotal NPDES	$	*50,000*

								TOTAL ENVIRONMENTAL	**$**	**349,500**

Supplemental Work for NPDES

066595	Water Pollution Control Maintenance Sharing*	LS	1	x	50,000.00	=	$	50,000		
066596	Additional Water Pollution Control**	LS		x		=	$	-		
066597	Storm Water Sampling and Analysis***	LS	1	x	50,000.00	=	$	50,000		
XXXXXX	Some Item	LS		x		=	$	-		
								Subtotal Supplemental Work for NDPS	$	*100,000*

*Applies to all SWPPPs and those WPCPs with sediment control or soil stabilization BMPs.

**Applies to both SWPPPs and WPCP projects.

*** Applies only to project with SWPPPs.

SECTION 6: TRAFFIC ITEMS

6A - Traffic Electrical

Item code		Unit	Quantity		Unit Price ($)			Cost
860460	Lighting and Sign Illumination	LS	1	x	1,000,000.00	=	$	1,000,000
860201	Signal and Lighting	LS	1	x	1,500,000.00	=	$	1,500,000
860990	Closed Circuit Television System	LS		x		=	$	-
86110X	Ramp Metering System (Location X)	LS		x		=	$	-
86070X	Interconnection Conduit and Cable	LF/LS		x		=	$	-
5602XX	Furnish Sign Structure (Type X)	LB		x		=	$	-
5602XX	Install Sign Structure (Type X)	LB		x		=	$	-
498040	XX" CIDHC Pile (Sign Foundation)	LF		x		=	$	-
86080X	Inductive Loop Detectors	EA/LS		x		=	$	-
8609XX	Traffic Monitoring Station (Type X)	LS		x		=	$	-
15075X	Remove Sign Structure	EA/LS		x		=	$	-
151581	Reconstruct Sign Structure	EA		x		=	$	-
152641	Modify Sign Structure	EA		x		=	$	-
860090	Maintain Existing Traffic Management System Elem	LS		x		=	$	-
86XXXX	Fiber Optic Conduit System	LS		x		=	$	-
XXXXX	Some Item	LS		x		=	$	-

Subtotal Traffic Electrical $ *2,500,000*

6B - Traffic Signing and Striping

Item code		Unit	Quantity		Unit Price ($)			Cost
566011	Roadside Sign - One Post	EA	23	x	340.00	=	$	7,820
566012	Roadside Sign - Two Post	EA	3	x	540.00	=	$	1,620
820790	Furnish Single Sheet Aluminum Sign (0.080"	SQFT	1,840	x	20.00	=	$	36,800
560218	Furnish Sign Structure (Truss)	LB	79,600	x	4.00	=	$	318,400
150711	Remove Painted Traffic Stripe	LF		x		=	$	-
141101	Remove Yellow Painted Traffic Stripe (Hazardous W...)	LF		x		=	$	-
150712	Remove Painted Pavement Marking	SQFT		x		=	$	-
150742	Remove Roadside Sign	EA	26	x	160.00	=	$	4,160
152320	Reset Roadside Sign	EA		x		=	$	-
152390	Relocate Roadside Sign	EA		x		=	$	-
568046	Remove Sign Structure	EA	4	x	2,700.00	=	$	10,800
840502	Thermoplastic Traffic Stripe (Enhanced Wet Night V	LF		x		=	$	-
846012	Thermoplastic Crosswalk and Pavement Marking (E	SQFT		x		=	$	-
120090	Construction Area Signs	LS	1	x	25,000.00	=	$	25,000
84XXXX	Permanent Pavement Delineation	LS	1	x	500,000.00	=	$	500,000

Subtotal Traffic Signing and Striping $ *904,600*

6C - Traffic Management Plan

Item code		Unit	Quantity		Unit Price ($)			Cost
12865X	Portable Changeable Message Signs	EA/LS		x		=	$	-

Subtotal Traffic Management Plan $ -

6C - Stage Construction and Traffic Handling

Item code		Unit	Quantity		Unit Price ($)			Cost
120199	Traffic Plastic Drum	EA		x		=	$	-
12016X	Channelizer (Type X)	EA		x		=	$	-
120120	Type III Barricade	EA		x		=	$	-
129100	Temporary Crash Cushion Module	EA		x		=	$	-
120100	Traffic Control System	LS	1	x	1,000,000.00	=	$	1,000,000
129110	Temporary Crash Cushion	EA		x		=	$	-
129000	Temporary Railing (Type K)	LF		x		=	$	-
120149	Temporary Pavement Marking (Paint)	SQFT		x		=	$	-
82010X	Delineator (Class X)	EA		x		=	$	-
XXXXXX	Some Item	Unit		x		=	$	-

Subtotal Stage Construction and Traffic Handling $ *1,000,000*

TOTAL TRAFFIC ITEMS **$ 4,404,600**

SECTION 7: DETOURS

Includes constructing, maintaining, and removal

Item code		Unit	Quantity		Unit Price ($)			Cost
190101	Roadway Excavation	CY		x		=	$	-
19801X	Imported Borrow	CY/TON		x		=	$	-
390132	Hot Mix Asphalt (Type A)	TON		x		=	$	-
26020X	Class 2 Aggregate Base	TON/CY		x		=	$	-
250401	Class 4 Aggregate Subbase	CY		x		=	$	-
130620	Temporary Drainage Inlet Protection	EA		x		=	$	-
129000	Temporary Railing (Type K)	LF		x		=	$	-
128601	Temporary Signal System	LS		x		=	$	-
120149	Temporary Pavement Marking (Paint)	SQFT		x		=	$	-
80010X	Temporary Fence (Type X)	LF		x		=	$	-
XXXXXX	Detour	LS	1	x	250,000.00	=	$	250,000

TOTAL DETOURS	**$**	**250,000**
SUBTOTAL SECTIONS 1 through 7	$	27,976,100

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items						
ADA Items			1.0%	$	279,761	
8B - Bike Path Items						
Bike Path Items			1.0%	$	279,761	
8C - Other Minor Items						
Other Minor Items			8.0%	$	2,238,088	
Total of Section 1-7	$	27,976,100	x 10.0%	= $	2,797,610	

TOTAL MINOR ITEMS	**$**	**2,797,700**

SECTIONS 9: MOBILIZATION

Item code								
999990	Total Section 1-8	$	30,773,800	x	10%	=	$	3,077,380

TOTAL MOBILIZATION	**$**	**3,077,400**

SECTION 10: SUPPLEMENTAL WORK

Item code		Unit	Quantity		Unit Price ($)			Cost
066670	Payment Adjustments For Price Index Fluctuations	LS		x		=	$	-
066094	Value Analysis	LS		x		=	$	-
066070	Maintain Traffic	LS		x		=	$	-
066919	Dispute Resolution Board	LS		x		=	$	-
066921	Dispute Resolution Advisor	LS		x		=	$	-
066015	Federal Trainee Program	LS		x		=	$	-
066610	Partnering	LS		x		=	$	-
066204	Remove Rock and Debris	LS		x		=	$	-
066222	Locate Existing Crossover	LS		x		=	$	-
XXXXXX	Some Item	Unit		x		=	$	-
	*Cost of **NPDES** Supplemental Work specified in Section 5D*					=	$	100,000
	Total Section 1-8	$	30,773,800		5%	=	$	1,538,690

TOTAL SUPPLEMENTAL WORK	**$**	**1,638,700**

SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

Item code		Unit	Quantity		Unit Price ($)		Cost
066105	Resident Engineers Office	LS		x		=	$0
066063	Traffic Management Plan - Public Information	LS		x		=	$0
066901	Water Expenses	LS		x		=	$0
8609XX	Traffic Monitoring Station (X)	LS		x		=	$0
066841	Traffic Controller Assembly	LS		x		=	$0
066840	Traffic Signal Controller Assembly	LS		x		=	$0
066062	COZEEP Contract	LS		x		=	$0
066838	Reflective Numbers and Edge Sealer	LS		x		=	$0
066065	Tow Truck Service Patrol	LS		x		=	$0
066916	Annual Construction General Permit Fee	LS		x		=	$0
XXXXXX	Some Item	Unit		x		=	$0
	Total Section 1-8		$ 30,773,800		4%	=	$ 1,230,952

TOTAL STATE FURNISHED **$1,231,000**

SECTION 12: TIME-RELATED OVERHEAD

Total of Roadway and Structures Contract Items excluding Mobilization $590,462,085 (used to calculate TRO)

Total Construction Cost (excluding TRO and Contingency) $639,462,130 (used to check if project is greater than $5 million excluding contingency)

Estiamted Time-Releated Overhead (TRO) Percentage (0% to 10%) = **10%**

Item code		Unit	Quantity		Unit Price ($)		Cost
070018	Time-Related Overhead	WD	0	X	#DIV/0!	=	$0

TOTAL TIME-RELATED OVERHEAD **$0**

Note: If the building portion of the project is greater than 50% of the total project cost, then TRO is not included.

SECTION 13: ROADWAY CONTINGENCY

Recommended Contingency: (Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Total Section 1-12	$	36,720,900	x	**50%**	=	$18,360,450

TOTAL CONTINGENCY **$18,360,500**

II. STRUCTURE ITEMS

	Bridge 1	Bridge 2	Bridge 3
DATE OF ESTIMATE	03/14/18	03/14/18	03/14/18
Bridge Name	Main Causeway	On/Off Ramps	Petaluma River Replace
Bridge Number	57-XXX	57-XXX	57-XXX
Structure Type	PC/PS Girders	PC/PS Girders	Long Span Bridge
Width (Feet) [out to out]	97 LF	29 LF	95 LF
Total Bridge Length (Feet)	13122 LF	6660 LF	695 LF
Total Area (Square Feet)	1278083 SQFT	193140 SQFT	66025 SQFT
Structure Depth (Feet)	6 LF	6 LF	5 LF
Footing Type (pile or spread)	Large Diameter Steel Piles	Large Diameter Steel Piles	Large Diameter Steel Piles
Cost Per Square Foot	$250	$250	$950
COST OF EACH	**$319,520,700**	**$48,285,000**	**$62,723,750**

DATE OF ESTIMATE	00/00/00	00/00/00	00/00/00
Name	xxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxx
Bridge Number	57-XXX	57-XXX	57-XXX
Structure Type	xxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxx
Width (Feet) [out to out]	0 LF	0 LF	0 LF
Total Length (Feet)	0 LF	0 LF	0 LF
Total Area (Square Feet)	0 SQFT	0 SQFT	0 SQFT
Structure Depth (Feet)	0 LF	0 LF	0 LF
Footing Type (pile or spread)	xxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxx
Cost Per Square Foot	$100	$0	$0
COST OF EACH	**$0**	**$0**	**$0**

TOTAL COST OF BRIDGES	**$430,529,450**
TOTAL COST OF BUILDINGS	**$0**
Structures Mobilization Percentage 10%	**$43,052,945**

Recommended Contingency: (Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Structures Contingency Percentage 30%	**$129,158,835**
TOTAL COST OF STRUCTURES	**$602,741,230**

Estimate Prepared By: _____ _____

XXXXXXXXXXXXXXXX ------ Division of Structures Date

EA: DS-123456 PID: DS1234567

III. RIGHT OF WAY

Fill in all of the available information from the Right of Way data sheet.

A)	A1)	Acquisition, including Excess Land Purchases, Damages & Goodwill, Fees		$	2,300,000
	A2)	SB-1210		$	0
B)	Acquisition of Offsite Mitigation			$	0
C)	C1)	Utility Relocation (State Share)		$	0
	C2)	Potholing (Design Phase)		$	0
D)	Railroad Acquisition			$	0
E)	Clearance / Demolition			$	0
F)	Relocation Assistance (RAP and/or Last Resort Housing Costs)			$	0
G)	Title and Escrow			$	0
H)	Environmental Review			$	0
I)	Condemnation Settlements		0%	$	0
J)	Design Appreciation Factor		0%	$	0
K)	Utility Relocation (Construction Cost)			$	10,000,000

L)	**TOTAL RIGHT OF WAY ESTIMATE**	**$12,300,000**
M)	**TOTAL R/W ESTIMATE: Escalated**	**$14,000,000**
N)	**RIGHT OF WAY SUPPORT**	**$26,804,920**

Support Cost Estimate Prepared By _____ Project Coordinator[1] Phone

Utility Estimate Prepared By _____ Utiliy Coordinator[2] Phone

R/W Acquistion Estimate Prepared By _____ Right of Way Estimator[3] Phone

Note: Items G & H applied to items A + B

[1] When estimate has Support Costs only [2] When estimate has Utility Relocation [3] When R/W Acquisition is required

DO NOT PRINT THIS SHEET AS PART OF COST ESTIMATE ATTACHMENT TO PROJECT INITIATION OR APPROVAL DOCUMENTS.

EA: DS-123456 PID: DS1234567

IV. SUPPORT COST ESTIMATE SUMMARY

Note: Use PRSM project data.

Total by FY		Escalated Support Cost for Estimate To Completion (ETC) PA&ED	PS&E	RW	CON	Total $
< 2010	Expended					
	ETC					
2011	Expended					
	ETC					
2012	Expended					
	ETC					
2013	Expended					
	ETC					
2014	Expended					
	ETC					
2015	Expended					
	ETC					
2016	Expended					
	ETC					
2017	Expended					
	ETC					
2018	Expended	$10,100,000	$53,609,840	$26,804,920	$80,414,760	$170,929,520
	ETC					
2019	Expended					
	ETC					
2020	Expended					
	ETC					
2021	Expended					
	ETC					
2022	Expended					
	ETC					
2023	Expended					
	ETC					
2024	Expended					
	ETC					
2025 >	Expended					
	ETC					
EAC (Expended + ETC)		$10,100,000	$53,609,840	$26,804,920	$80,414,760	$170,929,520
Approved Budget (PRSM)						
Difference (Budget - EAC)		-$10,100,000	-$53,609,840	-$26,804,920	-$80,414,760	-$170,929,520
Support Ratio (EAC / Cap Cost)		1.5%	8.0%	4.0%	12.0%	25.5%

Total Capital Cost:	**$670,123,000**
Total Capital Outlay Support Cost:	**$170,929,520**
Overall Percent Support Cost:	**25.51%**

PRSM workplan hours/costs verified against approved MWA:

Office Chief - Date

Approved by:

Project Control - Date

PROJECT

PLANNING COST ESTIMATE

EA: DS-123456 PID: DS1234567

EA: DS-123456

PID: DS1234567

District-County-Route: 04-MRN-SON-SR37

PM:

Type of Estimate : Planning Level

Program Code :

Project Limits : The project limits will be SR 37 between US 101 interchange to SR 121 junction.

Project Description: This segment extends from US 101 in Marin County for 3.4 miles and continues for 3.9 miles in Sonoma County to the SR 121 junction. Segment A is designated a 4-lane expressway with bridges over Novato Creek, Simonds Slough Creek, Petaluma River, Atherton Ave, an interchange at Highway 101 and Atherton and an at-grade intersection at Lakeville Road and SR 121. There are three minor access roads/driveways connecting to SR37. The Sonoma-Marin Area Transit (SMART) is also located south of SR 37 and runs parallel between US 101 and Atherton Ave. The roadway is relatively low-lying, about 2-6 feet NAVD88 for most of the portion except between Atherton Ave and Petaluma Bridge and transitions to rolling terrain and upload along the eastern end near the SR 37/SR 121. Portion of the road is protected by levees along Novato Creek, the Petaluma River and landward levees of the Sonoma Baylands.

Scope : This study focused on developing three alternatives as described below:
1. Alternative 1: An all bridge alternative between US 101 to SR 121.
2. Alternative 2: A hybrid option (bridge and embankment) between US 101 to SR 121.
3. Alternative 3: A raised roadway between US 101 to Novato Creek.

Alternative : Alternative 1 - Sonoma County Cost Only (Segment A2)

SUMMARY OF PROJECT COST ESTIMATE

	Current Year Cost	Escalated Cost
TOTAL ROADWAY COST	**$ 85,497,500**	**$ 133,205,298**
TOTAL STRUCTURES COST	**$ 693,014,000**	**$ 1,079,717,377**
SUBTOTAL CONSTRUCTION COST	**$ 778,511,500**	**$ 1,212,922,675**
TOTAL RIGHT OF WAY COST	**$ 10,450,000**	**$ 10,450,000**
TOTAL CAPITAL OUTLAY COSTS	**$ 788,962,000**	**$ 1,223,373,000**
PR/ED SUPPORT	**$ 11,500,000**	**$ 11,500,000**
PS&E SUPPORT	**$ 63,116,960**	**$ 63,116,960**
RIGHT OF WAY SUPPORT	**$ 31,558,480**	**$ 31,558,480**
CONSTRUCTION SUPPORT	**$ 94,675,440**	**$ 94,675,440**
TOTAL SUPPORT COST	**$ 200,850,880**	**$ 200,850,880**
TOTAL PROJECT COST	**$ 990,000,000**	**$ 1,425,000,000**

If Project has been programmed enter Programmed Amount NA

Month / Year

Date of Estimate (Month/Year) 3 / 2018

Estimated Construction Start (Month/Year) _____ /

Number of Working Days =

Estimated Mid-Point of Construction (Month/Year) _____ /

Estimated Construction End (Month/Year) _____ /

Number of Plant Establishment Days

Estimated Project Schedule

PID Approval	xx/xx/xxxx
PA/ED Approval	xx/xx/xxxx
PS&E	xx/xx/xxxx
RTL	xx/xx/xxxx
Begin Construction	xx/xx/xxxx

Reviewed by District O.E. or Cost Estimate Certifier

xx/xx/xxxx (xxx) xxx-xxxx

Office Engineer / Cost Estimate Certifier **Date** **Phone**

Approved by Project Manager

xx/xx/xxxx (xxx) xxx-xxxx

Project Manager **Date** **Phone**

I. ROADWAY ITEMS SUMMARY

	Section		Cost
1	**Alternative 2 - Sonoma County Estimated Cost Onl**	$	4,467,000
2	**Pavement Structural Section**	$	6,464,000
3	**Drainage**	$	19,729,900
4	**Specialty Items**	$	8,226,100
5	**Environmental**	$	439,500
6	**Traffic Items**	$	4,040,400
7	**Detours**	$	100,000
8	**Minor Items**	$	4,346,700
9	**Roadway Mobilization**	$	4,781,400
10	**Supplemental Work**	$	2,490,700
11	**State Furnished**	$	1,912,600.00
12	**Time-Related Overhead**	$	-
13	**Roadway Contingency**	$	28,499,200.00
	TOTAL ROADWAY ITEMS	**$**	**85,497,500**

Estimate Prepared By :

Name and Title Date Phone

Estimate Reviewed By :

Name and Title Date Phone

By signing this estimate you are attesting that you have discussed your project with all functional units and have incorporated all their comments or have discussed with them why they will not be incorporated.

SECTION 1: EARTHWORK

Item code		Unit	Quantity		Unit Price ($)			Cost
190101	Roadway Excavation	CY		x		=	$	-
19010X	Roadway Excavation (Type X) ADL	CY		x		=	$	-
194001	Ditch Excavation	CY		x		=	$	-
198010	Imported Borrow	CY	396,810	x	11.00	=	$	4,364,910
192037	Structure Excavation (Retaining Wall)	CY		x		=	$	-
193013	Structure Backfill (Retaining Wall)	Alternative 2 - Sonoma		x		=	$	-
193031	Pervious Backfill Material (Retaining Wall)	CY		x		=	$	-
170105	Clearing & Grubbing	ACRE	24	x	3,000.00	=	$	72,000
170101	Develop Water Supply	LS	1	x	30,000.00	=	$	30,000
210130	Duff	ACRE		x		=	$	-
XXXXXX	Some Item	Unit						

TOTAL EARTHWORK SECTION ITEMS	**$**	**4,467,000**

SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code		Unit	Quantity		Unit Price ($)			Cost
401050	Jointed Plain Concrete Pavement	CY		x		=	$	-
400050	Continuously Reinforced Concrete Pavement	CY		x		=	$	-
404092	Seal Pavement Joint	LF		x		=	$	-
404093	Seal Isolation Joint	LF		x		=	$	-
413117	Seal Concrete Pavement Joint (Silicone)	LF		x		=	$	-
413118	Seal Pavement Joint (Asphalt Rubber)	LF		x		=	$	-
280010	Rapid Strength Concrete Base	CY		x		=	$	-
410095	Dowel Bar (Drill and Bond)	EA		x		=	$	-
390132	Hot Mix Asphalt (Type A)	TON	25,170	x	105.00	=	$	2,642,850
390137	Rubberized Hot Mix Asphalt (Gap Graded)	TON	1,980	x	160.00	=	$	316,800
39300X	Geosynthetic Pavement Interlayer (Type X)	SQYD		x		=	$	-
260203	Class 2 Aggregate Base	CY	21,160	x	80.00	=	$	1,692,800
290201	Asphalt Treated Permeable Base	CY		x		=	$	-
250401	Class 4 Aggregate Subbase	CY		x		=	$	-
374002	Asphaltic Emulsion (Fog Seal Coat)	TON		x		=	$	-
397005	Tack Coat	TON		x		=	$	-
377501	Slurry Seal	TON		x		=	$	-
3750XX	Screenings (Type XX)	TON		x		=	$	-
374492	Asphaltic Emulsion (Polymer Modified)	TON		x		=	$	-
370001	Sand Cover (Seal)	TON		x		=	$	-
731530	Minor Concrete (Textured Paving)	CY		x		=	$	-
731502	Minor Concrete (Miscellaneous Construction)	CY		x		=	$	-
394073	Place Hot Mix Asphalt Dike (Type A)	LF	2,860	x	15.00	=	$	42,900
150771	Remove Asphalt Concrete Dike	LF		x		=	$	-
420201	Grind Existing Concrete Pavement	SQYD		x		=	$	-
782200	Obliterate Surfacing	SQYD	219,590	x	3.50	=	$	768,565
390095	Replace Asphalt Concrete Surfacing	CY		x		=	$	-
15312X	Remove Concrete	LF/CY/LS		x		=	$	-
394090	Place Hot Mix Asphalt (Miscellaneous Area)	SQYD		x		=	$	-
153103	Cold Plane Asphalt Concrete Pavement	SQYD		x		=	$	-
39405X	Shoulder Rumble Strip (HMA, X-In Indentations)	STA		x		=	$	-
413113	Repair Spalled Joints, Polyester Grout	SQYD		x		=	$	-
420102	Groove Existing Concrete Pavement	SQYD		x		=	$	-
390136	Minor Hot Mix Asphalt	TON		x		=	$	-
394095	Roadside Paving (Miscellaneous Areas)	SQYD		x		=	$	-
XXXXXX	Ramp & Interaction Reconstruction	LS	1	x	1,000,000.00	=	$	1,000,000

TOTAL PAVEMENT STRUCTURAL SECTION ITEMS	**$**	**6,464,000**

SECTION 3: DRAINAGE

Item code		Unit	Quantity		Unit Price ($)			Cost
15080X	Remove Culvert	EA/LF		x		=	$	-
150820	Modify Inlet	EA		x		=	$	-
155232	Sand Backfill	CY		x		=	$	-
15020X	Abandon Culvert	EA/LF		x		=	$	-
152430	Adjust Inlet	LF		x		=	$	-
155003	Cap Inlet	Alternative 2 - Sonoma County Estir		x		=	$	-
510501	Minor Concrete	CY		x		=	$	-
510502	Minor Concrete (Minor Structure)	CY	310	x	2,720.00	=	$	843,200
5105XX	Minor Concrete (Type XX)	CY		x		=	$	-
620XXX	XX" Alternative Pipe Culvert (Type X)	LF		x		=	$	-
6411XX	XX" Plastic Pipe	LF		x		=	$	-
650014	18" Reinforced Concrete Pipe	LF	44,200	x	310.00	=	$	13,702,000
6650XX	XX" Corrugated Steel Pipe (0.XXX" Thick)	LF		x		=	$	-
68XXXX	XX" Plastic Pipe (Edge Drain)	LF		x		=	$	-
69011X	XX" Corrugated Steel Pipe Downdrain (0.XXX" Thick)	LF		x		=	$	-
70321X	XX" Corrugated Steel Pipe Inlet (0.XXX" Thick)	LF		x		=	$	-
70XXXX	XX" Corrugated Steel Pipe Riser (0.XXX" Thick)	LF		x		=	$	-
7050XX	XX" Steel Flared End Section	EA		x		=	$	-
703233	Grated Line Drain	LF		x		=	$	-
72XXXX	Rock Slope Protection (Type and Method)	CY/TON		x		=	$	-
72901X	Rock Slope Protection Fabric (Class X)	SQYD		x		=	$	-
721420	Concrete (Ditch Lining)	CY		x		=	$	-
721430	Concrete (Channel Lining)	CY		x		=	$	-
750001	Miscellaneous Iron and Steel	LB	20,870	x	6.00	=	$	125,220
XXXXXX	Additional Drainage (15% of Section 1-2 and Structure)	LS	505,941,000	x	0.01	=	$	5,059,410

TOTAL DRAINAGE ITEMS $ 19,729,900

SECTION 4: SPECIALTY ITEMS

Item code		Unit	Quantity		Unit Price ($)			Cost
080050	Progress Schedule (Critical Path Method)	LS		x		=	$	-
582001	Sound Wall (Masonry Block)	SQFT		x		=	$	-
510530	Minor Concrete (Wall)	CY		x		=	$	-
15325X	Remove Sound Wall	LF/LS		x		=	$	-
070030	Lead Compliance Plan	LS		x		=	$	-
141120	Treated Wood Waste	LB		x		=	$	-
153221	Remove Concrete Barrier	LF		x		=	$	-
150662	Remove Metal Beam Guard Railing	LF	17,780	x	15.00	=	$	266,700
150668	Remove Flared End Section	EA		x		=	$	-
8000XX	Chain Link Fence (Type XX)	LF		x		=	$	-
80XXXX	XX" Chain Link Gate (Type CL-6)	EA		x		=	$	-
832001	Metal Beam Guard Railing	LF		x		=	$	-
839302	Single Thrie Beam Barrier (Wood Post)	LF	10,400	x	40.00	=	$	416,000
839311	Double Thrie Beam Barrier (Wood Post)	LF	6,080	x	60.00	=	$	364,800
833088	Tubular Handrailing	LF	35,560	x	110.00	=	$	3,911,600
8395XX	Terminal System (Type CAT)	EA		x		=	$	-
839585	Alternative Flared Terminal System	EA		x		=	$	-
839584	Alternative In-line Terminal System	EA		x		=	$	-
4906XX	CIDH Concrete Piling (Insert Diameter)	LF		x		=	$	-
839XXX	Crash Cushion (Insert Type)	EA		x		=	$	-
839701	Concrete Barrier (Type 60)	LF		x		=	$	-
839717	Concrete Barrier (Type 732 MOD)	LF	17,780	x	150.00	=	$	2,667,000
839720	Concrete Barrier (Type 732)	LF		x		=	$	-
513553	Retaining Wall (Masonry Wall)	SQFT		x		=	$	-
511035	Architectural Treatment	SQFT		x		=	$	-
598001	Anti-Graffiti Coating	SQFT		x		=	$	-
203070	Rock Stain	SQFT		x		=	$	-
5136XX	Reinforced Concrete Crib Wall (Type X)	SQFT		x		=	$	-
83954X	Transition Railing (Type X)	EA		x		=	$	-
597601	Prepare and Stain Concrete	SQFT		x		=	$	-
839561	Rail Tensioning Assembly	EA		x		=	$	-
83958X	End Anchor Assembly (Type X)	EA		x		=	$	-
013341	Truck scale (Assume replace in kind)	LS	2	x	300,000.00	=	$	600,000

TOTAL SPECIALTY ITEMS $ 8,226,100

SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Item code		Unit	Quantity		Unit Price ($)			Cost		
	Biological Mitigation	LS	1	x	2,500.00	=	$	2,500		
130670	Temporary Reinforced Silt Fence	LF	43,000	x	9.00	=	$	387,000		
141000	Temporary Fence (Type ESA)	LF		x		=	$	-		
								Subtotal Environmental Mitigation	$	*389,500*

5B - LANDSCAPE AND IRRIGATION

Alternative 2 - Sonoma County Estimated Cost Only (Segment A2)

Item code		Unit	Quantity		Unit Price ($)			Cost		
20XXXX	Highway Planting	LS	1	x		=	$	-		
20XXXX	Irrigation System	LS		x		=	$	-		
204099	Plant Establishment Work	LS		x		=	$	-		
204101	Extend Plant Establishment Work	LS		x		=	$	-		
20XXXX	Follow-up Landscape Project	LS		x		=	$	-		
150685	Remove Irrigation Facility	LS		x		=	$	-		
20XXXX	Maintain Existing (Irrigation or Planted Areas)	LS		x		=	$	-		
206400	Check and Test Existing Irrigation Facilities	LS		x		=	$	-		
21011X	Imported Topsoil (X)	CY/TON		x		=	$	-		
20XXXX	Rock Blanket, Rock Mulch, DG, Gravel Mulch	SQFT/SQYD		x		=	$	-		
200122	Weed Germination	SQYD		x		=	$	-		
208304	Water Meter	EA		x		=	$	-		
2087XX	XX" Conduit (Use for Irrigation x-overs)	LF		x		=	$	-		
20890X	Extend X" Conduit (Use for Extension of Irrigation \	LF		x		=	$	-		
								Subtotal Landscape and Irrigation	$	-

5C - EROSION CONTROL

Item code		Unit	Quantity		Unit Price ($)			Cost		
210010	Move In/Move Out (Erosion Control)	EA		x		=	$	-		
210350	Fiber Rolls	LF		x		=	$	-		
210360	Compost Sock	LF		x		=	$	-		
2102XX	Rolled Erosion Control Product (X)	SQFT		x		=	$	-		
21025X	Bonded Fiber Matrix	SQFT/ACRE		x		=	$	-		
210300	Hydromulch	SQFT		x		=	$	-		
210420	Straw	SQFT		x		=	$	-		
210430	Hydroseed	SQFT		x		=	$	-		
210600	Compost	SQFT		x		=	$	-		
210630	Incorporate Materials	SQFT		x		=	$	-		
								Subtotal Erosion Control	$	-

5D - NPDES

Item code		Unit	Quantity		Unit Price ($)			Cost		
130300	Prepare SWPPP	LS	1	x	50,000.00	=	$	50,000		
130200	Prepare WPCP	LS		x		=	$	-		
130100	Job Site Management	LS		x		=	$	-		
130330	Storm Water Annual Report	EA		x		=	$	-		
130310	Rain Event Action Plan (REAP)	EA		x		=	$	-		
130320	Storm Water Sampling and Analysis Day	EA		x		=	$	-		
130520	Temporary Hydraulic Mulch	SQYD		x		=	$	-		
130550	Temporary Hydroseed	SQYD		x		=	$	-		
130505	Move-In/Move-Out (Temporary Erosion Control)	EA		x		=	$	-		
130640	Temporary Fiber Roll	LF		x		=	$	-		
130900	Temporary Concrete Washout	LS		x		=	$	-		
130710	Temporary Construction Entrance	EA		x		=	$	-		
130610	Temporary Check Dam	LF		x		=	$	-		
130620	Temporary Drainage Inlet Protection	EA		x		=	$	-		
130730	Street Sweeping	LS		x		=	$	-		
								Subtotal NPDES	$	*50,000*

								TOTAL ENVIRONMENTAL	**$**	**439,500**

Supplemental Work for NPDES

066595	Water Pollution Control Maintenance Sharing*	LS	1	x	50,000.00	=	$	50,000		
066596	Additional Water Pollution Control**	LS		x		=	$	-		
066597	Storm Water Sampling and Analysis***	LS	1	x	50,000.00	=	$	50,000		
XXXXXX	Some Item	LS		x		=	$	-		
								Subtotal Supplemental Work for NDPS	$	*100,000*

*Applies to all SWPPPs and those WPCPs with sediment control or soil stabilization BMPs.

**Applies to both SWPPPs and WPCP projects.

*** Applies only to project with SWPPPs.

SECTION 6: TRAFFIC ITEMS

6A - Traffic Electrical

Item code		Unit	Quantity		Unit Price ($)			Cost
860460	Lighting and Sign Illumination	LS	1	x	1,000,000.00	=	$	1,000,000
860201	Signal and Lighting	LS	1	x	1,500,000.00	=	$	1,500,000
860990	Closed Circuit Television System	LS		x		=	$	-
86110X	Ramp Metering System (Location X)	LS		x		=	$	-
86070X	Interconnection Conduit and Cable	Alternative 2 - Sonoma		x		=	$	-
5602XX	Furnish Sign Structure (Type X)	LB		x		=	$	-
5602XX	Install Sign Structure (Type X)	LB		x		=	$	-
498040	XX" CIDHC Pile (Sign Foundation)	LF		x		=	$	-
86080X	Inductive Loop Detectors	EA/LS		x		=	$	-
8609XX	Traffic Monitoring Station (Type X)	LS		x		=	$	-
15075X	Remove Sign Structure	EA/LS		x		=	$	-
151581	Reconstruct Sign Structure	EA		x		=	$	-
152641	Modify Sign Structure	EA		x		=	$	-
860090	Maintain Existing Traffic Management System Elem	LS		x		=	$	-
86XXXX	Fiber Optic Conduit System	LS		x		=	$	-
XXXXX	Some Item	LS		x		=	$	-

Subtotal Traffic Electrical *$* *2,500,000*

6B - Traffic Signing and Striping

Item code		Unit	Quantity		Unit Price ($)			Cost
566011	Roadside Sign - One Post	EA	21	x	340.00	=	$	7,140
566012	Roadside Sign - Two Post	EA	7	x	540.00	=	$	3,780
5602XX	Furnish Sign	SQFT		x		=	$	-
568016	Install Sign Panel on Existing Frame	SQFT		x		=	$	-
150711	Remove Painted Traffic Stripe	LF		x		=	$	-
141101	Remove Yellow Painted Traffic Stripe (Hazardous Wst.)	LF		x		=	$	-
150712	Remove Painted Pavement Marking	SQFT		x		=	$	-
150742	Remove Roadside Sign	EA	28	x	160.00	=	$	4,480
152320	Reset Roadside Sign	EA		x		=	$	-
152390	Relocate Roadside Sign	EA		x		=	$	-
82010X	Delineator (Class X)	EA		x		=	$	-
840502	Thermoplastic Traffic Stripe (Enhanced Wet Night V	LF		x		=	$	-
846012	Thermoplastic Crosswalk and Pavement Marking (E	SQFT		x		=	$	-
120090	Construction Area Signs	LS	1	x	25,000.00	=	$	25,000
84XXXX	Permanent Pavement Delineation	LS	1	x	500,000.00	=	$	500,000

Subtotal Traffic Signing and Striping *$* *540,400*

6C - Traffic Management Plan

Item code		Unit	Quantity		Unit Price ($)			Cost
12865X	Portable Changeable Message Signs	EA/LS		x		=	$	-

Subtotal Traffic Management Plan *$* *-*

6C - Stage Construction and Traffic Handling

Item code		Unit	Quantity		Unit Price ($)			Cost
120199	Traffic Plastic Drum	EA		x		=	$	-
12016X	Channelizer (Type X)	EA		x		=	$	-
120120	Type III Barricade	EA		x		=	$	-
129100	Temporary Crash Cushion Module	EA		x		=	$	-
120100	Traffic Control System	LS	1	x	1,000,000.00	=	$	1,000,000
129110	Temporary Crash Cushion	EA		x		=	$	-
129000	Temporary Railing (Type K)	LF		x		=	$	-
120149	Temporary Pavement Marking (Paint)	SQFT		x		=	$	-
82010X	Delineator (Class X)	EA		x		=	$	-
XXXXXX	Some Item	Unit		x		=	$	-

Subtotal Stage Construction and Traffic Handling *$* *1,000,000*

TOTAL TRAFFIC ITEMS **$** **4,040,400**

SECTION 7: DETOURS

Includes constructing, maintaining, and removal

Item code		Unit	Quantity		Unit Price ($)			Cost
190101	Roadway Excavation	CY		x		=	$	-
19801X	Imported Borrow	CY/TON		x		=	$	-
390132	Hot Mix Asphalt (Type A)	TON		x		=	$	-
26020X	Class 2 Aggregate Base	TON/CY		x		=	$	-
250401	Class 4 Aggregate Subbase	Alternative 2 - Sonoma Cou		x		=	$	-
130620	Temporary Drainage Inlet Protection	EA		x		=	$	-
129000	Temporary Railing (Type K)	LF		x		=	$	-
128601	Temporary Signal System	LS		x		=	$	-
120149	Temporary Pavement Marking (Paint)	SQFT		x		=	$	-
80010X	Temporary Fence (Type X)	LF		x		=	$	-
XXXXXX	Detour	LS	1	x	100,000.00	=	$	100,000

TOTAL DETOURS **$ 100,000**

SUBTOTAL SECTIONS 1 through 7 $ 43,466,900

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items							
	ADA Items			1.0%		$	434,669
8B - Bike Path Items							
	Bike Path Items			1.0%		$	434,669
8C - Other Minor Items							
	Other Minor Items			8.0%		$	3,477,352
	Total of Section 1-7	$	43,466,900	x 10.0%	=	$	4,346,690

TOTAL MINOR ITEMS **$ 4,346,700**

SECTIONS 9: MOBILIZATION

Item code							
999990	Total Section 1-8	$	47,813,600	x 10%	=	$	4,781,360

TOTAL MOBILIZATION **$ 4,781,400**

SECTION 10: SUPPLEMENTAL WORK

Item code		Unit	Quantity		Unit Price ($)			Cost
066670	Payment Adjustments For Price Index Fluctuations	LS		x		=	$	-
066094	Value Analysis	LS		x		=	$	-
066070	Maintain Traffic	LS		x		=	$	-
066919	Dispute Resolution Board	LS		x		=	$	-
066921	Dispute Resolution Advisor	LS		x		=	$	-
066015	Federal Trainee Program	LS		x		=	$	-
066610	Partnering	LS		x		=	$	-
066204	Remove Rock and Debris	LS		x		=	$	-
066222	Locate Existing Crossover	LS		x		=	$	-
XXXXXX	Some Item	Unit		x		=	$	-
	*Cost of **NPDES** Supplemental Work specified in Section 5D*					=	$	100,000
	Total Section 1-8	$	47,813,600		5%	=	$	2,390,680

TOTAL SUPPLEMENTAL WORK **$ 2,490,700**

SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

Item code		Unit	Quantity		Unit Price ($)		Cost
066105	Resident Engineers Office	LS		x		=	$0
066063	Traffic Management Plan - Public Information	LS		x		=	$0
066901	Water Expenses	LS		x		=	$0
8609XX	Traffic Monitoring Station (X)	Alternative 2 - Sonoma Count		x		=	$0
066841	Traffic Controller Assembly	LS		x		=	$0
066840	Traffic Signal Controller Assembly	LS		x		=	$0
066062	COZEEP Contract	LS		x		=	$0
066838	Reflective Numbers and Edge Sealer	LS		x		=	$0
066065	Tow Truck Service Patrol	LS		x		=	$0
066916	Annual Construction General Permit Fee	LS		x		=	$0
XXXXXX	Some Item	Unit		x		=	$0

Total Section 1-8	$	47,813,600	4%	= $	1,912,544

TOTAL STATE FURNISHED **$1,912,600**

SECTION 12: TIME-RELATED OVERHEAD

Total of Roadway and Structures Contract Items excluding Mobilization	$691,326,600	(used to calculate TRO)
Total Construction Cost (excluding TRO and Contingency)	$750,012,300	(used to check if project is greater than $5 million excluding contingency)

Estiamted Time-Releated Overhead (TRO) Percentage (0% to 10%) = **10%**

Item code		Unit	Quantity		Unit Price ($)		Cost
070018	Time-Related Overhead	WD	0	X	#DIV/0!	=	$0

TOTAL TIME-RELATED OVERHEAD **$0**

Note: If the building portion of the project is greater than 50% of the total project cost, then TRO is not included.

SECTION 13: ROADWAY CONTINGENCY

Recommended Contingency: (Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Total Section 1-12	$	56,998,300	x	**50%**	=	$28,499,150	

TOTAL CONTINGENCY **$28,499,200**

II. STRUCTURE ITEMS

	Bridge 1		**Bridge 2**		
Alternative 2 - Sonoma County Estimated Cost Only (Segment A2)					
DATE OF ESTIMATE	03/14/18		03/14/18		00/00/00
Bridge Name	Causeway		Petaluma River Replace		xxxxxxxxxxxxxxxxxx
Bridge Number	57-XXX		57-XXX		57-XXX
Structure Type	PC/PS Girders		PC/PS Girders		xxxxxxxxxxxxxxxxxx
Width (Feet) [out to out]	97 LF		95 LF		0 LF
Total Bridge Length (Feet)	14825 LF		1485 LF		0 LF
Total Area (Square Feet)	1443955 SQFT		141075 SQFT		0 SQFT
Structure Depth (Feet)	6 LF		6 LF		0 LF
Footing Type (pile or spread)	Large Diameter Steel Piles		Large Diameter Steel Piles		xxxxxxxxxxxxxxxxxx
Cost Per Square Foot	$250		$950		$0
COST OF EACH	**$360,988,750**		**$134,021,250**		**$0**

DATE OF ESTIMATE	00/00/00		00/00/00		00/00/00
Name	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Bridge Number	57-XXX		57-XXX		57-XXX
Structure Type	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Width (Feet) [out to out]	0 LF		0 LF		0 LF
Total Length (Feet)	0 LF		0 LF		0 LF
Total Area (Square Feet)	0 SQFT		0 SQFT		0 SQFT
Structure Depth (Feet)	0 LF		0 LF		0 LF
Footing Type (pile or spread)	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Cost Per Square Foot	$100		$0		$0
COST OF EACH	**$0**		**$0**		**$0**

TOTAL COST OF BRIDGES		**$495,010,000**
TOTAL COST OF BUILDINGS		**$0**
Structures Mobilization Percentage	10%	**$49,501,000**

Recommended Contingency: (Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Structures Contingency Percentage	30%	**$148,503,000**
TOTAL COST OF STRUCTURES		**$693,014,000**

Estimate Prepared By: _____ _____

XXXXXXXXXXXXXXXX ------ Division of Structures Date

EA: DS-123456 PID: DS1234567

III. RIGHT OF WAY

Fill in all of the available information from the Right of Way data sheet.

A)	A1)	Acquisition, including Excess Land Purchases, Damages & Goodwill, Fees	$	450,000
	A2)	SB-1210	$	0
B)		Acquisition of Offsite Mitigation	$	0
C)	C1)	Alternative 2 - Sonoma County Estimated Cost Only (Segment A2)	$	0
	C2)	Potholing (Design Phase)	$	0
D)		Railroad Acquisition	$	0
E)		Clearance / Demolition	$	0
F)		Relocation Assistance (RAP and/or Last Resort Housing Costs)	$	0
G)		Title and Escrow	$	0
H)		Environmental Review	$	0
I)		Condemnation Settlements 0%	$	0
J)		Design Appreciation Factor 0%	$	0
K)		Utility Relocation (Construction Cost)	$	10,000,000

L)	**TOTAL RIGHT OF WAY ESTIMATE**	**$10,450,000**
M)	**TOTAL R/W ESTIMATE: Escalated**	**$14,000,000**
N)	**RIGHT OF WAY SUPPORT**	**$31,558,480**

Support Cost Estimate Prepared By _____ Project Coordinator[1] _____ Phone

Utility Estimate Prepared By _____ Utiliy Coordinator[2] _____ Phone

R/W Acquistion Estimate Prepared By _____ Right of Way Estimator[3] _____ Phone

Note: Items G & H applied to items A + B

[1] When estimate has Support Costs only [2] When estimate has Utility Relocation [3] When R/W Acquisition is required

DO NOT PRINT THIS SHEET AS PART OF COST ESTIMATE ATTACHMENT TO PROJECT INITIATION OR APPROVAL DOCUMENTS.

EA: DS-123456 PID: DS1234567

IV. SUPPORT COST ESTIMATE SUMMARY

Note: Use PRSM project data.

Total by FY		Escalated Support Cost for Estimate To Completion (ETC) PA&ED	PS&E	RW	CON	Total $
< 2010	Expended					
	ETC					
2011	Expended	Alternative 2 - Sonoma County Estimated Cost Only (Segment A2)				
	ETC					
2012	Expended					
	ETC					
2013	Expended					
	ETC					
2014	Expended					
	ETC					
2015	Expended					
	ETC					
2016	Expended					
	ETC					
2017	Expended					
	ETC					
2018	Expended	$11,500,000	$63,116,960	$31,558,480	$94,675,440	$200,850,880
	ETC					
2019	Expended					
	ETC					
2020	Expended					
	ETC					
2021	Expended					
	ETC					
2022	Expended					
	ETC					
2023	Expended					
	ETC					
2024	Expended					
	ETC					
2025 >	Expended					
	ETC					
EAC (Expended + ETC)		$11,500,000	$63,116,960	$31,558,480	$94,675,440	$200,850,880
Approved Budget (PRSM)						
Difference (Budget - EAC)		-$11,500,000	-$63,116,960	-$31,558,480	-$94,675,440	-$200,850,880
Support Ratio (EAC / Cap Cost)		1.5%	8.0%	4.0%	12.0%	25.5%

Total Capital Cost:	**$788,962,000**
Total Capital Outlay Support Cost:	**$200,850,880**
Overall Percent Support Cost:	**25.46%**

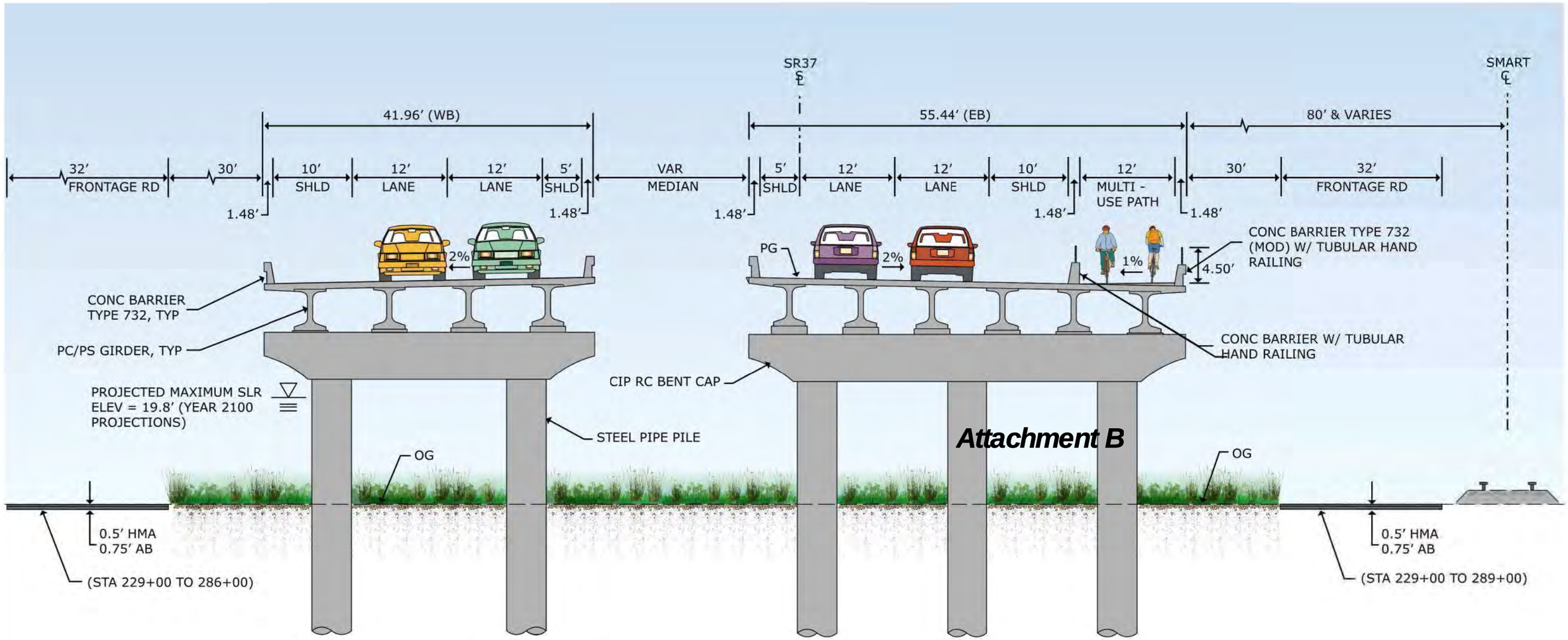
PRSM workplan hours/costs verified against approved MWA:

Office Chief - Date

Approved by:

Project Control - Date

TYPICAL CAUSEWAY SECTION
SECTION A-A



Attachment B

ALTERNATIVE 2: ELEVATED STRUCTURE DESIGN FROM US 101 TO SEARS POINT

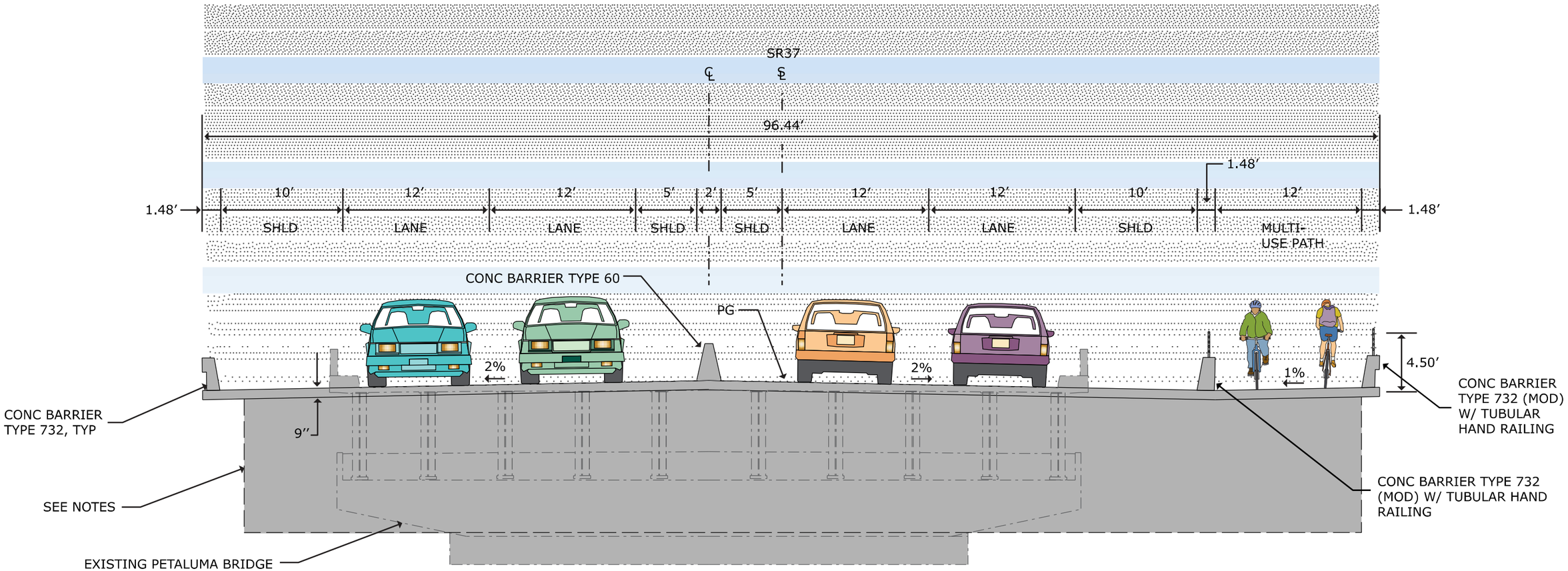
X-1
SCALE: NTS

PRELIMINARY
FOR DISCUSSION ONLY

Attachment C

NOTE:
BRIDGE TYPE TO BE DETERMINED AT A LATER STAGE.

PETALUMA CREEK BRIDGE TYPICAL SECTION
SECTION B-B



ALTERNATIVE 2: ELEVATED STRUCTURE DESIGN FROM US 101 TO SEARS POINT

X-2
SCALE: NTS

PRELIMINARY
FOR DISCUSSION ONLY

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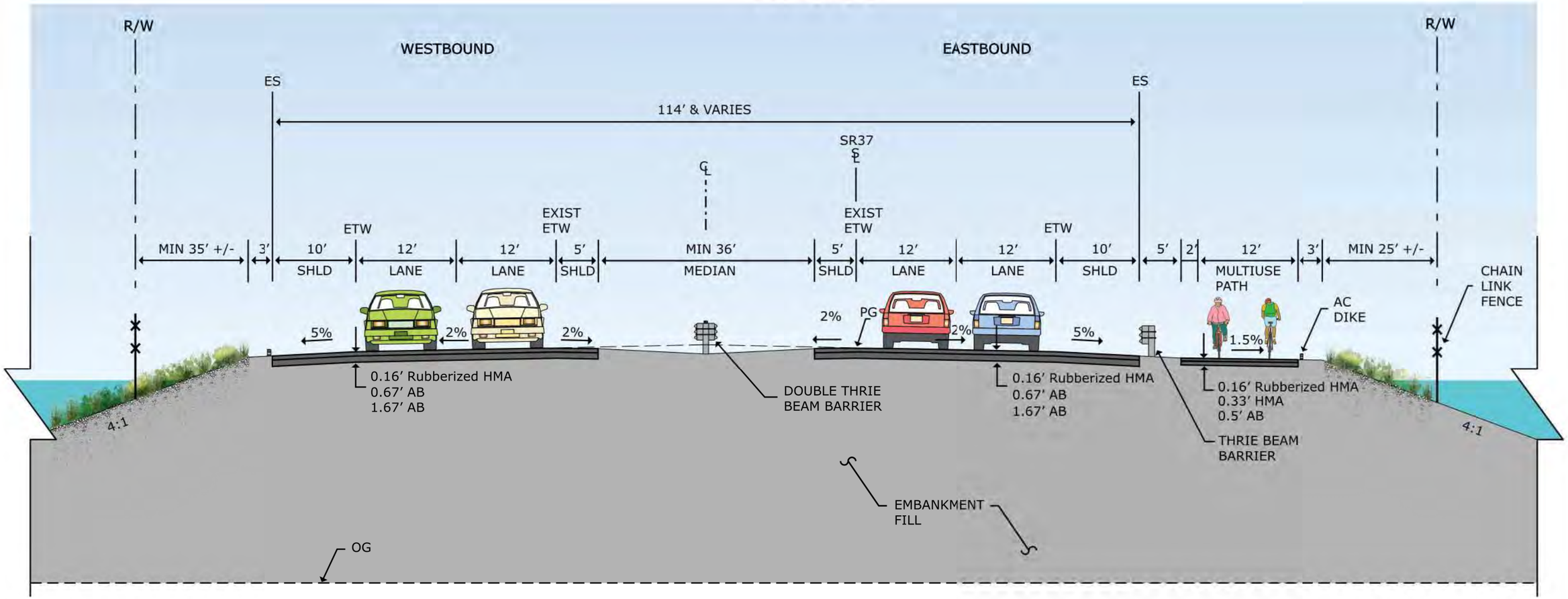
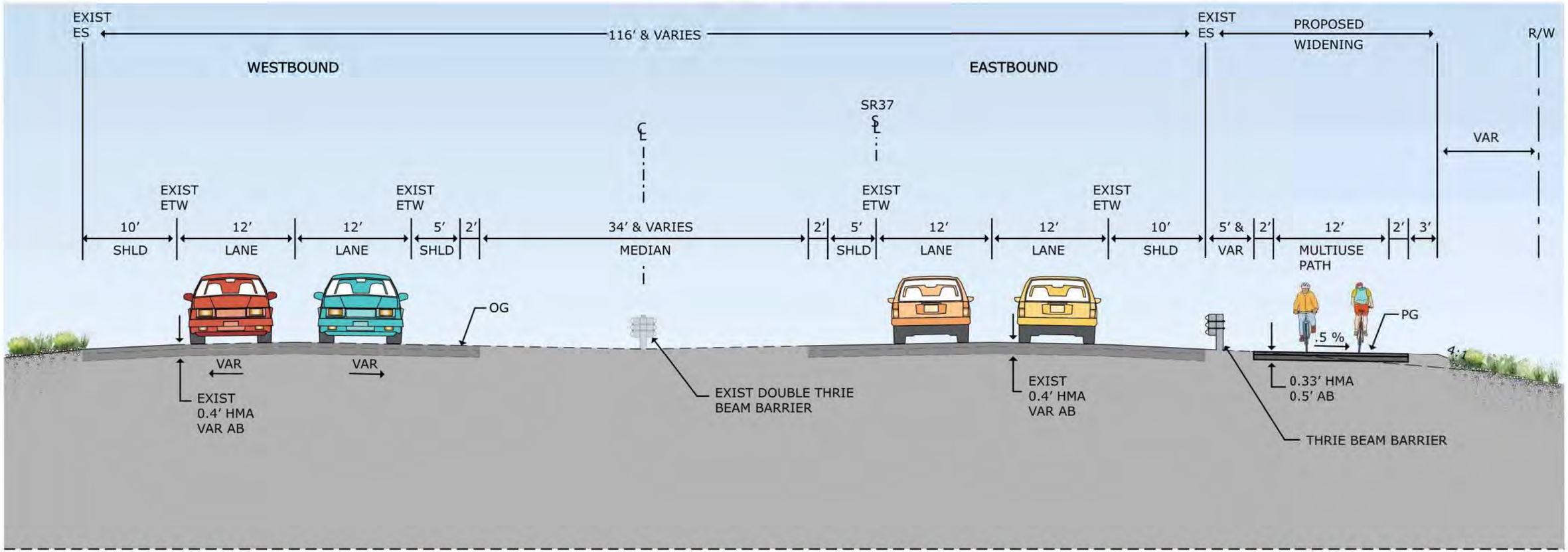
TYPICAL ROADWAY SECTION
SECTION C-C



ALTERNATIVE 2: ELEVATED STRUCTURE DESIGN FROM US 101 TO SEARS POINT

X-3
SCALE: NTS

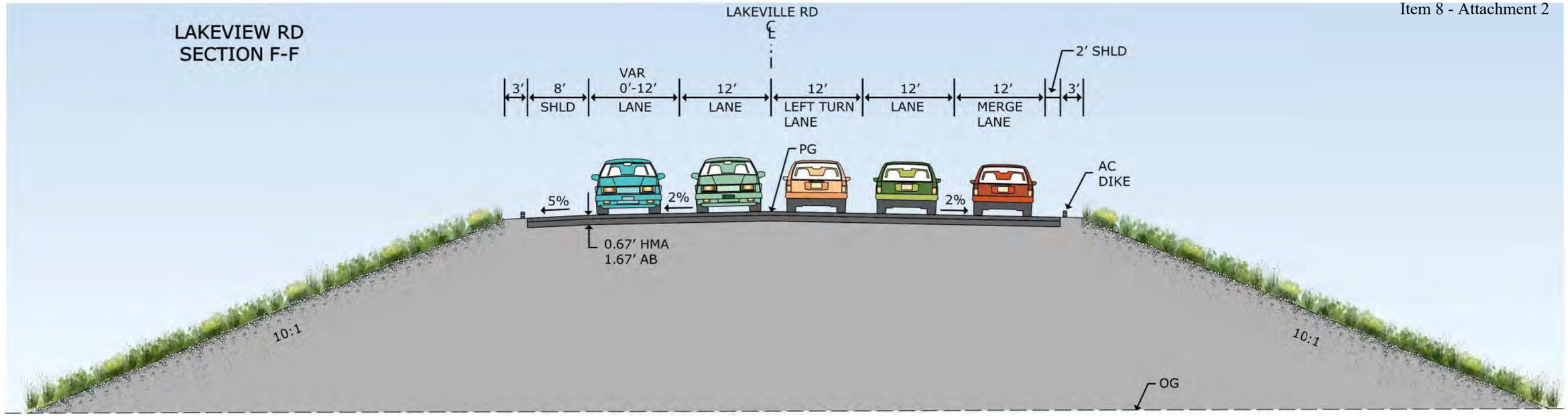
TYPICAL ROADWAY WIDENING SECTION
SECTION D-D



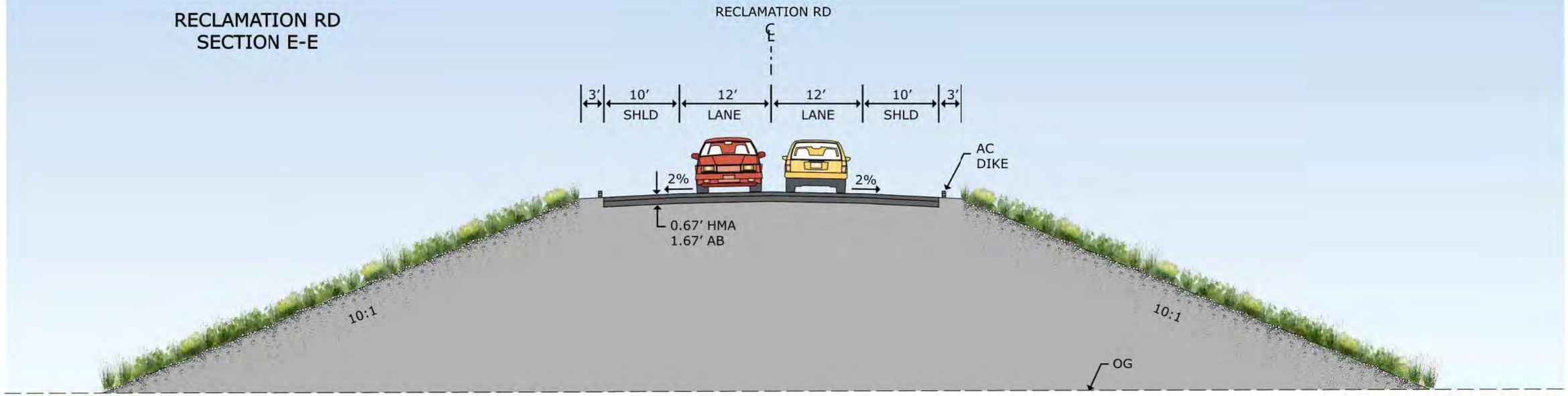
ALTERNATIVE 2: ELEVATED STRUCTURE DESIGN FROM US 101 TO SEARS POINT

X-4
SCALE: NTS

LAKEVIEW RD SECTION F-F



RECLAMATION RD SECTION E-E

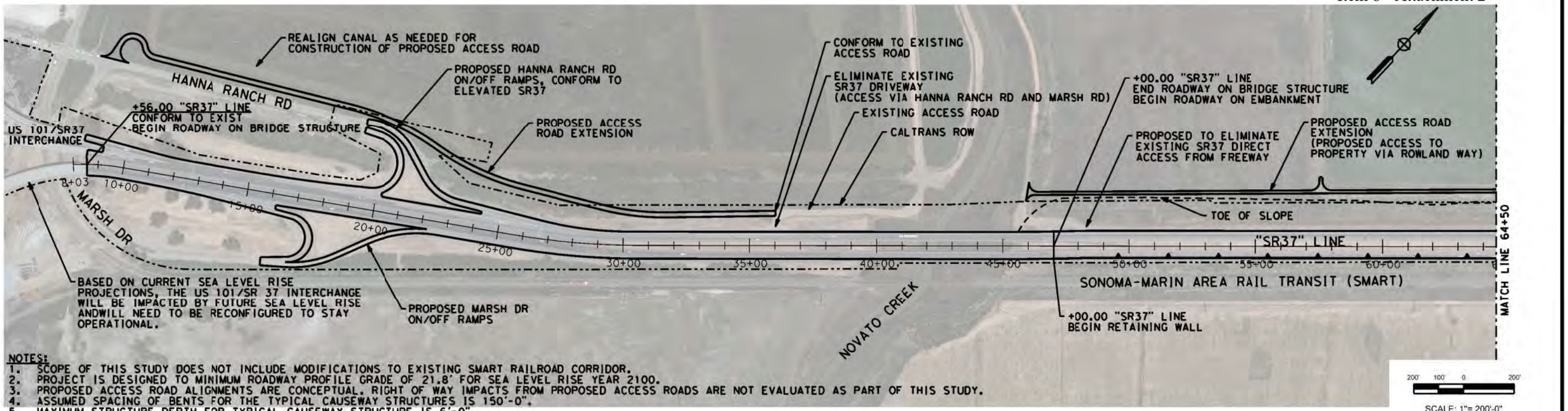


ALTERNATIVE 2: ELEVATED STRUCTURE DESIGN FROM US 101 TO SEARS POINT

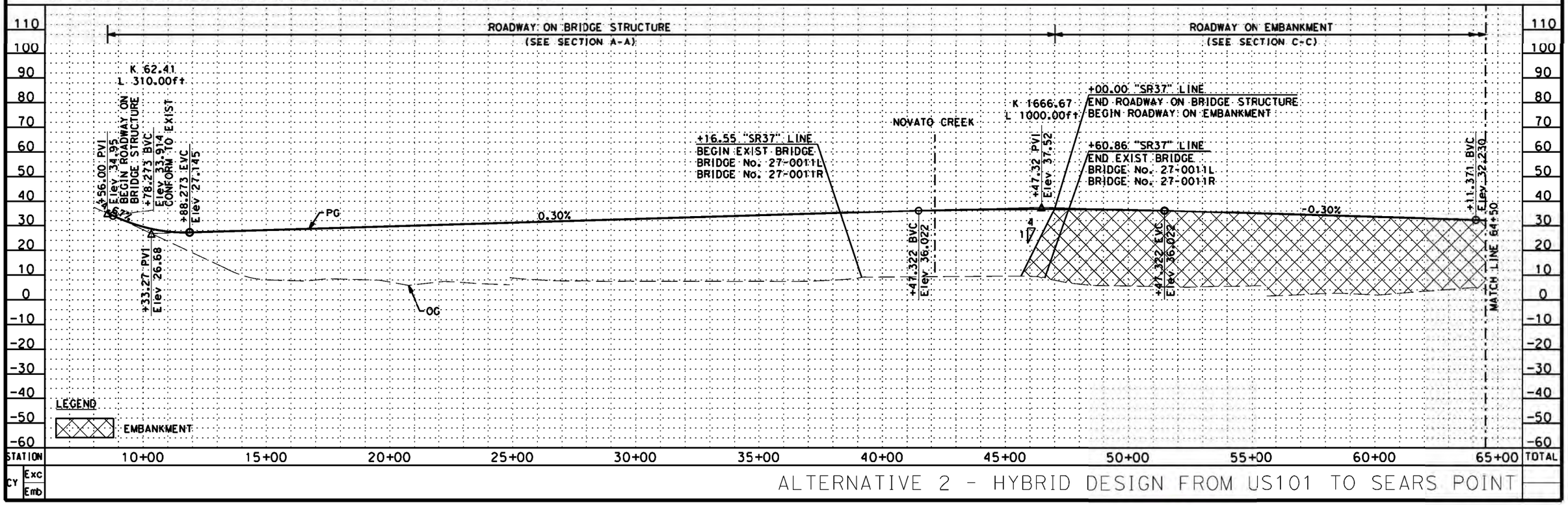
X-5
SCALE: NTS

PRELIMINARY
FOR DISCUSSION ONLY

Attachment C



NOTES:
1. SCOPE OF THIS STUDY DOES NOT INCLUDE MODIFICATIONS TO EXISTING SMART RAILROAD CORRIDOR.
2. PROJECT IS DESIGNED TO MINIMUM ROADWAY PROFILE GRADE OF 21.8' FOR SEA LEVEL RISE YEAR 2100.
3. PROPOSED ACCESS ROAD ALIGNMENTS ARE CONCEPTUAL. RIGHT OF WAY IMPACTS FROM PROPOSED ACCESS ROADS ARE NOT EVALUATED AS PART OF THIS STUDY.
4. ASSUMED SPACING OF BENTS FOR THE TYPICAL CAUSEWAY STRUCTURES IS 150'-0".
5. MAXIMUM STRUCTURE DEPTH FOR TYPICAL CAUSEWAY STRUCTURE IS 6'-0".
6. LARGE DIAMETER STEEL PIPE PILES ARE ASSUMED FOR SUPERSTRUCTURE SUPPORT.



ALTERNATIVE 2 - HYBRID DESIGN FROM US101 TO SEARS POINT

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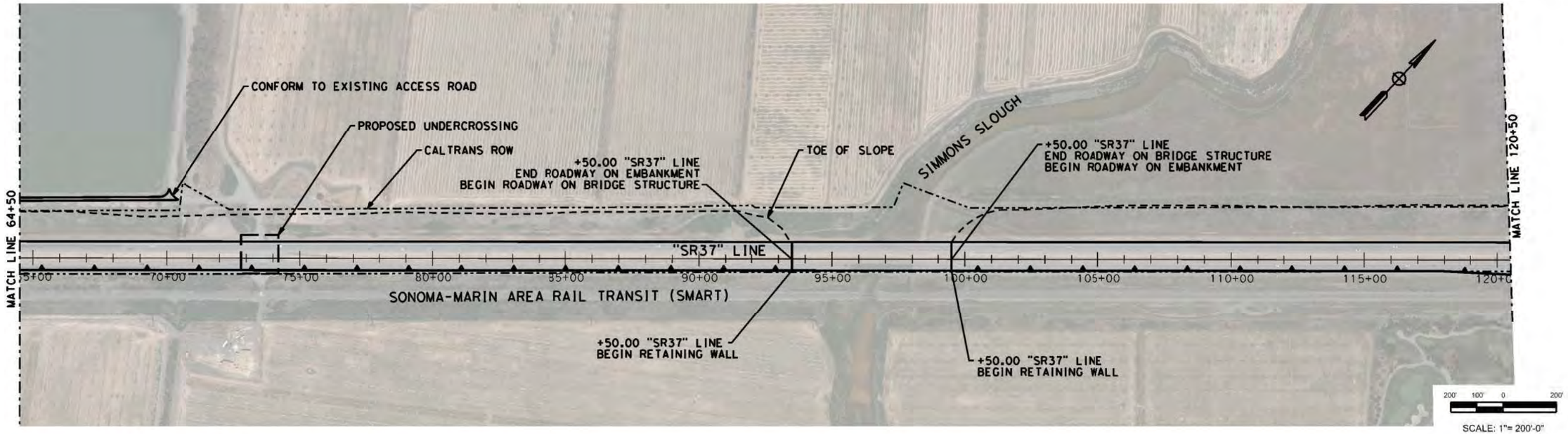

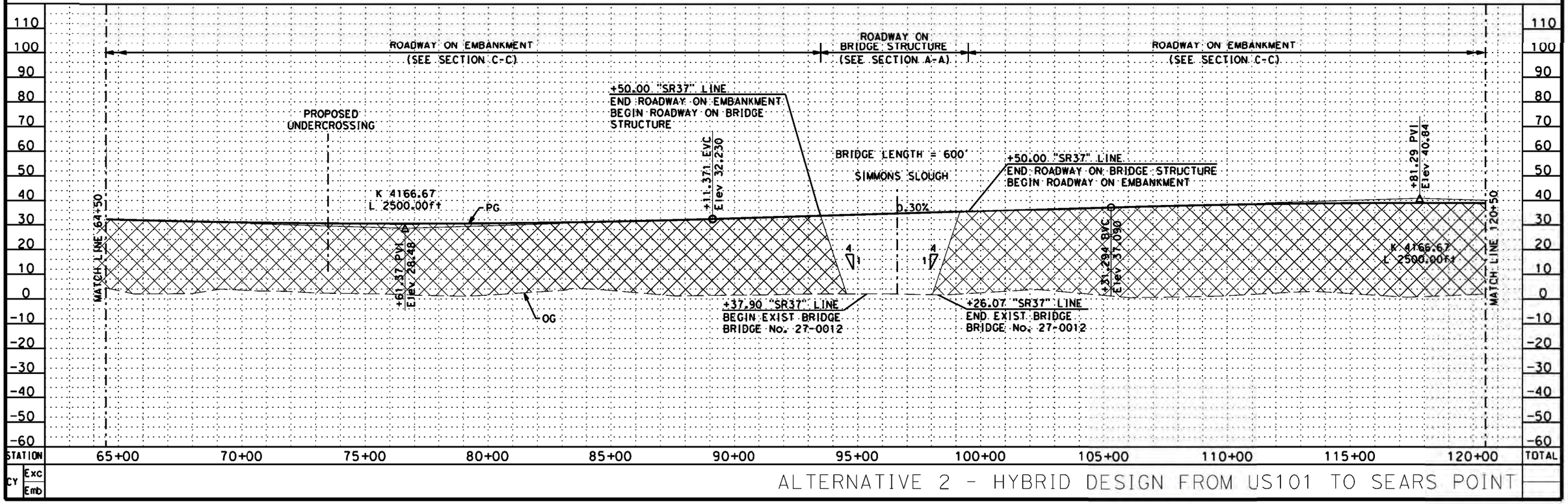

ALTERNATIVE 2 - HYBRID DESIGN FROM US101 TO SEARS POINT

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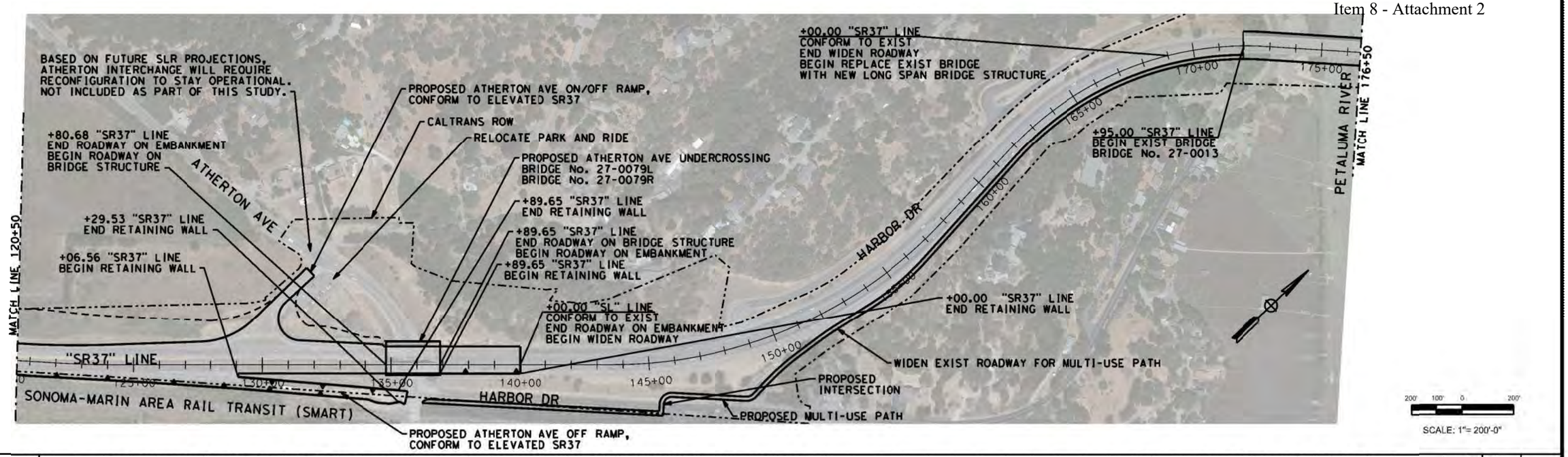

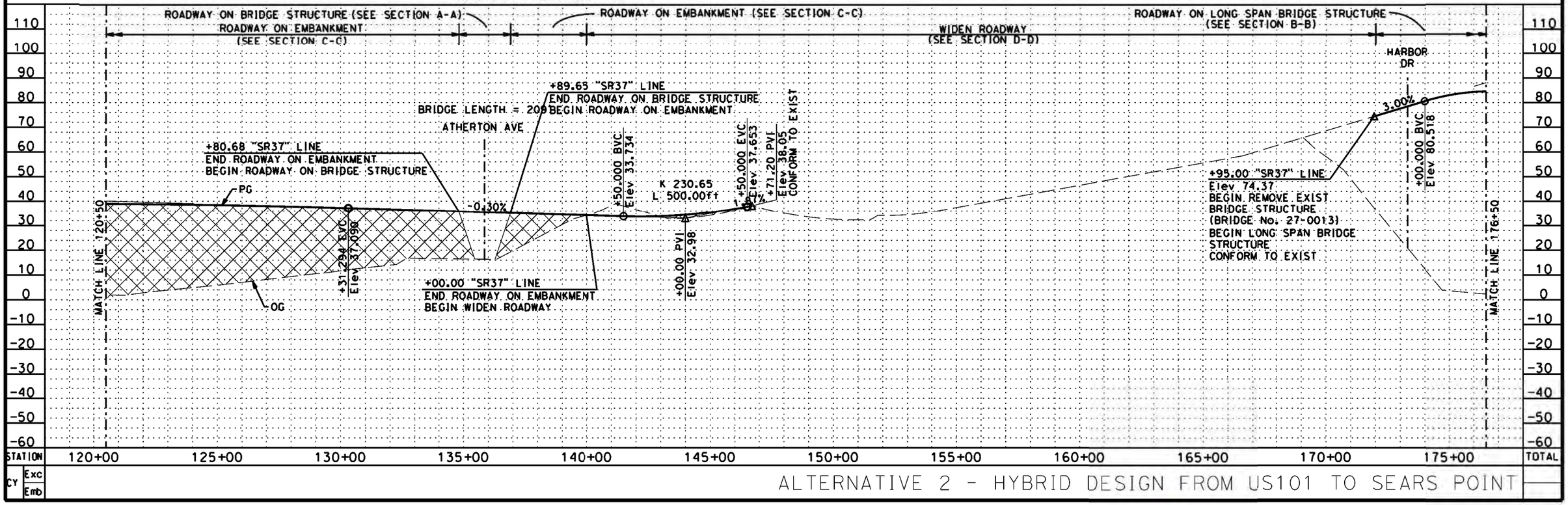

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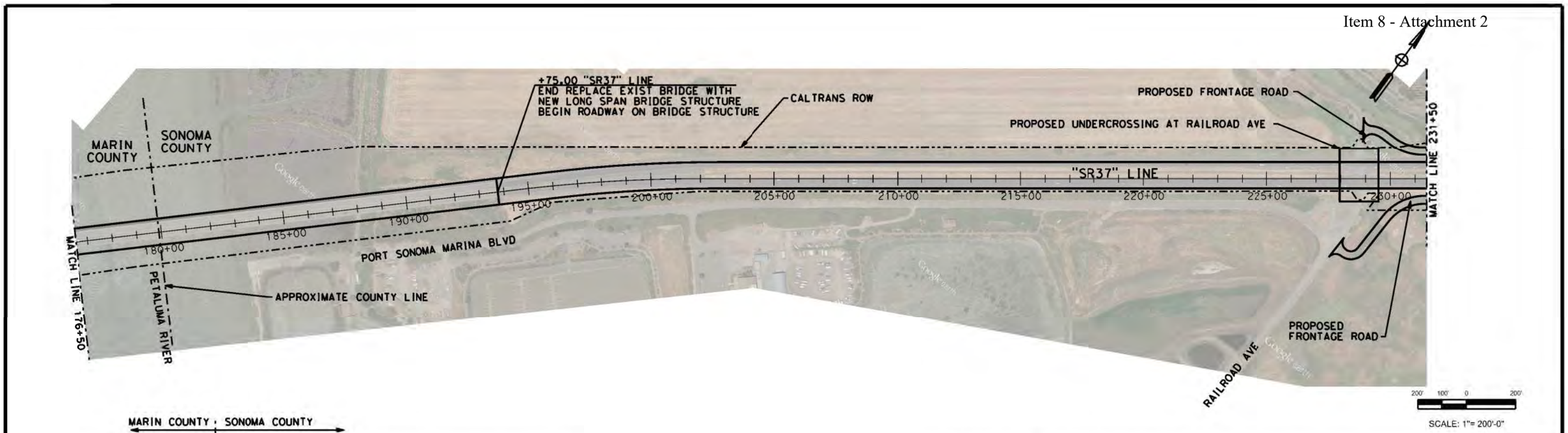

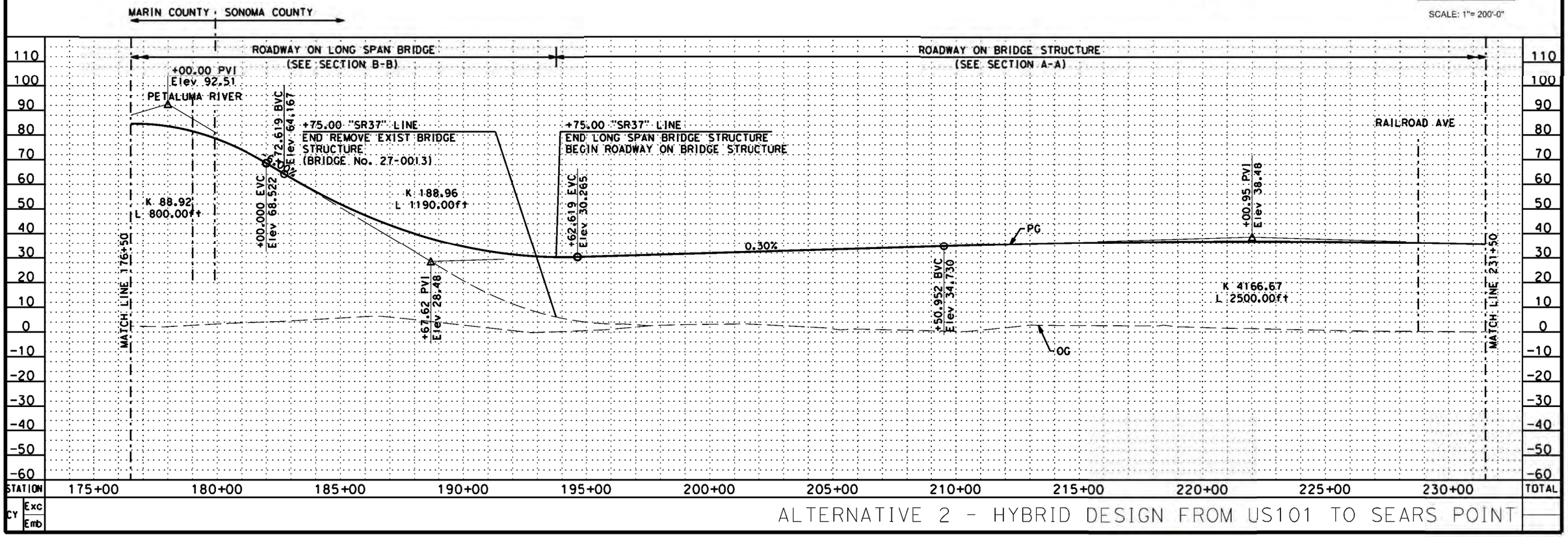

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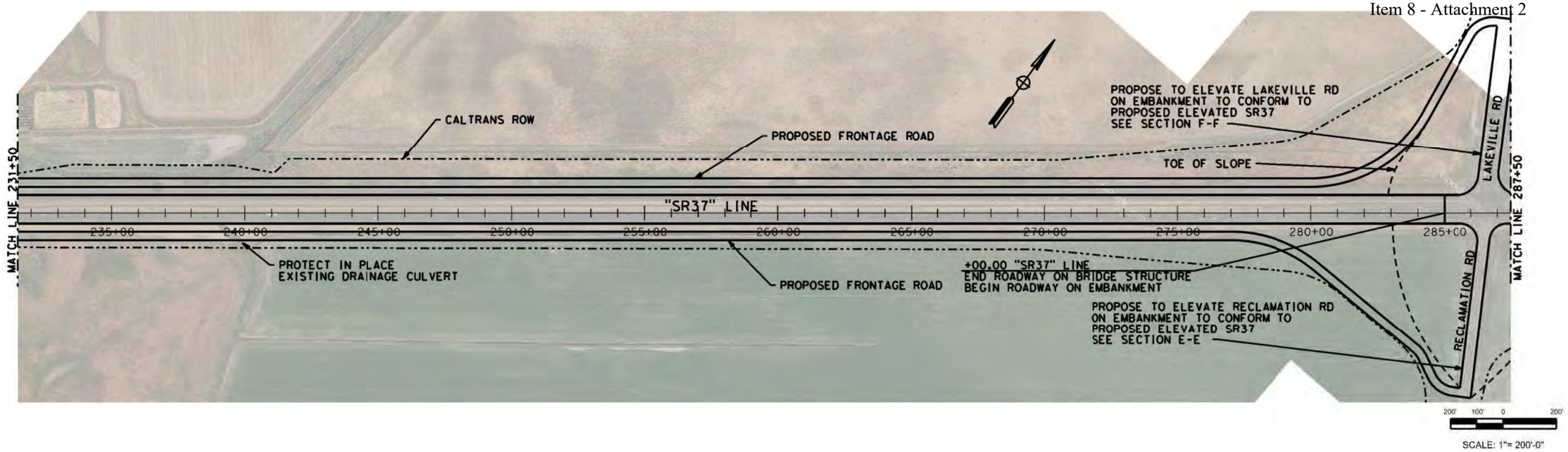

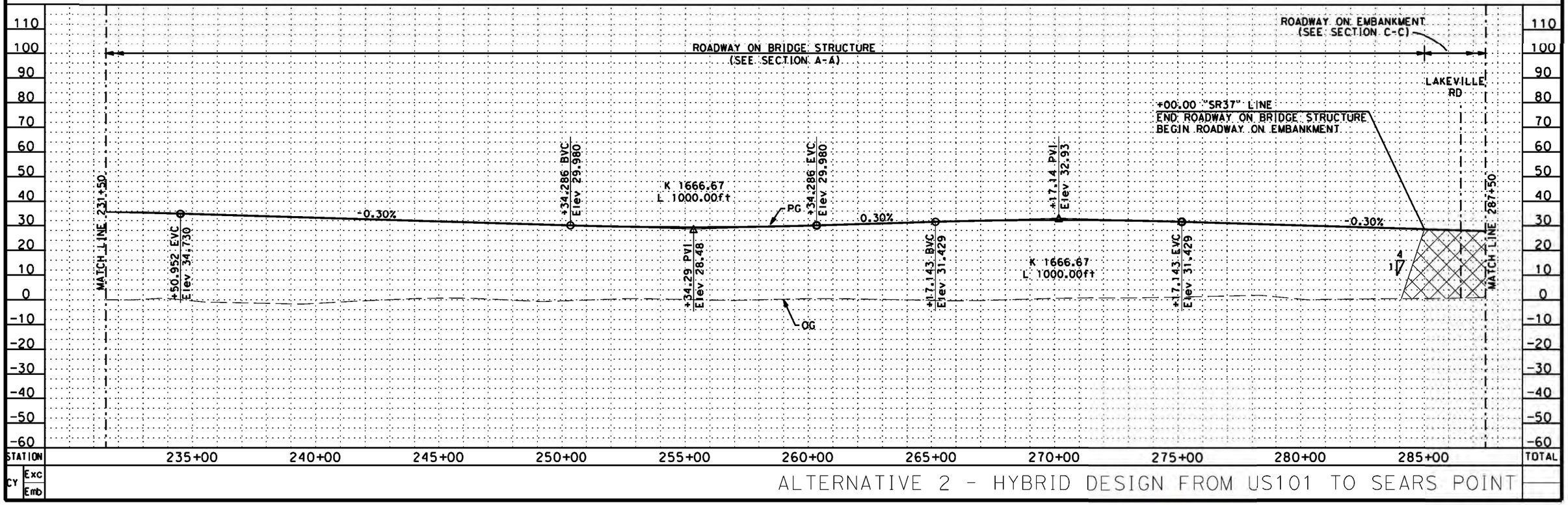

PRELIMINARY
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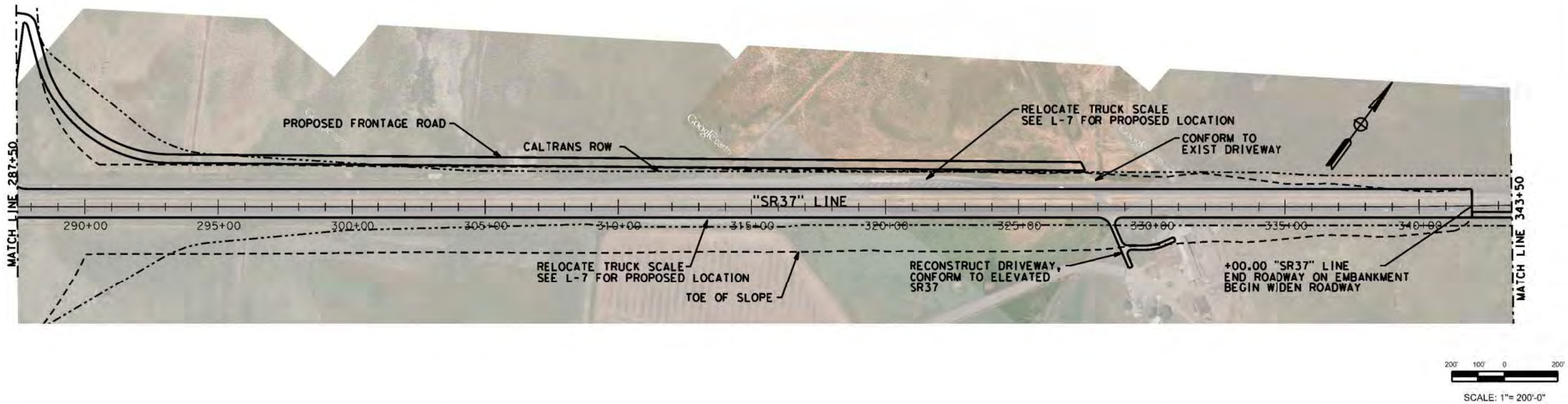

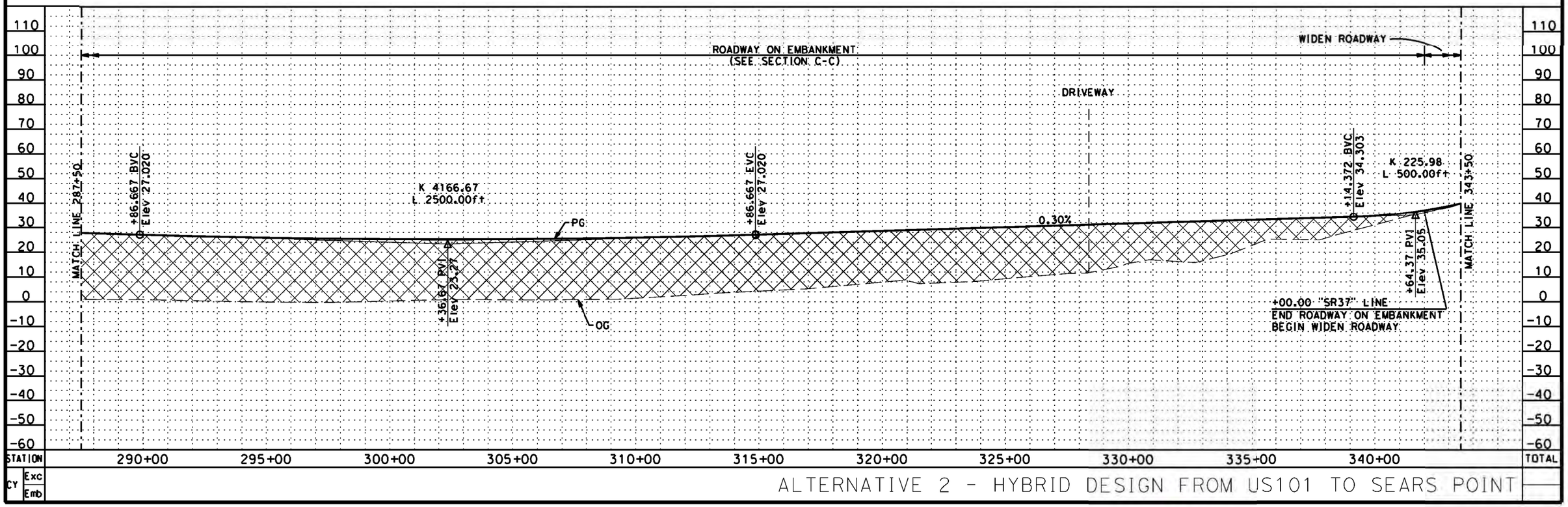

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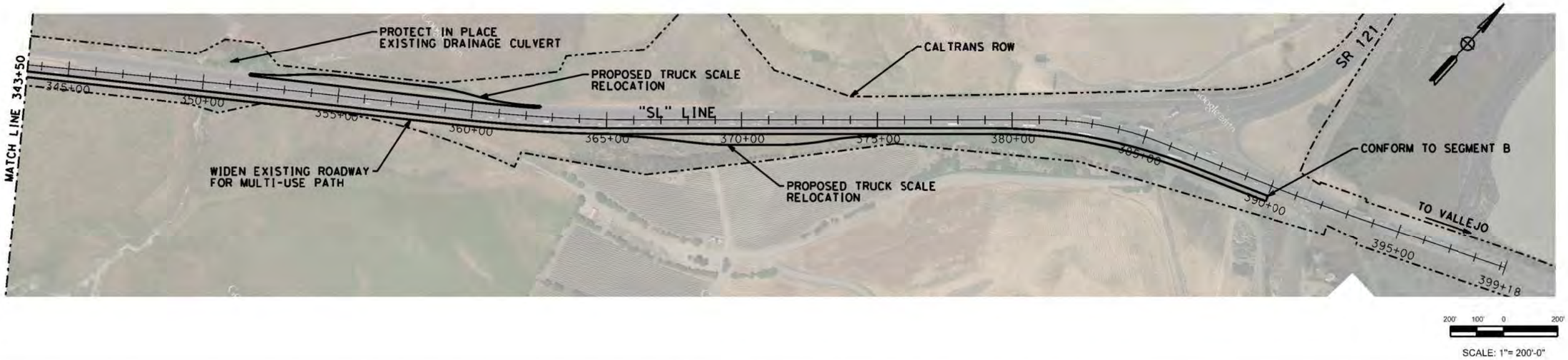
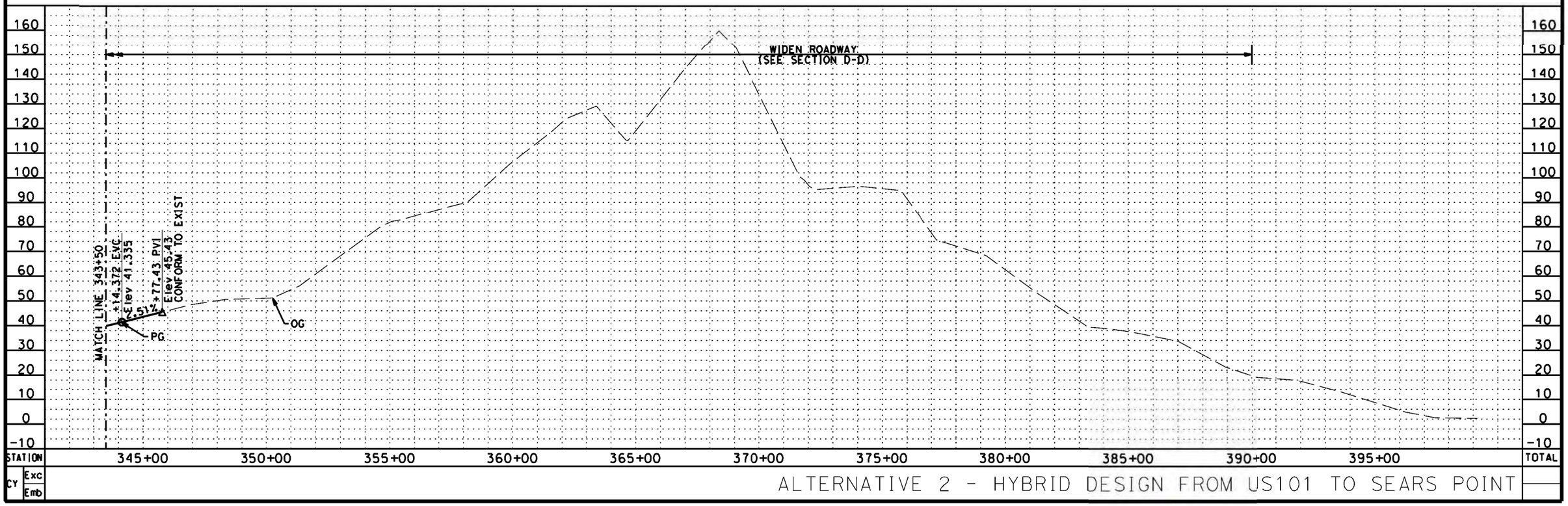




PRELIMINARY
FOR DISCUSSION ONLY

Attachment C

Transportation Authority of Marin

HNTB

PROJECT

PLANNING COST ESTIMATE

EA: DS-123456 PID: DS1234567

EA: DS-123456

PID: DS1234567

District-County-Route: 04-MRN-SON-SR37

PM:

Type of Estimate : Planning Level

Program Code :

Project Limits : The project limits will be SR 37 between US 101 interchange to SR 121 junction.

Project Description: This segment extends from US 101 in Marin County for 3.4 miles and continues for 3.9 miles in Sonoma County to the SR 121 junction. Segment A is designated a 4-lane expressway with bridges over Novato Creek, Simonds Slough Creek, Petaluma River, Atherton Ave, an interchange at Highway 101 and Atherton and an at-grade intersection at Lakeville Road and SR 121. There are three minor access roads/driveways connecting to SR37. The Sonoma-Marin Area Transit (SMART) is also located south of SR 37 and runs parallel between US 101 and Atherton Ave. The roadway is relatively low-lying, about 2-6 feet NAVD88 for most of the portion except between Atherton Ave and Petaluma Bridge and transitions to rolling terrain and upload along the eastern end near the SR 37/SR 121. Portion of the road is protected by levees along Novato Creek, the Petaluma River and landward levees of the Sonoma Baylands.

Scope : This study focused on developing three alternatives as described below:
1. Alternative 1: An all bridge alternative between US 101 to SR 121.
2. Alternative 2: A hybrid option (bridge and embankment) between US 101 to SR 121.
3. Alternative 3: A raised roadway between US 101 to Novato Creek.

Alternative : Alternative 2 - Marin County Cost Only (Segment A1)

SUMMARY OF PROJECT COST ESTIMATE

	Current Year Cost	Escalated Cost
TOTAL ROADWAY COST	**$ 198,797,400**	**$ 309,726,798**
TOTAL STRUCTURES COST	**$ 239,225,210**	**$ 372,713,417**
SUBTOTAL CONSTRUCTION COST	**$ 438,022,610**	**$ 682,440,216**
TOTAL RIGHT OF WAY COST	**$ 13,250,000**	**$ 13,250,000**
TOTAL CAPITAL OUTLAY COSTS	**$ 451,273,000**	**$ 695,691,000**
PR/ED SUPPORT	**$ 10,100,000**	**$ 10,100,000**
PS&E SUPPORT	**$ 36,101,840**	**$ 36,101,840**
RIGHT OF WAY SUPPORT	**$ 18,050,920**	**$ 18,050,920**
CONSTRUCTION SUPPORT	**$ 54,152,760**	**$ 54,152,760**
TOTAL SUPPORT COST	**$ 118,405,520**	**$ 118,405,520**
TOTAL PROJECT COST	**$ 570,000,000**	**$ 815,000,000**

If Project has been programmed enter Programmed Amount

Date of Estimate (Month/Year) Month 3 / Year 2018

Estimated Construction Start (Month/Year) _____ /

Number of Working Days =

Estimated Mid-Point of Construction (Month/Year) _____ /

Estimated Construction End (Month/Year) _____ /

Number of Plant Establishment Days

Estimated Project Schedule

PID Approval	xx/xx/xxxx
PA/ED Approval	xx/xx/xxxx
PS&E	xx/xx/xxxx
RTL	xx/xx/xxxx
Begin Construction	xx/xx/xxxx

Reviewed by District O.E. or Cost Estimate Certifier

Office Engineer / Cost Estimate Certifier	Date	Phone
	xx/xx/xxxx	(xxx) xxx-xxxx

Approved by Project Manager

Project Manager	Date	Phone
	xx/xx/xxxx	(xxx) xxx-xxxx

I. ROADWAY ITEMS SUMMARY

	Section		Cost
1	**Earthwork**	$	36,282,900
2	**Pavement Structural Section**	$	10,787,300
3	**Drainage**	$	15,057,800
4	**Specialty Items**	$	34,037,900
5	**Environmental**	$	349,500
6	**Traffic Items**	$	4,404,600
7	**Detours**	$	250,000
8	**Minor Items**	$	10,117,000
9	**Roadway Mobilization**	$	11,128,700
10	**Supplemental Work**	$	5,664,400
11	**State Furnished**	$	4,451,500.00
12	**Time-Related Overhead**	$	-
13	**Roadway Contingency**	$	66,265,800.00
	TOTAL ROADWAY ITEMS	**$**	**198,797,400**

Estimate Prepared By :

Name and Title | Date | Phone

Estimate Reviewed By :

Name and Title | Date | Phone

By signing this estimate you are attesting that you have discussed your project with all functional units and have incorporated all their comments or have discussed with them why they will not be incorporated.

SECTION 1: EARTHWORK

Item code		Unit	Quantity		Unit Price ($)			Cost
190101	Roadway Excavation	CY		x		=	$	-
19010X	Roadway Excavation (Type X) ADL	CY		x		=	$	-
194001	Ditch Excavation	CY		x		=	$	-
198010	Imported Borrow	CY	1,905,700	x	11.00	=	$	20,962,700
192037	Structure Excavation (Retaining Wall)	CY	14,840	x	90.00	=	$	1,335,600
193013	Structure Backfill (Retaining Wall)	CY	139,310	x	90.00	=	$	12,537,900
193031	Pervious Backfill Material (Retaining Wall)	CY	10,190	x	130.00	=	$	1,324,700
170105	Clearing & Grubbing	ACRE	24	x	3,000.00	=	$	72,000
170101	Develop Water Supply	LS	1	x	50,000.00	=	$	50,000
19801X	Imported Borrow	CY/TON		x		=	$	-
210130	Duff	ACRE		x		=	$	-
XXXXXX	Some Item	Unit						

TOTAL EARTHWORK SECTION ITEMS	**$**	**36,282,900**

SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code		Unit	Quantity		Unit Price ($)			Cost
401050	Jointed Plain Concrete Pavement	CY		x		=	$	-
400050	Continuously Reinforced Concrete Pavement	CY		x		=	$	-
404092	Seal Pavement Joint	LF		x		=	$	-
404093	Seal Isolation Joint	LF		x		=	$	-
413117	Seal Concrete Pavement Joint (Silicone)	LF		x		=	$	-
413118	Seal Pavement Joint (Asphalt Rubber)	LF		x		=	$	-
280010	Rapid Strength Concrete Base	CY		x		=	$	-
410095	Dowel Bar (Drill and Bond)	EA		x		=	$	-
390132	Hot Mix Asphalt (Type A)	TON	42,940	x	105.00	=	$	4,508,700
390137	Rubberized Hot Mix Asphalt (Gap Graded)	TON	650	x	160.00	=	$	104,000
39300X	Geosynthetic Pavement Interlayer (Type X)	SQYD		x		=	$	-
260203	Class 2 Aggregate Base	CY	50,940	x	80.00	=	$	4,075,200
290201	Asphalt Treated Permeable Base	CY		x		=	$	-
250401	Class 4 Aggregate Subbase	CY		x		=	$	-
374002	Asphaltic Emulsion (Fog Seal Coat)	TON		x		=	$	-
397005	Tack Coat	TON		x		=	$	-
377501	Slurry Seal	TON		x		=	$	-
3750XX	Screenings (Type XX)	TON		x		=	$	-
374492	Asphaltic Emulsion (Polymer Modified)	TON		x		=	$	-
370001	Sand Cover (Seal)	TON		x		=	$	-
731530	Minor Concrete (Textured Paving)	CY		x		=	$	-
731502	Minor Concrete (Miscellaneous Construction)	CY		x		=	$	-
394073	Place Hot Mix Asphalt Dike (Type A)	LF	18,750	x	15.00	=	$	281,250
150771	Remove Asphalt Concrete Dike	LF		x		=	$	-
420201	Grind Existing Concrete Pavement	SQYD		x		=	$	-
782200	Obliterate Surfacing	SQYD	199,550	x	3.50	=	$	698,425
390095	Replace Asphalt Concrete Surfacing	CY		x		=	$	-
15312X	Remove Concrete	LF/CY/LS		x		=	$	-
394090	Place Hot Mix Asphalt (Miscellaneous Area)	SQYD		x		=	$	-
153103	Cold Plane Asphalt Concrete Pavement	SQYD		x		=	$	-
846051	12" Rumble Strip (Asphalt Concrete Pavement)	STA	190	x	630.00	=	$	119,700
413113	Repair Spalled Joints, Polyester Grout	SQYD		x		=	$	-
420102	Groove Existing Concrete Pavement	SQYD		x		=	$	-
390136	Minor Hot Mix Asphalt	TON		x		=	$	-
394095	Roadside Paving (Miscellaneous Areas)	SQYD		x		=	$	-
XXXXXX	Ramp & Intersection Reconstruction	LS	1	x	1,000,000.00	=	$	1,000,000

TOTAL PAVEMENT STRUCTURAL SECTION ITEMS	**$**	**10,787,300**

SECTION 3: DRAINAGE

Item code		Unit	Quantity		Unit Price ($)			Cost
15080X	Remove Culvert	EA/LF		x		=	$	-
150820	Modify Inlet	EA		x		=	$	-
155232	Sand Backfill	CY		x		=	$	-
15020X	Abandon Culvert	EA/LF		x		=	$	-
152430	Adjust Inlet	LF		x		=	$	-
155003	Cap Inlet	EA		x		=	$	-
510501	Minor Concrete	CY		x		=	$	-
510502	Minor Concrete (Minor Structure)	CY	240	x	2,720.00	=	$	652,800
5105XX	Minor Concrete (Type XX)	CY		x		=	$	-
620XXX	XX" Alternative Pipe Culvert (Type X)	LF		x		=	$	-
6411XX	XX" Plastic Pipe	LF		x		=	$	-
650014	18" Reinforced Concrete Pipe	LF	32,090	x	310.00	=	$	9,947,900
6650XX	XX" Corrugated Steel Pipe (0.XXX" Thick)	LF		x		=	$	-
68XXXX	XX" Plastic Pipe (Edge Drain)	LF		x		=	$	-
69011X	XX" Corrugated Steel Pipe Downdrain (0.XXX" Thick)	LF		x		=	$	-
70321X	XX" Corrugated Steel Pipe Inlet (0.XXX" Thick)	LF		x		=	$	-
70XXXX	XX" Corrugated Steel Pipe Riser (0.XXX" Thick)	LF		x		=	$	-
7050XX	XX" Steel Flared End Section	EA		x		=	$	-
703233	Grated Line Drain	LF		x		=	$	-
72XXXX	Rock Slope Protection (Type and Method)	CY/TON		x		=	$	-
72901X	Rock Slope Protection Fabric (Class X)	SQYD		x		=	$	-
721420	Concrete (Ditch Lining)	CY		x		=	$	-
721430	Concrete (Channel Lining)	CY		x		=	$	-
750001	Miscellaneous Iron and Steel	LB	16,360	x	6.00	=	$	98,160
XXXXXX	Additional Drainage (15% of Section 1-2 and Structure)	LS	217,945,350	x	0.02	=	$	4,358,907

TOTAL DRAINAGE ITEMS $ 15,057,800

SECTION 4: SPECIALTY ITEMS

Item code		Unit	Quantity		Unit Price ($)			Cost
080050	Progress Schedule (Critical Path Method)	LS		x		=	$	-
582001	Sound Wall (Masonry Block)	SQFT		x		=	$	-
510530	Minor Concrete (Wall)	CY		x		=	$	-
15325X	Remove Sound Wall	LF/LS		x		=	$	-
070030	Lead Compliance Plan	LS		x		=	$	-
141120	Treated Wood Waste	LB		x		=	$	-
153221	Remove Concrete Barrier	LF		x		=	$	-
150662	Remove Metal Beam Guard Railing	LF	13,815	x	15.00	=	$	207,225
150668	Remove Flared End Section	EA		x		=	$	-
800360	Chain Link Fence (Type CL-6)	LF	9,380	x	50.00	=	$	469,000
80XXXX	XX" Chain Link Gate (Type CL-6)	EA		x		=	$	-
832001	Metal Beam Guard Railing	LF		x		=	$	-
839302	Single Thrie Beam Barrier (Wood Post)	LF	11,600	x	40.00	=	$	464,000
839311	Double Thrie Beam Barrier (Wood Post)	LF	9,380	x	50.00	=	$	469,000
833088	Tubular Handrailing	LF	9,310	x	110.00	=	$	1,024,100
8395XX	Terminal System (Type CAT)	EA		x		=	$	-
839585	Alternative Flared Terminal System	EA		x		=	$	-
839584	Alternative In-line Terminal System	EA		x		=	$	-
4906XX	CIDH Concrete Piling (Insert Diameter)	LF		x		=	$	-
839XXX	Crash Cushion (Insert Type)	EA		x		=	$	-
839701	Concrete Barrier (Type 60)	LF		x		=	$	-
839717	Concrete Barrier (Type 732 MOD)	LF	4,660	x	150.00	=	$	699,000
839720	Concrete Barrier (Type 732)	LF		x		=	$	-
510060	Structural Concrete, Retaining Wall	CY	20,020	x	1,500.00	=	$	30,030,000
511035	Architectural Treatment	SQFT		x		=	$	-
598001	Anti-Graffiti Coating	SQFT	270,200	x	2.50	=	$	675,500
203070	Rock Stain	SQFT		x		=	$	-
5136XX	Reinforced Concrete Crib Wall (Type X)	SQFT		x		=	$	-
83954X	Transition Railing (Type X)	EA		x		=	$	-
597601	Prepare and Stain Concrete	SQFT		x		=	$	-
839561	Rail Tensioning Assembly	EA		x		=	$	-
83958X	End Anchor Assembly (Type X)	EA		x		=	$	-
013341	Truck scale (Assume replace in kind)	LS	0	x	300.00	=	$	-

TOTAL SPECIALTY ITEMS $ 34,037,900

SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Item code		Unit	Quantity		Unit Price ($)		Cost
	Biological Mitigation	LS	1	x	2,500.00	= $	2,500
130670	Temporary Reinforced Silt Fence	LF	33,000	x	9.00	= $	297,000
141000	Temporary Fence (Type ESA)	LF		x		= $	-
					Subtotal Environmental Mitigation		*$ 299,500*

5B - LANDSCAPE AND IRRIGATION

Item code		Unit	Quantity		Unit Price ($)		Cost
20XXXX	Highway Planting	LS	1	x		= $	-
20XXXX	Irrigation System	LS		x		= $	-
204099	Plant Establishment Work	LS		x		= $	-
204101	Extend Plant Establishment Work	LS		x		= $	-
20XXXX	Follow-up Landscape Project	LS		x		= $	-
150685	Remove Irrigation Facility	LS		x		= $	-
20XXXX	Maintain Existing (Irrigation or Planted Areas)	LS		x		= $	-
206400	Check and Test Existing Irrigation Facilities	LS		x		= $	-
21011X	Imported Topsoil (X)	CY/TON		x		= $	-
20XXXX	Rock Blanket, Rock Mulch, DG, Gravel Mulch	SQFT/SQYD		x		= $	-
200122	Weed Germination	SQYD		x		= $	-
208304	Water Meter	EA		x		= $	-
2087XX	XX" Conduit (Use for Irrigation x-overs)	LF		x		= $	-
20890X	Extend X" Conduit (Use for Extension of Irrigation s)	LF		x		= $	-
					Subtotal Landscape and Irrigation		*$ -*

5C - EROSION CONTROL

Item code		Unit	Quantity		Unit Price ($)		Cost
210010	Move In/Move Out (Erosion Control)	EA		x		= $	-
210350	Fiber Rolls	LF		x		= $	-
210360	Compost Sock	LF		x		= $	-
2102XX	Rolled Erosion Control Product (X)	SQFT		x		= $	-
21025X	Bonded Fiber Matrix	SQFT/ACRE		x		= $	-
210300	Hydromulch	SQFT		x		= $	-
210420	Straw	SQFT		x		= $	-
210430	Hydroseed	SQFT		x		= $	-
210600	Compost	SQFT		x		= $	-
210630	Incorporate Materials	SQFT		x		= $	-
					Subtotal Erosion Control		*$ -*

5D - NPDES

Item code		Unit	Quantity		Unit Price ($)		Cost
130300	Prepare SWPPP	LS	1	x	50,000.00	= $	50,000
130200	Prepare WPCP	LS		x		= $	-
130100	Job Site Management	LS		x		= $	-
130330	Storm Water Annual Report	EA		x		= $	-
130310	Rain Event Action Plan (REAP)	EA		x		= $	-
130320	Storm Water Sampling and Analysis Day	EA		x		= $	-
130520	Temporary Hydraulic Mulch	SQYD		x		= $	-
130550	Temporary Hydroseed	SQYD		x		= $	-
130505	Move-In/Move-Out (Temporary Erosion Control)	EA		x		= $	-
130640	Temporary Fiber Roll	LF		x		= $	-
130900	Temporary Concrete Washout	LS		x		= $	-
130710	Temporary Construction Entrance	EA		x		= $	-
130610	Temporary Check Dam	LF		x		= $	-
130620	Temporary Drainage Inlet Protection	EA		x		= $	-
130730	Street Sweeping	LS		x		= $	-
						Subtotal NPDES	*$ 50,000*

TOTAL ENVIRONMENTAL	**$**	**349,500**

Supplemental Work for NPDES

066595	Water Pollution Control Maintenance Sharing*	LS	1	x	50,000.00	= $	50,000
066596	Additional Water Pollution Control**	LS		x		= $	-
066597	Storm Water Sampling and Analysis***	LS	1	x	50,000.00	= $	50,000
XXXXXX	Some Item	LS		x		= $	-
						Subtotal Supplemental Work for NDPS	*$ 100,000*

*Applies to all SWPPPs and those WPCPs with sediment control or soil stabilization BMPs.

**Applies to both SWPPPs and WPCP projects.

*** Applies only to project with SWPPPs.

SECTION 6: TRAFFIC ITEMS

6A - Traffic Electrical

Item code		Unit	Quantity		Unit Price ($)			Cost
860460	Lighting and Sign Illumination	LS	1	x	1,000,000.00	=	$	1,000,000
860201	Signal and Lighting	LS	1	x	1,500,000.00	=	$	1,500,000
860990	Closed Circuit Television System	LS		x		=	$	-
86110X	Ramp Metering System (Location X)	LS		x		=	$	-
86070X	Interconnection Conduit and Cable	LF/LS		x		=	$	-
5602XX	Furnish Sign Structure (Type X)	LB		x		=	$	-
5602XX	Install Sign Structure (Type X)	LB		x		=	$	-
498040	XX" CIDHC Pile (Sign Foundation)	LF		x		=	$	-
86080X	Inductive Loop Detectors	EA/LS		x		=	$	-
8609XX	Traffic Monitoring Station (Type X)	LS		x		=	$	-
15075X	Remove Sign Structure	EA/LS		x		=	$	-
151581	Reconstruct Sign Structure	EA		x		=	$	-
152641	Modify Sign Structure	EA		x		=	$	-
860090	Maintain Existing Traffic Management System Elem	LS		x		=	$	-
86XXXX	Fiber Optic Conduit System	LS		x		=	$	-
XXXXX	Some Item	LS		x		=	$	-

Subtotal Traffic Electrical $ *2,500,000*

6B - Traffic Signing and Striping

Item code		Unit	Quantity		Unit Price ($)			Cost
566011	Roadside Sign - One Post	EA	23	x	340.00	=	$	7,820
566012	Roadside Sign - Two Post	EA	3	x	540.00	=	$	1,620
820790	Furnish Single Sheet Aluminum Sign (0.080"	SQFT	1,840	x	20.00	=	$	36,800
560218	Furnish Sign Structure (Truss)	LB	79,600	x	4.00	=	$	318,400
150711	Remove Painted Traffic Stripe	LF		x		=	$	-
141101	Remove Yellow Painted Traffic Stripe (Hazardous	LF		x		=	$	-
150712	Remove Painted Pavement Marking	SQFT		x		=	$	-
150742	Remove Roadside Sign	EA	26	x	160.00	=	$	4,160
152320	Reset Roadside Sign	EA		x		=	$	-
152390	Relocate Roadside Sign	EA		x		=	$	-
568046	Remove Sign Structure	EA	4	x	2,700.00	=	$	10,800
840502	Thermoplastic Traffic Stripe (Enhanced Wet Night V	LF		x		=	$	-
846012	Thermoplastic Crosswalk and Pavement Marking (E	SQFT		x		=	$	-
120090	Construction Area Signs	LS	1	x	25,000.00	=	$	25,000
84XXXX	Permanent Pavement Delineation	LS	1	x	500,000.00	=	$	500,000

Subtotal Traffic Signing and Striping $ *904,600*

6C - Traffic Management Plan

Item code		Unit	Quantity		Unit Price ($)			Cost
12865X	Portable Changeable Message Signs	EA/LS		x		=	$	-

Subtotal Traffic Management Plan $ -

6C - Stage Construction and Traffic Handling

Item code		Unit	Quantity		Unit Price ($)			Cost
120199	Traffic Plastic Drum	EA		x		=	$	-
12016X	Channelizer (Type X)	EA		x		=	$	-
120120	Type III Barricade	EA		x		=	$	-
129100	Temporary Crash Cushion Module	EA		x		=	$	-
120100	Traffic Control System	LS	1	x	1,000,000.00	=	$	1,000,000
129110	Temporary Crash Cushion	EA		x		=	$	-
129000	Temporary Railing (Type K)	LF		x		=	$	-
120149	Temporary Pavement Marking (Paint)	SQFT		x		=	$	-
82010X	Delineator (Class X)	EA		x		=	$	-
XXXXXX	Some Item	Unit		x		=	$	-

Subtotal Stage Construction and Traffic Handling $ *1,000,000*

TOTAL TRAFFIC ITEMS **$ 4,404,600**

SECTION 7: DETOURS

Includes constructing, maintaining, and removal

Item code		Unit	Quantity		Unit Price ($)			Cost
190101	Roadway Excavation	CY		x		=	$	-
19801X	Imported Borrow	CY/TON		x		=	$	-
390132	Hot Mix Asphalt (Type A)	TON		x		=	$	-
26020X	Class 2 Aggregate Base	TON/CY		x		=	$	-
250401	Class 4 Aggregate Subbase	CY		x		=	$	-
130620	Temporary Drainage Inlet Protection	EA		x		=	$	-
129000	Temporary Railing (Type K)	LF		x		=	$	-
128601	Temporary Signal System	LS		x		=	$	-
120149	Temporary Pavement Marking (Paint)	SQFT		x		=	$	-
80010X	Temporary Fence (Type X)	LF		x		=	$	-
XXXXXX	Detour	LS	1	x	250,000.00	=	$	250,000

TOTAL DETOURS	**$ 250,000**

SUBTOTAL SECTIONS 1 through 7	$ 101,170,000

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items							
	ADA Items			1.0%	$	1,011,700	
8B - Bike Path Items							
	Bike Path Items			1.0%	$	1,011,700	
8C - Other Minor Items							
	Other Minor Items			8.0%	$	8,093,600	
	Total of Section 1-7	$	101,170,000	x 10.0%	= $	10,117,000	

TOTAL MINOR ITEMS	**$ 10,117,000**

SECTIONS 9: MOBILIZATION

Item code							
999990	Total Section 1-8	$	111,287,000	x 10%	= $	11,128,700	

TOTAL MOBILIZATION	**$ 11,128,700**

SECTION 10: SUPPLEMENTAL WORK

Item code		Unit	Quantity		Unit Price ($)			Cost
066670	Payment Adjustments For Price Index Fluctuations	LS		x		=	$	-
066094	Value Analysis	LS		x		=	$	-
066070	Maintain Traffic	LS		x		=	$	-
066919	Dispute Resolution Board	LS		x		=	$	-
066921	Dispute Resolution Advisor	LS		x		=	$	-
066015	Federal Trainee Program	LS		x		=	$	-
066610	Partnering	LS		x		=	$	-
066204	Remove Rock and Debris	LS		x		=	$	-
066222	Locate Existing Crossover	LS		x		=	$	-
XXXXXX	Some Item	Unit		x		=	$	-
	*Cost of **NPDES** Supplemental Work specified in Section 5D*					=	$	100,000
	Total Section 1-8	$	111,287,000		5%	=	$	5,564,350

TOTAL SUPPLEMENTAL WORK	**$ 5,664,400**

SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

Item code		Unit	Quantity		Unit Price ($)		Cost
066105	Resident Engineers Office	LS		x		=	$0
066063	Traffic Management Plan - Public Information	LS		x		=	$0
066901	Water Expenses	LS		x		=	$0
8609XX	Traffic Monitoring Station (X)	LS		x		=	$0
066841	Traffic Controller Assembly	LS		x		=	$0
066840	Traffic Signal Controller Assembly	LS		x		=	$0
066062	COZEEP Contract	LS		x		=	$0
066838	Reflective Numbers and Edge Sealer	LS		x		=	$0
066065	Tow Truck Service Patrol	LS		x		=	$0
066916	Annual Construction General Permit Fee	LS		x		=	$0
XXXXXX	Some Item	Unit		x		=	$0
	Total Section 1-8		$ 111,287,000		4%	=	$ 4,451,480

TOTAL STATE FURNISHED	**$4,451,500**

SECTION 12: TIME-RELATED OVERHEAD

Total of Roadway and Structures Contract Items excluding Mobilization	$333,424,695	(used to calculate TRO)
Total Construction Cost (excluding TRO and Contingency)	$371,756,810	(used to check if project is greater than $5 million excluding contingency)

Estiamted Time-Releated Overhead (TRO) Percentage (0% to 10%) = **10%**

Item code		Unit	Quantity		Unit Price ($)		Cost
070018	Time-Related Overhead	WD	0	X	#DIV/0!	=	$0

TOTAL TIME-RELATED OVERHEAD	**$0**

Note: If the building portion of the project is greater than 50% of the total project cost, then TRO is not included.

SECTION 13: ROADWAY CONTINGENCY

Recommended Contingency: (Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Total Section 1-12	$	132,531,600	x	**50%**	=	$66,265,800

TOTAL CONTINGENCY	**$66,265,800**

II. STRUCTURE ITEMS

	Bridge 1	Bridge 2	Bridge 3
DATE OF ESTIMATE	03/14/18	03/14/18	03/14/18
Bridge Name	Novato Creek	Simmons Slough	Petaluma River Replace
Bridge Number	57-XXX	57-XXX	57-XXX
Structure Type	PC/PS Girders	PC/PS Girders	Long Span Bridge
Width (Feet) [out to out]	97 LF	97 LF	95 LF
Total Bridge Length (Feet)	3844 LF	600 LF	695 LF
Total Area (Square Feet)	374406 SQFT	58200 SQFT	66025 SQFT
Structure Depth (Feet)	6 LF	6 LF	6 LF
Footing Type (pile or spread)	Large Diameter Steel Piles	Large Diameter Steel Piles	Large Diameter Piles
Cost Per Square Foot	$250	$250	$950
COST OF EACH	**$93,601,400**	**$14,550,000**	**$62,723,750**

DATE OF ESTIMATE	00/00/00	00/00/00	00/00/00
Name	xxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxx
Bridge Number	57-XXX	57-XXX	57-XXX
Structure Type	xxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxx
Width (Feet) [out to out]	0 LF	0 LF	0 LF
Total Length (Feet)	0 LF	0 LF	0 LF
Total Area (Square Feet)	0 SQFT	0 SQFT	0 SQFT
Structure Depth (Feet)	0 LF	0 LF	0 LF
Footing Type (pile or spread)	xxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxx
Cost Per Square Foot	$100	$0	$0
COST OF EACH	**$0**	**$0**	**$0**

TOTAL COST OF BRIDGES	**$170,875,150**
TOTAL COST OF BUILDINGS	**$0**
Structures Mobilization Percentage 10%	**$17,087,515**

Recommended Contingency: (Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Structures Contingency Percentage 30%	**$51,262,545**
TOTAL COST OF STRUCTURES	**$239,225,210**

Estimate Prepared By: _____ _____

XXXXXXXXXXXXXXXX ------ Division of Structures Date

EA: DS-123456 PID: DS1234567

III. RIGHT OF WAY

Fill in all of the available information from the Right of Way data sheet.

A)	A1)	Acquisition, including Excess Land Purchases, Damages & Goodwill, Fees	$	3,250,000
	A2)	SB-1210	$	0
B)		Acquisition of Offsite Mitigation	$	0
C)	C1)	Utility Relocation (State Share)	$	0
	C2)	Potholing (Design Phase)	$	0
D)		Railroad Acquisition	$	0
E)		Clearance / Demolition	$	0
F)		Relocation Assistance (RAP and/or Last Resort Housing Costs)	$	0
G)		Title and Escrow	$	0
H)		Environmental Review	$	0
I)		Condemnation Settlements 0%	$	0
J)		Design Appreciation Factor 0%	$	0
K)		Utility Relocation (Construction Cost)	$	10,000,000

L)	**TOTAL RIGHT OF WAY ESTIMATE**	**$13,250,000**
M)	**TOTAL R/W ESTIMATE: Escalated**	
N)	**RIGHT OF WAY SUPPORT**	**$18,050,920**

Support Cost Estimate Prepared By _____ Project Coordinator[1] _____ Phone

Utility Estimate Prepared By _____ Utiliy Coordinator[2] _____ Phone

R/W Acquistion Estimate Prepared By _____ Right of Way Estimator[3] _____ Phone

Note: Items G & H applied to items A + B

[1] When estimate has Support Costs only [2] When estimate has Utility Relocation [3] When R/W Acquisition is required

DO NOT PRINT THIS SHEET AS PART OF COST ESTIMATE ATTACHMENT TO PROJECT INITIATION OR APPROVAL DOCUMENTS.

EA: DS-123456 PID: DS1234567

IV. SUPPORT COST ESTIMATE SUMMARY

Note: Use PRSM project data.

Total by FY		Escalated Support Cost for Estimate To Completion (ETC)				
		PA&ED	PS&E	RW	CON	Total $
< 2010	Expended					
	ETC					
2011	Expended					
	ETC					
2012	Expended					
	ETC					
2013	Expended					
	ETC					
2014	Expended					
	ETC					
2015	Expended					
	ETC					
2016	Expended					
	ETC					
2017	Expended					
	ETC					
2018	Expended	$10,100,000	$36,101,840	$18,050,920	$54,152,760	$118,405,520
	ETC					
2019	Expended					
	ETC					
2020	Expended					
	ETC					
2021	Expended					
	ETC					
2022	Expended					
	ETC					
2023	Expended					
	ETC					
2024	Expended					
	ETC					
2025 >	Expended					
	ETC					
EAC (Expended + ETC)		$10,100,000	$36,101,840	$18,050,920	$54,152,760	$118,405,520
Approved Budget (PRSM)						
Difference (Budget - EAC)		-$10,100,000	-$36,101,840	-$18,050,920	-$54,152,760	-$118,405,520
Support Ratio (EAC / Cap Cost)		2.2%	8.0%	4.0%	12.0%	26.2%

Total Capital Cost:	**$451,273,000**
Total Capital Outlay Support Cost:	**$118,405,520**
Overall Percent Support Cost:	**26.24%**

PRSM workplan hours/costs verified against approved MWA:

Office Chief - _____ Date _____

Approved by:

Project Control - _____ Date _____

PROJECT

PLANNING COST ESTIMATE

EA: DS-123456 PID: DS1234567

EA: DS-123456

PID: DS1234567

District-County-Route: 04-MRN-SON-SR37

PM:

Type of Estimate : Planning Level

Program Code :

Project Limits : The project limits will be SR 37 between US 101 interchange to SR 121 junction.

Project Description: This segment extends from US 101 in Marin County for 3.4 miles and continues for 3.9 miles in Sonoma County to the SR 121 junction. Segment A is designated a 4-lane expressway with bridges over Novato Creek, Simonds Slough Creek, Petaluma River, Atherton Ave, an interchange at Highway 101 and Atherton and an at-grade intersection at Lakeville Road and SR 121. There are three minor access roads/driveways connecting to SR37. The Sonoma-Marin Area Transit (SMART) is also located south of SR 37 and runs parallel between US 101 and Atherton Ave. The roadway is relatively low-lying, about 2-6 feet NAVD88 for most of the portion except between Atherton Ave and Petaluma Bridge and transitions to rolling terrain and upload along the eastern end near the SR 37/SR 121. Portion of the road is protected by levees along Novato Creek, the Petaluma River and landward levees of the Sonoma Baylands.

Scope : This study focused on developing three alternatives as described below:
1. Alternative 1: An all bridge alternative between US 101 to SR 121.
2. Alternative 2: A hybrid option (bridge and embankment) between US 101 to SR 121.
3. Alternative 3: A raised roadway between US 101 to Novato Creek.

Alternative : Alternative 2 - Sonoma County Cost Only (Segment A2)

SUMMARY OF PROJECT COST ESTIMATE

	Current Year Cost	Escalated Cost
TOTAL ROADWAY COST	$ 111,263,400	$ 173,348,628
TOTAL STRUCTURES COST	$ 498,701,000	$ 776,977,284
SUBTOTAL CONSTRUCTION COST	$ 609,964,400	$ 950,325,913
TOTAL RIGHT OF WAY COST	$ 16,100,000	$ 16,100,000
TOTAL CAPITAL OUTLAY COSTS	$ 626,065,000	$ 966,426,000
PR/ED SUPPORT	$ 11,500,000	$ 11,500,000
PS&E SUPPORT	$ 50,085,200	$ 50,085,200
RIGHT OF WAY SUPPORT	$ 25,042,600	$ 25,042,600
CONSTRUCTION SUPPORT	$ 75,127,800	$ 75,127,800
TOTAL SUPPORT COST	$ 161,755,600	$ 161,755,600
TOTAL PROJECT COST	$ 788,000,000	$ 1,129,000,000

If Project has been programmed enter Programmed Amount

Date of Estimate (Month/Year) Month 3 / Year 2018

Estimated Construction Start (Month/Year) _____ /

Number of Working Days =

Estimated Mid-Point of Construction (Month/Year) _____ /

Estimated Construction End (Month/Year) _____ /

Number of Plant Establishment Days

Estimated Project Schedule

PID Approval	xx/xx/xxxx
PA/ED Approval	xx/xx/xxxx
PS&E	xx/xx/xxxx
RTL	xx/xx/xxxx
Begin Construction	xx/xx/xxxx

Reviewed by District O.E. or Cost Estimate Certifier

Office Engineer / Cost Estimate Certifier	Date	Phone
	xx/xx/xxxx	(xxx) xxx-xxxx

Approved by Project Manager

Project Manager	Date	Phone
	xx/xx/xxxx	(xxx) xxx-xxxx

I. ROADWAY ITEMS SUMMARY

	Section		Cost
1	**Earthwork**	$	15,457,400
2	**Pavement Structural Section**	$	11,841,500
3	**Drainage**	$	18,505,600
4	**Specialty Items**	$	6,204,800
5	**Environmental**	$	439,500
6	**Traffic Items**	$	4,040,400
7	**Detours**	$	100,000
8	**Minor Items**	$	5,659,000
9	**Roadway Mobilization**	$	6,224,900
10	**Supplemental Work**	$	3,212,500
11	**State Furnished**	$	2,490,000.00
12	**Time-Related Overhead**	$	-
13	**Roadway Contingency**	$	37,087,800.00
	TOTAL ROADWAY ITEMS	**$**	**111,263,400**

Estimate Prepared By :

Name and Title Date Phone

Estimate Reviewed By :

Name and Title Date Phone

By signing this estimate you are attesting that you have discussed your project with all functional units and have incorporated all their comments or have discussed with them why they will not be incorporated.

SECTION 1: EARTHWORK

Item code		Unit	Quantity		Unit Price ($)			Cost
190101	Roadway Excavation	CY		x		=	$	-
19010X	Roadway Excavation (Type X) ADL	CY		x		=	$	-
194001	Ditch Excavation	CY		x		=	$	-
198010	Imported Borrow	CY	1,394,400	x	11.00	=	$	15,338,400
192037	Structure Excavation (Retaining Wall)	CY		x		=	$	-
193013	Structure Backfill (Retaining Wall)	CY		x		=	$	-
193031	Pervious Backfill Material (Retaining Wall)	CY		x		=	$	-
170105	Clearing & Grubbing	ACRE	23	x	3,000.00	=	$	69,000
170101	Develop Water Supply	LS	1	x	50,000.00	=	$	50,000
19801X	Imported Borrow	CY/TON		x		=	$	-
210130	Duff	ACRE		x		=	$	-
XXXXXX	Some Item	Unit						

TOTAL EARTHWORK SECTION ITEMS $ 15,457,400

SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code		Unit	Quantity		Unit Price ($)			Cost
401050	Jointed Plain Concrete Pavement	CY		x		=	$	-
400050	Continuously Reinforced Concrete Pavement	CY		x		=	$	-
404092	Seal Pavement Joint	LF		x		=	$	-
404093	Seal Isolation Joint	LF		x		=	$	-
413117	Seal Concrete Pavement Joint (Silicone)	LF		x		=	$	-
413118	Seal Pavement Joint (Asphalt Rubber)	LF		x		=	$	-
280010	Rapid Strength Concrete Base	CY		x		=	$	-
410095	Dowel Bar (Drill and Bond)	EA		x		=	$	-
390132	Hot Mix Asphalt (Type A)	TON	50,240	x	105.00	=	$	5,275,200
390137	Rubberized Hot Mix Asphalt (Gap Graded)	TON	2,060	x	160.00	=	$	329,600
39300X	Geosynthetic Pavement Interlayer (Type X)	SQYD		x		=	$	-
260203	Class 2 Aggregate Base	CY	52,050	x	80.00	=	$	4,164,000
290201	Asphalt Treated Permeable Base	CY		x		=	$	-
250401	Class 4 Aggregate Subbase	CY		x		=	$	-
374002	Asphaltic Emulsion (Fog Seal Coat)	TON		x		=	$	-
397005	Tack Coat	TON		x		=	$	-
377501	Slurry Seal	TON		x		=	$	-
3750XX	Screenings (Type XX)	TON		x		=	$	-
374492	Asphaltic Emulsion (Polymer Modified)	TON		x		=	$	-
370001	Sand Cover (Seal)	TON		x		=	$	-
731530	Minor Concrete (Textured Paving)	CY		x		=	$	-
731502	Minor Concrete (Miscellaneous Construction)	CY		x		=	$	-
394073	Place Hot Mix Asphalt Dike (Type A)	LF	15,020	x	15.00	=	$	225,300
150771	Remove Asphalt Concrete Dike	LF		x		=	$	-
420201	Grind Existing Concrete Pavement	SQYD		x		=	$	-
782200	Obliterate Surfacing	SQYD	219,590	x	3.50	=	$	768,565
390095	Replace Asphalt Concrete Surfacing	CY		x		=	$	-
15312X	Remove Concrete	LF/CY/LS		x		=	$	-
394090	Place Hot Mix Asphalt (Miscellaneous Area)	SQYD		x		=	$	-
153103	Cold Plane Asphalt Concrete Pavement	SQYD		x		=	$	-
846051	12" Rumble Strip (Asphalt Concrete Pavement)	STA	125	x	630.00	=	$	78,750
413113	Repair Spalled Joints, Polyester Grout	SQYD		x		=	$	-
420102	Groove Existing Concrete Pavement	SQYD		x		=	$	-
390136	Minor Hot Mix Asphalt	TON		x		=	$	-
394095	Roadside Paving (Miscellaneous Areas)	SQYD		x		=	$	-
XXXXXX	Ramp & Intersection Reconstruction	LS	1	x	1,000,000.00	=	$	1,000,000

TOTAL PAVEMENT STRUCTURAL SECTION ITEMS $ 11,841,500

SECTION 3: DRAINAGE

Item code		Unit	Quantity		Unit Price ($)			Cost
15080X	Remove Culvert	EA/LF		x		=	$	-
150820	Modify Inlet	EA		x		=	$	-
155232	Sand Backfill	CY		x		=	$	-
15020X	Abandon Culvert	EA/LF		x		=	$	-
152430	Adjust Inlet	LF		x		=	$	-
155003	Cap Inlet	EA		x		=	$	-
510501	Minor Concrete	CY		x		=	$	-
510502	Minor Concrete (Minor Structure)	CY	310	x	2,720.00	=	$	843,200
5105XX	Minor Concrete (Type XX)	CY		x		=	$	-
620XXX	XX" Alternative Pipe Culvert (Type X)	LF		x		=	$	-
6411XX	XX" Plastic Pipe	LF		x		=	$	-
650014	18" Reinforced Concrete Pipe	LF	44,200	x	310.00	=	$	13,702,000
6650XX	XX" Corrugated Steel Pipe (0.XXX" Thick)	LF		x		=	$	-
68XXXX	XX" Plastic Pipe (Edge Drain)	LF		x		=	$	-
69011X	XX" Corrugated Steel Pipe Downdrain (0.XXX" Thick)	LF		x		=	$	-
70321X	XX" Corrugated Steel Pipe Inlet (0.XXX" Thick)	LF		x		=	$	-
70XXXX	XX" Corrugated Steel Pipe Riser (0.XXX" Thick)	LF		x		=	$	-
7050XX	XX" Steel Flared End Section	EA		x		=	$	-
703233	Grated Line Drain	LF		x		=	$	-
72XXXX	Rock Slope Protection (Type and Method)	CY/TON		x		=	$	-
72901X	Rock Slope Protection Fabric (Class X)	SQYD		x		=	$	-
721420	Concrete (Ditch Lining)	CY		x		=	$	-
721430	Concrete (Channel Lining)	CY		x		=	$	-
750001	Miscellaneous Iron and Steel	LB	20,870	x	6.00	=	$	125,220
XXXXXX	Additional Drainage (15% of Section 1-2 and Structure)	LS	383,513,900	x	0.01	=	$	3,835,139

TOTAL DRAINAGE ITEMS $ 18,505,600

SECTION 4: SPECIALTY ITEMS

Item code		Unit	Quantity		Unit Price ($)			Cost
080050	Progress Schedule (Critical Path Method)	LS		x		=	$	-
582001	Sound Wall (Masonry Block)	SQFT		x		=	$	-
510530	Minor Concrete (Wall)	CY		x		=	$	-
15325X	Remove Sound Wall	LF/LS		x		=	$	-
070030	Lead Compliance Plan	LS		x		=	$	-
141120	Treated Wood Waste	LB		x		=	$	-
153221	Remove Concrete Barrier	LF		x		=	$	-
150662	Remove Metal Beam Guard Railing	LF	17,780	x	15.00	=	$	266,700
150668	Remove Flared End Section	EA		x		=	$	-
800360	Chain Link Fence (Type CL-6)	LF	12,160	x	50.00	=	$	608,000
800XXX	Chain Link Gate (Type XX)	LF				=	$	-
832001	Metal Beam Guard Railing	LF		x		=	$	-
839302	Single Thrie Beam Barrier (Wood Post)	LF	6,080	x	40.00	=	$	243,200
839311	Double Thrie Beam Barrier (Wood Post)	LF	6,080	x	50.00	=	$	304,000
833088	Tubular Handrailing	LF	22,610	x	110.00	=	$	2,487,100
8395XX	Terminal System (Type CAT)	EA		x		=	$	-
839585	Alternative Flared Terminal System	EA		x		=	$	-
839584	Alternative In-line Terminal System	EA		x		=	$	-
4906XX	CIDH Concrete Piling (Insert Diameter)	LF		x		=	$	-
839XXX	Crash Cushion (Insert Type)	EA		x		=	$	-
839701	Concrete Barrier (Type 60)	LF		x		=	$	-
839717	Concrete Barrier (Type 732 MOD)	LF	11,305	x	150.00	=	$	1,695,750
839720	Concrete Barrier (Type 732)	LF		x		=	$	-
513553	Retaining Wall (Masonry Wall)	SQFT		x		=	$	-
511035	Architectural Treatment	SQFT		x		=	$	-
598001	Anti-Graffiti Coating	SQFT		x		=	$	-
203070	Rock Stain	SQFT		x		=	$	-
5136XX	Reinforced Concrete Crib Wall (Type X)	SQFT		x		=	$	-
83954X	Transition Railing (Type X)	EA		x		=	$	-
597601	Prepare and Stain Concrete	SQFT		x		=	$	-
839561	Rail Tensioning Assembly	EA		x		=	$	-
83958X	End Anchor Assembly (Type X)	EA		x		=	$	-
013341	Truck scale (Assume replace in kind)	LS	2	x	300,000.00	=	$	600,000

TOTAL SPECIALTY ITEMS $ 6,204,800

SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Item code		Unit	Quantity		Unit Price ($)			Cost		
	Biological Mitigation	LS	1	x	2,500.00	=	$	2,500		
130670	Temporary Reinforced Silt Fence	LF	43,000	x	9.00	=	$	387,000		
141000	Temporary Fence (Type ESA)	LF		x		=	$	-		
								Subtotal Environmental Mitigation	$	*389,500*

5B - LANDSCAPE AND IRRIGATION

Item code		Unit	Quantity		Unit Price ($)			Cost		
20XXXX	Highway Planting	LS	1	x		=	$	-		
20XXXX	Irrigation System	LS		x		=	$	-		
204099	Plant Establishment Work	LS		x		=	$	-		
204101	Extend Plant Establishment Work	LS		x		=	$	-		
20XXXX	Follow-up Landscape Project	LS		x		=	$	-		
150685	Remove Irrigation Facility	LS		x		=	$	-		
20XXXX	Maintain Existing (Irrigation or Planted Areas)	LS		x		=	$	-		
206400	Check and Test Existing Irrigation Facilities	LS		x		=	$	-		
21011X	Imported Topsoil (X)	CY/TON		x		=	$	-		
20XXXX	Rock Blanket, Rock Mulch, DG, Gravel Mulch	SQFT/SQYD		x		=	$	-		
200122	Weed Germination	SQYD		x		=	$	-		
208304	Water Meter	EA		x		=	$	-		
2087XX	XX" Conduit (Use for Irrigation x-overs)	LF		x		=	$	-		
20890X	Extend X" Conduit (Use for Extension of Irrigation s)	LF		x		=	$	-		
								Subtotal Landscape and Irrigation	$	-

5C - EROSION CONTROL

Item code		Unit	Quantity		Unit Price ($)			Cost		
210010	Move In/Move Out (Erosion Control)	EA		x		=	$	-		
210350	Fiber Rolls	LF		x		=	$	-		
210360	Compost Sock	LF		x		=	$	-		
2102XX	Rolled Erosion Control Product (X)	SQFT		x		=	$	-		
21025X	Bonded Fiber Matrix	SQFT/ACRE		x		=	$	-		
210300	Hydromulch	SQFT		x		=	$	-		
210420	Straw	SQFT		x		=	$	-		
210430	Hydroseed	SQFT		x		=	$	-		
210600	Compost	SQFT		x		=	$	-		
210630	Incorporate Materials	SQFT		x		=	$	-		
								Subtotal Erosion Control	$	-

5D - NPDES

Item code		Unit	Quantity		Unit Price ($)			Cost		
130300	Prepare SWPPP	LS	1	x	50,000.00	=	$	50,000		
130200	Prepare WPCP	LS		x		=	$	-		
130100	Job Site Management	LS		x		=	$	-		
130330	Storm Water Annual Report	EA		x		=	$	-		
130310	Rain Event Action Plan (REAP)	EA		x		=	$	-		
130320	Storm Water Sampling and Analysis Day	EA		x		=	$	-		
130520	Temporary Hydraulic Mulch	SQYD		x		=	$	-		
130550	Temporary Hydroseed	SQYD		x		=	$	-		
130505	Move-In/Move-Out (Temporary Erosion Control)	EA		x		=	$	-		
130640	Temporary Fiber Roll	LF		x		=	$	-		
130900	Temporary Concrete Washout	LS		x		=	$	-		
130710	Temporary Construction Entrance	EA		x		=	$	-		
130610	Temporary Check Dam	LF		x		=	$	-		
130620	Temporary Drainage Inlet Protection	EA		x		=	$	-		
130730	Street Sweeping	LS		x		=	$	-		
								Subtotal NPDES	$	*50,000*

								TOTAL ENVIRONMENTAL	**$**	**439,500**

Supplemental Work for NPDES

066595	Water Pollution Control Maintenance Sharing*	LS	1	x	50,000.00	=	$	50,000		
066596	Additional Water Pollution Control**	LS		x		=	$	-		
066597	Storm Water Sampling and Analysis***	LS	1	x	50,000.00	=	$	50,000		
XXXXXX	Some Item	LS		x		=	$	-		
								Subtotal Supplemental Work for NDPS	$	*100,000*

*Applies to all SWPPPs and those WPCPs with sediment control or soil stabilization BMPs.

**Applies to both SWPPPs and WPCP projects.

*** Applies only to project with SWPPPs.

SECTION 6: TRAFFIC ITEMS

6A - Traffic Electrical

Item code		Unit	Quantity		Unit Price ($)			Cost
860460	Lighting and Sign Illumination	LS	1	x	1,000,000.00	=	$	1,000,000
860201	Signal and Lighting	LS	1	x	1,500,000.00	=	$	1,500,000
860990	Closed Circuit Television System	LS		x		=	$	-
86110X	Ramp Metering System (Location X)	LS		x		=	$	-
86070X	Interconnection Conduit and Cable	LF/LS		x		=	$	-
5602XX	Furnish Sign Structure (Type X)	LB		x		=	$	-
5602XX	Install Sign Structure (Type X)	LB		x		=	$	-
498040	XX" CIDHC Pile (Sign Foundation)	LF		x		=	$	-
86080X	Inductive Loop Detectors	EA/LS		x		=	$	-
8609XX	Traffic Monitoring Station (Type X)	LS		x		=	$	-
15075X	Remove Sign Structure	EA/LS		x		=	$	-
151581	Reconstruct Sign Structure	EA		x		=	$	-
152641	Modify Sign Structure	EA		x		=	$	-
860090	Maintain Existing Traffic Management System Elem	LS		x		=	$	-
86XXXX	Fiber Optic Conduit System	LS		x		=	$	-
XXXXX	Some Item	LS		x		=	$	-

Subtotal Traffic Electrical $ *2,500,000*

6B - Traffic Signing and Striping

Item code		Unit	Quantity		Unit Price ($)			Cost
566011	Roadside Sign - One Post	EA	21	x	340.00	=	$	7,140
566012	Roadside Sign - Two Post	EA	7	x	540.00	=	$	3,780
5602XX	Furnish Sign	SQFT		x		=	$	-
568016	Install Sign Panel on Existing Frame	SQFT		x		=	$	-
150711	Remove Painted Traffic Stripe	LF		x		=	$	-
141101	Remove Yellow Painted Traffic Stripe (Hazardous W...t...)	LF		x		=	$	-
150712	Remove Painted Pavement Marking	SQFT		x		=	$	-
150742	Remove Roadside Sign	EA	28	x	160.00	=	$	4,480
152320	Reset Roadside Sign	EA		x		=	$	-
152390	Relocate Roadside Sign	EA		x		=	$	-
82010X	Delineator (Class X)	EA		x		=	$	-
840502	Thermoplastic Traffic Stripe (Enhanced Wet Night V	LF		x		=	$	-
846012	Thermoplastic Crosswalk and Pavement Marking (E	SQFT		x		=	$	-
120090	Construction Area Signs	LS	1	x	25,000.00	=	$	25,000
84XXXX	Permanent Pavement Delineation	LS	1	x	500,000.00	=	$	500,000

Subtotal Traffic Signing and Striping $ *540,400*

6C - Traffic Management Plan

Item code		Unit	Quantity		Unit Price ($)			Cost
12865X	Portable Changeable Message Signs	EA/LS		x		=	$	-

Subtotal Traffic Management Plan $ -

6C - Stage Construction and Traffic Handling

Item code		Unit	Quantity		Unit Price ($)			Cost
120199	Traffic Plastic Drum	EA		x		=	$	-
12016X	Channelizer (Type X)	EA		x		=	$	-
120120	Type III Barricade	EA		x		=	$	-
129100	Temporary Crash Cushion Module	EA		x		=	$	-
120100	Traffic Control System	LS	1	x	1,000,000.00	=	$	1,000,000
129110	Temporary Crash Cushion	EA		x		=	$	-
129000	Temporary Railing (Type K)	LF		x		=	$	-
120149	Temporary Pavement Marking (Paint)	SQFT		x		=	$	-
82010X	Delineator (Class X)	EA		x		=	$	-
XXXXXX	Some Item	Unit		x		=	$	-

Subtotal Stage Construction and Traffic Handling $ *1,000,000*

TOTAL TRAFFIC ITEMS $ **4,040,400**

SECTION 7: DETOURS

Includes constructing, maintaining, and removal

Item code		Unit	Quantity		Unit Price ($)			Cost
190101	Roadway Excavation	CY		x		=	$	-
19801X	Imported Borrow	CY/TON		x		=	$	-
390132	Hot Mix Asphalt (Type A)	TON		x		=	$	-
26020X	Class 2 Aggregate Base	TON/CY		x		=	$	-
250401	Class 4 Aggregate Subbase	CY		x		=	$	-
130620	Temporary Drainage Inlet Protection	EA		x		=	$	-
129000	Temporary Railing (Type K)	LF		x		=	$	-
128601	Temporary Signal System	LS		x		=	$	-
120149	Temporary Pavement Marking (Paint)	SQFT		x		=	$	-
80010X	Temporary Fence (Type X)	LF		x		=	$	-
XXXXXX	Detour	LS	1	x	100,000.00	=	$	100,000

TOTAL DETOURS	**$**	**100,000**
SUBTOTAL SECTIONS 1 through 7	$	56,589,200

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items						
ADA Items			1.0%	$	565,892	
8B - Bike Path Items						
Bike Path Items			1.0%	$	565,892	
8C - Other Minor Items						
Other Minor Items			8.0%	$	4,527,136	
Total of Section 1-7	$	56,589,200	x 10.0%	= $	5,658,920	

TOTAL MINOR ITEMS	**$**	**5,659,000**

SECTIONS 9: MOBILIZATION

Item code								
999990	Total Section 1-8	$	62,248,200	x	10%	=	$	6,224,820

TOTAL MOBILIZATION	**$**	**6,224,900**

SECTION 10: SUPPLEMENTAL WORK

Item code		Unit	Quantity		Unit Price ($)			Cost
066670	Payment Adjustments For Price Index Fluctuations	LS		x		=	$	-
066094	Value Analysis	LS		x		=	$	-
066070	Maintain Traffic	LS		x		=	$	-
066919	Dispute Resolution Board	LS		x		=	$	-
066921	Dispute Resolution Advisor	LS		x		=	$	-
066015	Federal Trainee Program	LS		x		=	$	-
066610	Partnering	LS		x		=	$	-
066204	Remove Rock and Debris	LS		x		=	$	-
066222	Locate Existing Crossover	LS		x		=	$	-
XXXXXX	Some Item	Unit		x		=	$	-
	*Cost of **NPDES** Supplemental Work specified in Section 5D*					=	$	100,000
	Total Section 1-8	$	62,248,200		5%	=	$	3,112,410

TOTAL SUPPLEMENTAL WORK	**$**	**3,212,500**

SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

Item code		Unit	Quantity		Unit Price ($)		Cost
066105	Resident Engineers Office	LS		x		=	$0
066063	Traffic Management Plan - Public Information	LS		x		=	$0
066901	Water Expenses	LS		x		=	$0
8609XX	Traffic Monitoring Station (X)	LS		x		=	$0
066841	Traffic Controller Assembly	LS		x		=	$0
066840	Traffic Signal Controller Assembly	LS		x		=	$0
066062	COZEEP Contract	LS		x		=	$0
066838	Reflective Numbers and Edge Sealer	LS		x		=	$0
066065	Tow Truck Service Patrol	LS		x		=	$0
066916	Annual Construction General Permit Fee	LS		x		=	$0
XXXXXX	Some Item	Unit		x		=	$0
	Total Section 1-8		$ 62,248,200		4%	=	$ 2,489,928

TOTAL STATE FURNISHED	**$2,490,000**

SECTION 12: TIME-RELATED OVERHEAD

Total of Roadway and Structures Contract Items excluding Mobilization	$525,327,700	(used to calculate TRO)
Total Construction Cost (excluding TRO and Contingency)	$572,876,600	(used to check if project is greater than $5 million excluding contingency)

Estiamted Time-Releated Overhead (TRO) Percentage (0% to 10%) = **10%**

Item code		Unit	Quantity		Unit Price ($)		Cost
070018	Time-Related Overhead	WD	0	X	#DIV/0!	=	$0

TOTAL TIME-RELATED OVERHEAD	**$0**

Note: If the building portion of the project is greater than 50% of the total project cost, then TRO is not included.

SECTION 13: ROADWAY CONTINGENCY

Recommended Contingency: (Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Total Section 1-12	$	74,175,600	x	**50%**	=	$37,087,800

TOTAL CONTINGENCY	**$37,087,800**

II. STRUCTURE ITEMS

	Bridge 1		Bridge 2		
DATE OF ESTIMATE	03/14/18		03/14/18		00/00/00
Bridge Name	Petaluma River Replace		Causeway		xxxxxxxxxxxxxxxxxx
Bridge Number	57-XXX		57-XXX		57-XXX
Structure Type	Long Span Bridge		PC/PS Girders		xxxxxxxxxxxxxxxxxx
Width (Feet) [out to out]	95 LF		97 LF		0 LF
Total Bridge Length (Feet)	1485 LF		9125 LF		0 LF
Total Area (Square Feet)	141075 SQFT		888775 SQFT		0 SQFT
Structure Depth (Feet)	6 LF		6 LF		0 LF
Footing Type (pile or spread)	Large Diameter Piles		Large Diameter Steel Piles		xxxxxxxxxxxxxxxxxx
Cost Per Square Foot	$950		$250		$0
COST OF EACH	**$134,021,250**		**$222,193,750**		**$0**

DATE OF ESTIMATE	00/00/00		00/00/00		00/00/00
Name	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Bridge Number	57-XXX		57-XXX		57-XXX
Structure Type	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Width (Feet) [out to out]	0 LF		0 LF		0 LF
Total Length (Feet)	0 LF		0 LF		0 LF
Total Area (Square Feet)	0 SQFT		0 SQFT		0 SQFT
Structure Depth (Feet)	0 LF		0 LF		0 LF
Footing Type (pile or spread)	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Cost Per Square Foot	$100		$0		$0
COST OF EACH	**$0**		**$0**		**$0**

TOTAL COST OF BRIDGES		**$356,215,000**
TOTAL COST OF BUILDINGS		**$0**
Structures Mobilization Percentage	10%	**$35,621,500**

Recommended Contingency: (Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Structures Contingency Percentage	30%	**$106,864,500**
TOTAL COST OF STRUCTURES		**$498,701,000**

Estimate Prepared By: _____ _____

XXXXXXXXXXXXXXXX ------ Division of Structures — Date

Attachment C

EA: DS-123456 PID: DS1234567

III. RIGHT OF WAY

Fill in all of the available information from the Right of Way data sheet.

A)	A1)	Acquisition, including Excess Land Purchases, Damages & Goodwill, Fees	$	6,100,000
	A2)	SB-1210	$	0
B)		Acquisition of Offsite Mitigation	$	0
C)	C1)	Utility Relocation (State Share)	$	0
	C2)	Potholing (Design Phase)	$	0
D)		Railroad Acquisition	$	0
E)		Clearance / Demolition	$	0
F)		Relocation Assistance (RAP and/or Last Resort Housing Costs)	$	0
G)		Title and Escrow	$	0
H)		Environmental Review	$	0
I)		Condemnation Settlements 0%	$	0
J)		Design Appreciation Factor 0%	$	0
K)		Utility Relocation (Construction Cost)	$	10,000,000

L)	**TOTAL RIGHT OF WAY ESTIMATE**	**$16,100,000**
M)	**TOTAL R/W ESTIMATE: Escalated**	
N)	**RIGHT OF WAY SUPPORT**	**$25,042,600**

Support Cost Estimate Prepared By _____ Project Coordinator[1] _____ Phone

Utility Estimate Prepared By _____ Utiliy Coordinator[2] _____ Phone

R/W Acquistion Estimate Prepared By _____ Right of Way Estimator[3] _____ Phone

Note: Items G & H applied to items A + B

[1] When estimate has Support Costs only [2] When estimate has Utility Relocation [3] When R/W Acquisition is required

DO NOT PRINT THIS SHEET AS PART OF COST ESTIMATE ATTACHMENT TO PROJECT INITIATION OR APPROVAL DOCUMENTS.

EA: DS-123456 PID: DS1234567

IV. SUPPORT COST ESTIMATE SUMMARY

Note: Use PRSM project data.

Total by FY		Escalated Support Cost for Estimate To Completion (ETC)				
		PA&ED	PS&E	RW	CON	Total $
< 2010	Expended					
	ETC					
2011	Expended					
	ETC					
2012	Expended					
	ETC					
2013	Expended					
	ETC					
2014	Expended					
	ETC					
2015	Expended					
	ETC					
2016	Expended					
	ETC					
2017	Expended					
	ETC					
2018	Expended	$11,500,000	$50,085,200	$25,042,600	$75,127,800	$161,755,600
	ETC					
2019	Expended					
	ETC					
2020	Expended					
	ETC					
2021	Expended					
	ETC					
2022	Expended					
	ETC					
2023	Expended					
	ETC					
2024	Expended					
	ETC					
2025 >	Expended					
	ETC					
EAC (Expended + ETC)		$11,500,000	$50,085,200	$25,042,600	$75,127,800	$161,755,600
Approved Budget (PRSM)						
Difference (Budget - EAC)		-$11,500,000	-$50,085,200	-$25,042,600	-$75,127,800	-$161,755,600
Support Ratio (EAC / Cap Cost)		1.8%	8.0%	4.0%	12.0%	25.8%

Total Capital Cost:	**$626,065,000**
Total Capital Outlay Support Cost:	**$161,755,600**
Overall Percent Support Cost:	**25.84%**

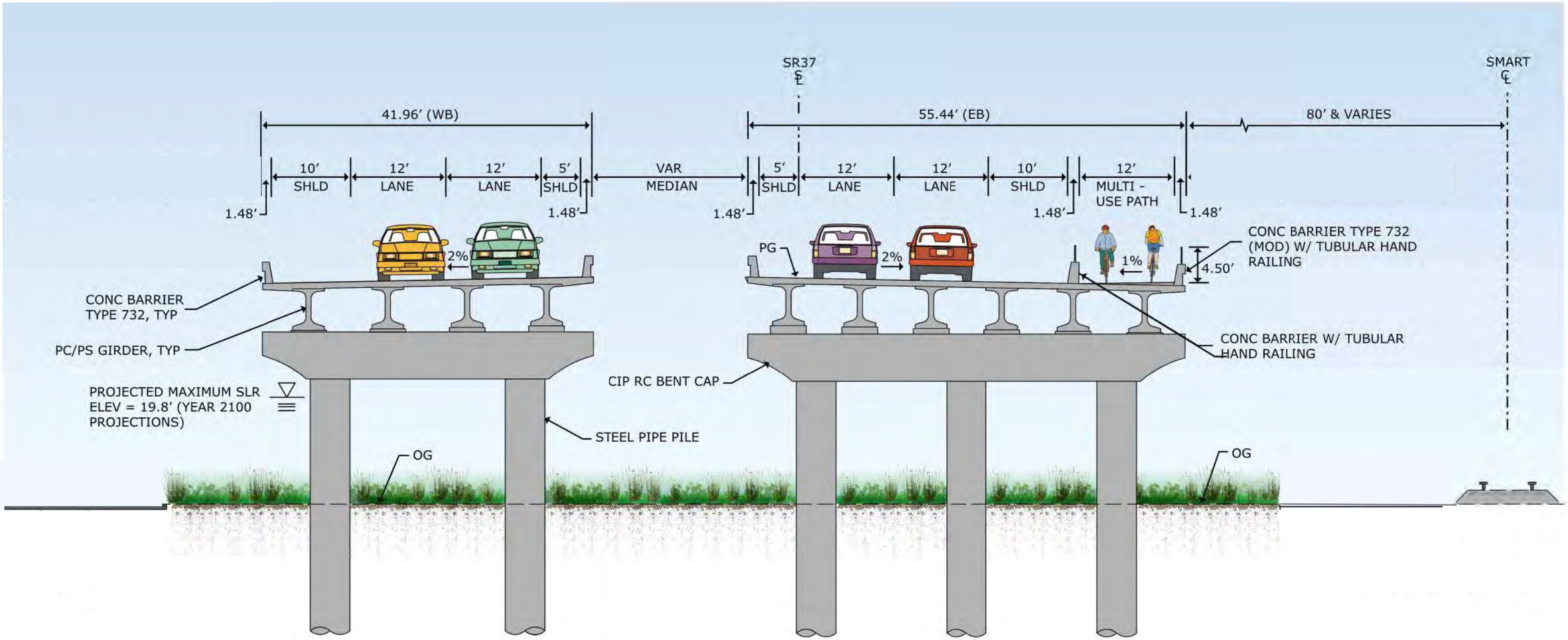
PRSM workplan hours/costs verified against approved MWA:

Office Chief - _____ Date _____

Approved by:

Project Control - _____ Date _____

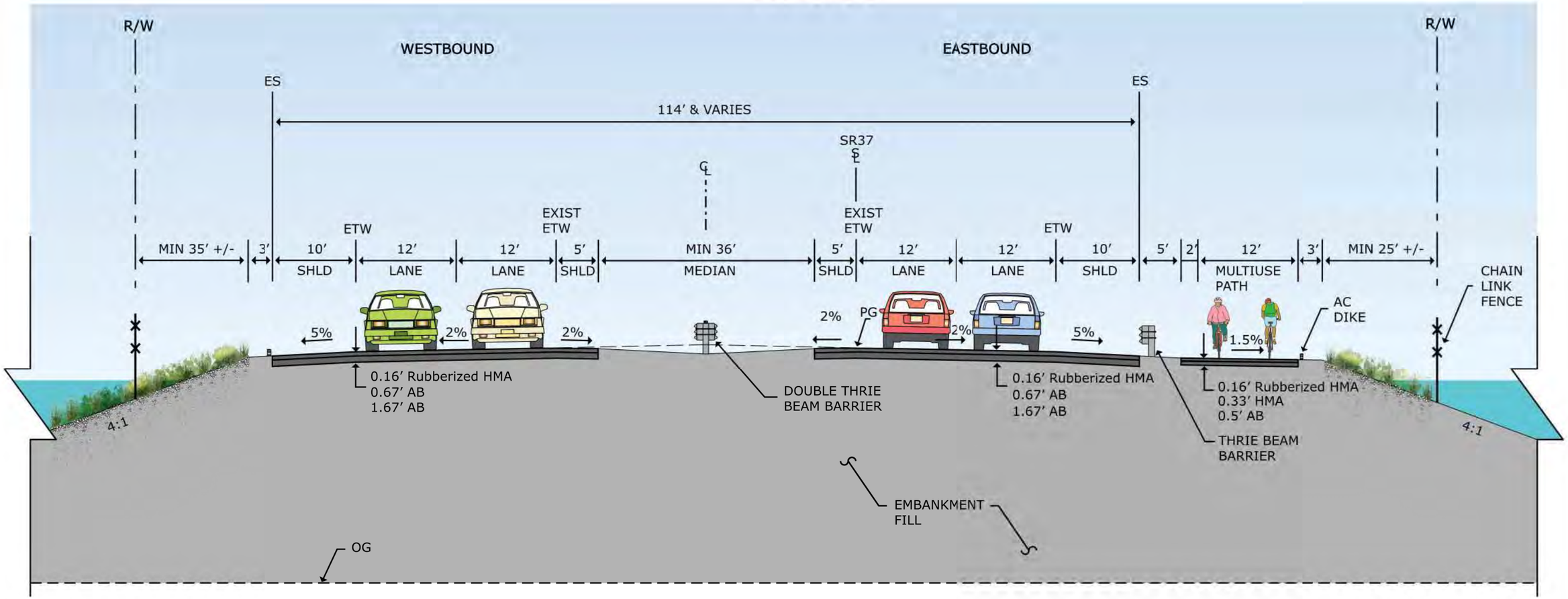
TYPICAL CAUSEWAY SECTION
SECTION A-A



ALTERNATIVE 3: ELEVATED STRUCTURE DESIGN FROM US 101 TO SEARS POINT

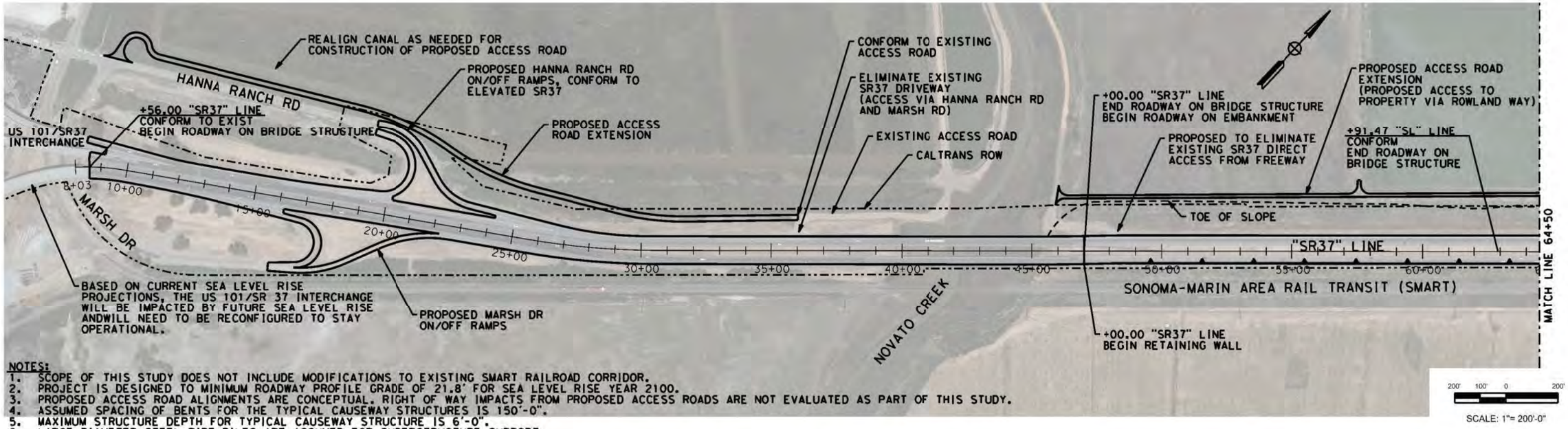
X-1
SCALE: NTS

TYPICAL ROADWAY SECTION
SECTION C-C

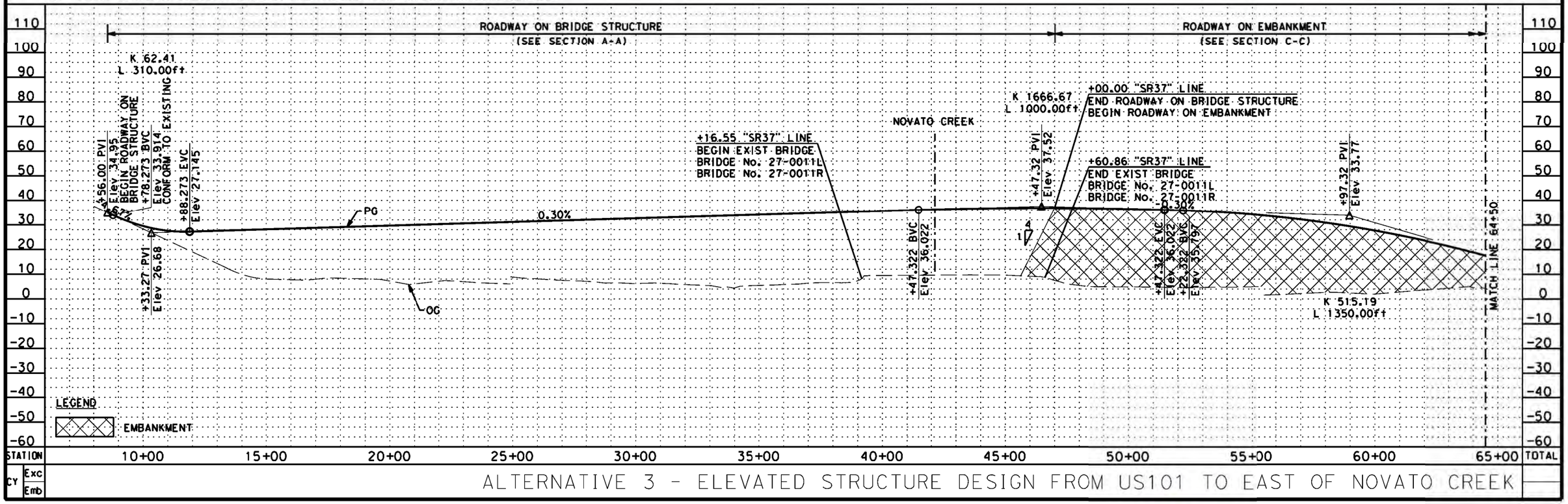


ALTERNATIVE 3: ELEVATED STRUCTURE DESIGN FROM US 101 TO SEARS POINT

X-2
SCALE: NTS



NOTES:
1. SCOPE OF THIS STUDY DOES NOT INCLUDE MODIFICATIONS TO EXISTING SMART RAILROAD CORRIDOR.
2. PROJECT IS DESIGNED TO MINIMUM ROADWAY PROFILE GRADE OF 21.8' FOR SEA LEVEL RISE YEAR 2100.
3. PROPOSED ACCESS ROAD ALIGNMENTS ARE CONCEPTUAL. RIGHT OF WAY IMPACTS FROM PROPOSED ACCESS ROADS ARE NOT EVALUATED AS PART OF THIS STUDY.
4. ASSUMED SPACING OF BENTS FOR THE TYPICAL CAUSEWAY STRUCTURES IS 150'-0".
5. MAXIMUM STRUCTURE DEPTH FOR TYPICAL CAUSEWAY STRUCTURE IS 6'-0".
6. LARGE DIAMETER STEEL PIPE PILES ARE ASSUMED FOR SUPERSTRUCTURE SUPPORT.



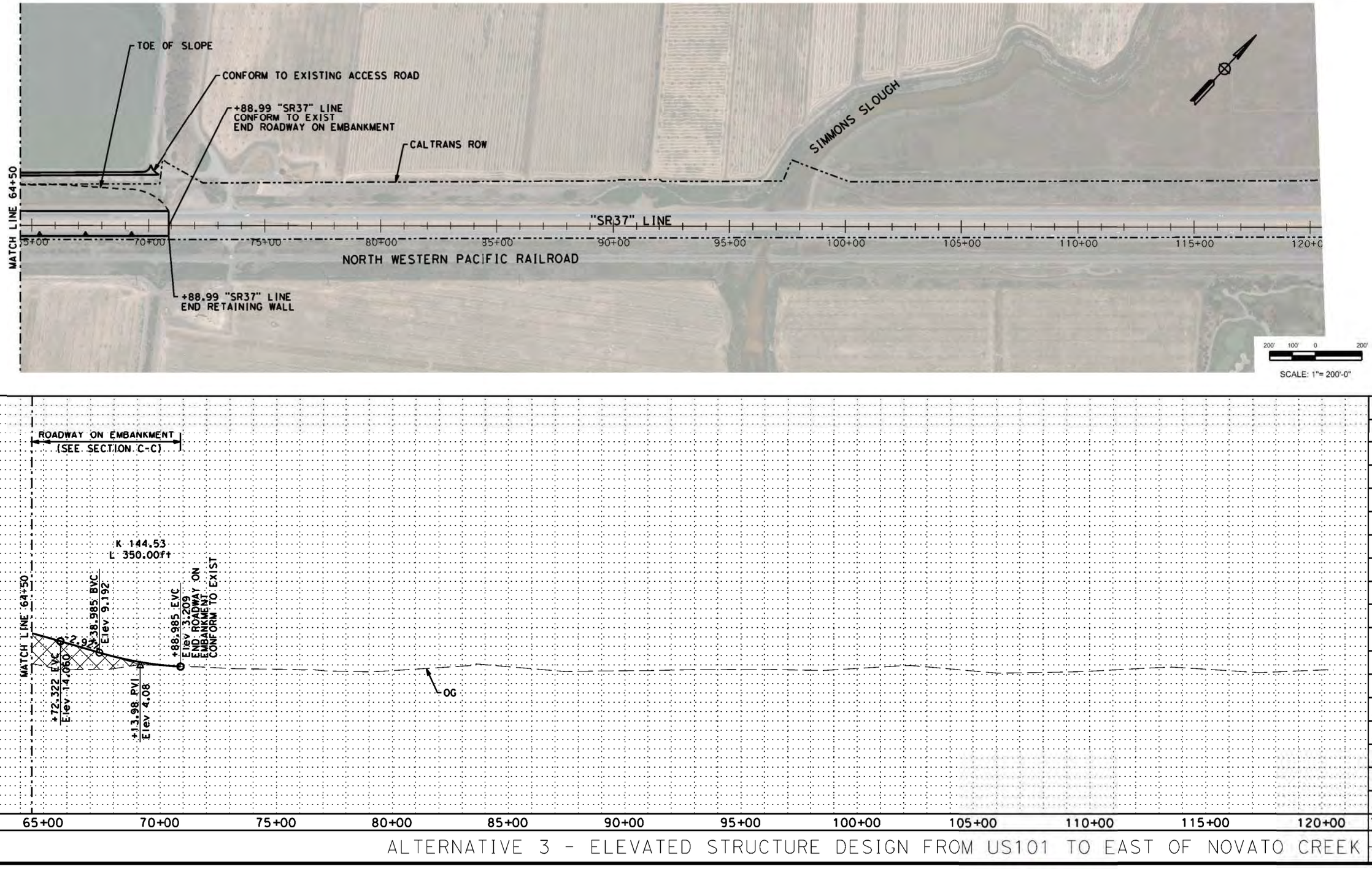
ALTERNATIVE 3 - ELEVATED STRUCTURE DESIGN FROM US101 TO EAST OF NOVATO CREEK

PRELIMINARY
FOR DISCUSSION ONLY

Attachment D

Transportation Authority of Marin

HNTB



PRELIMINARY
FOR DISCUSSION ONLY

Attachment D

PROJECT

PLANNING COST ESTIMATE

EA: DS-123456 PID: DS1234567

EA: DS-123456

PID: DS1234567

District-County-Route: 04-MRN-SON-SR37

PM:

Type of Estimate : Planning Level

Program Code :

Project Limits : The project limits will be SR 37 between US 101 interchange to SR 121 junction.

Project Description: This segment extends from US 101 in Marin County for 3.4 miles and continues for 3.9 miles in Sonoma County to the SR 121 junction. Segment A is designated a 4-lane expressway with bridges over Novato Creek, Simonds Slough Creek, Petaluma River, Atherton Ave, an interchange at Highway 101 and Atherton and an at-grade intersection at Lakeville Road and SR 121. There are three minor access roads/driveways connecting to SR37. The Sonoma-Marin Area Transit (SMART) is also located south of SR 37 and runs parallel between US 101 and Atherton Ave. The roadway is relatively low-lying, about 2-6 feet NAVD88 for most of the portion except between Atherton Ave and Petaluma Bridge and transitions to rolling terrain and upload along the eastern end near the SR 37/SR 121. Portion of the road is protected by levees along Novato Creek, the Petaluma River and landward levees of the Sonoma Baylands.

Scope : This study focused on developing three alternatives as described below:
1. Alternative 1: An all bridge alternative between US 101 to SR 121.
2. Alternative 2: A hybrid option (bridge and embankment) between US 101 to SR 121.
3. Alternative 3: A raised roadway between US 101 to Novato Creek.

Alternative : Alternative 3 Cost

SUMMARY OF PROJECT COST ESTIMATE

	Current Year Cost	Escalated Cost
TOTAL ROADWAY COST	$ 59,477,400	$ 92,665,924
TOTAL STRUCTURES COST	$ 223,749,960	$ 348,602,943
SUBTOTAL CONSTRUCTION COST	$ 283,227,360	$ 441,268,867
TOTAL RIGHT OF WAY COST	$ 5,800,000	$ 5,800,000
TOTAL CAPITAL OUTLAY COSTS	$ 289,028,000	$ 447,069,000
PR/ED SUPPORT	$ 5,202,504	$ 5,202,504
PS&E SUPPORT	$ 23,122,240	$ 23,122,240
RIGHT OF WAY SUPPORT	$ 11,561,120	$ 11,561,120
CONSTRUCTION SUPPORT	$ 34,683,360	$ 34,683,360
TOTAL SUPPORT COST	$ 74,569,224	$ 74,569,224
TOTAL PROJECT COST	$ 364,000,000	$ 522,000,000

If Project has been programmed enter Programmed Amount

Month / Year

Date of Estimate (Month/Year) 3 / 2018

Estimated Construction Start (Month/Year) _____ /

Number of Working Days =

Estimated Mid-Point of Construction (Month/Year) _____ /

Estimated Construction End (Month/Year) _____ /

Number of Plant Establishment Days

Estimated Project Schedule

PID Approval	xx/xx/xxxx
PA/ED Approval	xx/xx/xxxx
PS&E	xx/xx/xxxx
RTL	xx/xx/xxxx
Begin Construction	xx/xx/xxxx

Reviewed by District O.E. or Cost Estimate Certifier

Office Engineer / Cost Estimate Certifier	Date	Phone
	xx/xx/xxxx	(xxx) xxx-xxxx

Approved by Project Manager

Project Manager	Date	Phone
	xx/xx/xxxx	(xxx) xxx-xxxx

I. ROADWAY ITEMS SUMMARY

	Section		Cost
1	**Earthwork**	$	12,597,100
2	**Pavement Structural Section**	$	2,093,600
3	**Drainage**	$	5,984,700
4	**Specialty Items**	$	7,541,400
5	**Environmental**	$	144,500
6	**Traffic Items**	$	1,641,800
7	**Detours**	$	250,000
8	**Minor Items**	$	3,025,400
9	**Roadway Mobilization**	$	3,327,900
10	**Supplemental Work**	$	1,714,000
11	**State Furnished**	$	1,331,200.00
12	**Time-Related Overhead**	$	-
13	**Roadway Contingency**	$	19,825,800.00
	TOTAL ROADWAY ITEMS	**$**	**59,477,400**

Estimate Prepared By :

Name and Title | Date | Phone

Estimate Reviewed By :

Name and Title | Date | Phone

By signing this estimate you are attesting that you have discussed your project with all functional units and have incorporated all their comments or have discussed with them why they will not be incorporated.

SECTION 1: EARTHWORK

Item code		Unit	Quantity		Unit Price ($)			Cost
190101	Roadway Excavation	CY		x		=	$	-
19010X	Roadway Excavation (Type X) ADL	CY		x		=	$	-
194001	Ditch Excavation	CY		x		=	$	-
19801X	Imported Borrow	CY	765,020	x	11.00	=	$	8,415,220
192037	Structure Excavation (Retaining Wall)	CY	4,030	x	90.00	=	$	362,700
193013	Structure Backfill (Retaining Wall)	CY	37,800	x	90.00	=	$	3,402,000
193031	Pervious Backfill Material (Retaining Wall)	CY	2,770	x	130.00	=	$	360,100
170105	Clearing & Grubbing	ACRE	9	x	3,000.00	=	$	27,000
170101	Develop Water Supply	LS	1	x	30,000.00	=	$	30,000
19801X	Imported Borrow	CY/TON		x		=	$	-
210130	Duff	ACRE		x		=	$	-
XXXXXX	Some Item	Unit						

TOTAL EARTHWORK SECTION ITEMS	**$**	**12,597,100**

SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code		Unit	Quantity		Unit Price ($)			Cost
401050	Jointed Plain Concrete Pavement	CY		x		=	$	-
400050	Continuously Reinforced Concrete Pavement	CY		x		=	$	-
404092	Seal Pavement Joint	LF		x		=	$	-
404093	Seal Isolation Joint	LF		x		=	$	-
413117	Seal Concrete Pavement Joint (Silicone)	LF		x		=	$	-
413118	Seal Pavement Joint (Asphalt Rubber)	LF		x		=	$	-
280010	Rapid Strength Concrete Base	CY		x		=	$	-
410095	Dowel Bar (Drill and Bond)	EA		x		=	$	-
390132	Hot Mix Asphalt (Type A)	TON	13,090	x	105.00	=	$	1,374,450
390137	Rubberized Hot Mix Asphalt (Gap Graded)	TON	30	x	160.00	=	$	4,800
39300X	Geosynthetic Pavement Interlayer (Type X)	SQYD		x		=	$	-
260203	Class 2 Aggregate Base	CY	3,700	x	80.00	=	$	296,000
290201	Asphalt Treated Permeable Base	CY		x		=	$	-
250401	Class 4 Aggregate Subbase	CY		x		=	$	-
374002	Asphaltic Emulsion (Fog Seal Coat)	TON		x		=	$	-
397005	Tack Coat	TON		x		=	$	-
377501	Slurry Seal	TON		x		=	$	-
3750XX	Screenings (Type XX)	TON		x		=	$	-
374492	Asphaltic Emulsion (Polymer Modified)	TON		x		=	$	-
370001	Sand Cover (Seal)	TON		x		=	$	-
731530	Minor Concrete (Textured Paving)	CY		x		=	$	-
731502	Minor Concrete (Miscellaneous Construction)	CY		x		=	$	-
394073	Place Hot Mix Asphalt Dike (Type A)	LF	4,780	x	15.00	=	$	71,700
150771	Remove Asphalt Concrete Dike	LF		x		=	$	-
420201	Grind Existing Concrete Pavement	SQYD		x		=	$	-
782200	Obliterate Surfacing	SQYD	90,040	x	3.50	=	$	315,140
390095	Replace Asphalt Concrete Surfacing	CY		x		=	$	-
15312X	Remove Concrete	LF/CY/LS		x		=	$	-
394090	Place Hot Mix Asphalt (Miscellaneous Area)	SQYD		x		=	$	-
153103	Cold Plane Asphalt Concrete Pavement	SQYD		x		=	$	-
846051	12" Rumble Strip (Asphalt Concrete Pavement)	STA	50	x	630.00	=	$	31,500
413113	Repair Spalled Joints, Polyester Grout	SQYD		x		=	$	-
420102	Groove Existing Concrete Pavement	SQYD		x		=	$	-
390136	Minor Hot Mix Asphalt	TON		x		=	$	-
394095	Roadside Paving (Miscellaneous Areas)	SQYD		x		=	$	-
XXXXXX	Some Item	Unit		x		=	$	-

TOTAL PAVEMENT STRUCTURAL SECTION ITEMS	**$**	**2,093,600**

SECTION 3: DRAINAGE

Item code		Unit	Quantity		Unit Price ($)			Cost
15080X	Remove Culvert	EA/LF		x		=	$	-
150820	Modify Inlet	EA		x		=	$	-
155232	Sand Backfill	CY		x		=	$	-
15020X	Abandon Culvert	EA/LF		x		=	$	-
152430	Adjust Inlet	LF		x		=	$	-
155003	Cap Inlet	EA		x		=	$	-
510501	Minor Concrete	CY		x		=	$	-
510502	Minor Concrete (Minor Structure)	CY	120	x	2,720.00	=	$	326,400
5105XX	Minor Concrete (Type XX)	CY		x		=	$	-
620XXX	XX" Alternative Pipe Culvert (Type X)	LF		x		=	$	-
6411XX	XX" Plastic Pipe	LF		x		=	$	-
650014	18" Reinforced Concrete Pipe	LF	12,470	x	310.00	=	$	3,865,700
6650XX	XX" Corrugated Steel Pipe (0.XXX" Thick)	LF		x		=	$	-
68XXXX	XX" Plastic Pipe (Edge Drain)	LF		x		=	$	-
69011X	XX" Corrugated Steel Pipe Downdrain (0.XXX" Thick)	LF		x		=	$	-
70321X	XX" Corrugated Steel Pipe Inlet (0.XXX" Thick)	LF		x		=	$	-
70XXXX	XX" Corrugated Steel Pipe Riser (0.XXX" Thick)	LF		x		=	$	-
7050XX	XX" Steel Flared End Section	EA		x		=	$	-
703233	Grated Line Drain	LF		x		=	$	-
72XXXX	Rock Slope Protection (Type and Method)	CY/TON		x		=	$	-
72901X	Rock Slope Protection Fabric (Class X)	SQYD		x		=	$	-
721420	Concrete (Ditch Lining)	CY		x		=	$	-
721430	Concrete (Channel Lining)	CY		x		=	$	-
750001	Miscellaneous Iron and Steel	LB	7,900	x	6.00	=	$	47,400
XXXXXX	Additional Drainage (15% of Section 1-2 and Structure)	LS	174,512,100	x	0.01	=	$	1,745,121

TOTAL DRAINAGE ITEMS $ 5,984,700

SECTION 4: SPECIALTY ITEMS

Item code		Unit	Quantity		Unit Price ($)			Cost
080050	Progress Schedule (Critical Path Method)	LS		x		=	$	-
582001	Sound Wall (Masonry Block)	SQFT		x		=	$	-
510530	Minor Concrete (Wall)	CY		x		=	$	-
15325X	Remove Sound Wall	LF/LS		x		=	$	-
070030	Lead Compliance Plan	LS		x		=	$	-
141120	Treated Wood Waste	LB		x		=	$	-
153221	Remove Concrete Barrier	LF		x		=	$	-
150662	Remove Metal Beam Guard Railing	LF	6,240	x	15.00	=	$	93,600
150668	Remove Flared End Section	EA		x		=	$	-
800360	Chain Link Fence (Type CL-6)	LF	2,390	x	50.00	=	$	119,500
800XXX	Chain Link Gate (Type XX)	LF		x		=	$	-
832001	Metal Beam Guard Railing	LF		x		=	$	-
839301	Single Thrie Beam Barrier	LF		x		=	$	-
839310	Double Thrie Beam Barrier	LF		x		=	$	-
833088	Tubular Handrailing	LF	7,690	x	110.00	=	$	845,900
8395XX	Terminal System (Type CAT)	EA		x		=	$	-
839585	Alternative Flared Terminal System	EA		x		=	$	-
839584	Alternative In-line Terminal System	EA		x		=	$	-
4906XX	CIDH Concrete Piling (Insert Diameter)	LF		x		=	$	-
839XXX	Crash Cushion (Insert Type)	EA		x		=	$	-
839701	Concrete Barrier (Type 60)	LF		x		=	$	-
839717	Concrete Barrier (Type 732 MOD)	LF	3,850	x	150.00	=	$	577,500
839720	Concrete Barrier (Type 732)	LF		x		=	$	-
510060	Structural Concrete, Retaining Wall	CY	3,850	x	1,500.00	=	$	5,775,000
511035	Architectural Treatment	SQFT		x		=	$	-
598001	Anti-Graffiti Coating	SQFT	51,930	x	2.50	=	$	129,825
203070	Rock Stain	SQFT		x		=	$	-
5136XX	Reinforced Concrete Crib Wall (Type X)	SQFT		x		=	$	-
83954X	Transition Railing (Type X)	EA		x		=	$	-
597601	Prepare and Stain Concrete	SQFT		x		=	$	-
839561	Rail Tensioning Assembly	EA		x		=	$	-
83958X	End Anchor Assembly (Type X)	EA		x		=	$	-
XXXXXX	Some Item	Unit		x		=	$	-

TOTAL SPECIALTY ITEMS $ 7,541,400

SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Item code		Unit	Quantity		Unit Price ($)		Cost
	Biological Mitigation	LS	1	x	2,500.00	= $	2,500
130670	Temporary Reinforced Silt Fence	LF	13,000	x	9.00	= $	117,000
141000	Temporary Fence (Type ESA)	LF		x		= $	-

Subtotal Environmental Mitigation $ 119,500

5B - LANDSCAPE AND IRRIGATION

Item code		Unit	Quantity		Unit Price ($)		Cost
20XXXX	Highway Planting	LS		x		= $	-
20XXXX	Irrigation System	LS		x		= $	-
204099	Plant Establishment Work	LS		x		= $	-
204101	Extend Plant Establishment Work	LS		x		= $	-
20XXXX	Follow-up Landscape Project	LS		x		= $	-
150685	Remove Irrigation Facility	LS		x		= $	-
20XXXX	Maintain Existing (Irrigation or Planted Areas)	LS		x		= $	-
206400	Check and Test Existing Irrigation Facilities	LS		x		= $	-
21011X	Imported Topsoil (X)	CY/TON		x		= $	-
20XXXX	Rock Blanket, Rock Mulch, DG, Gravel Mulch	SQFT/SQYD		x		= $	-
200122	Weed Germination	SQYD		x		= $	-
208304	Water Meter	EA		x		= $	-
2087XX	XX" Conduit (Use for Irrigation x-overs)	LF		x		= $	-
20890X	Extend X" Conduit (Use for Extension of Irrigation s)	LF		x		= $	-

Subtotal Landscape and Irrigation $ -

5C - EROSION CONTROL

Item code		Unit	Quantity		Unit Price ($)		Cost
210010	Move In/Move Out (Erosion Control)	EA		x		= $	-
210350	Fiber Rolls	LF		x		= $	-
210360	Compost Sock	LF		x		= $	-
2102XX	Rolled Erosion Control Product (X)	SQFT		x		= $	-
21025X	Bonded Fiber Matrix	SQFT/ACRE		x		= $	-
210300	Hydromulch	SQFT		x		= $	-
210420	Straw	SQFT		x		= $	-
210430	Hydroseed	SQFT		x		= $	-
210600	Compost	SQFT		x		= $	-
210630	Incorporate Materials	SQFT		x		= $	-

Subtotal Erosion Control $ -

5D - NPDES

Item code		Unit	Quantity		Unit Price ($)		Cost
130300	Prepare SWPPP	LS	1	x	25,000.00	= $	25,000
130200	Prepare WPCP	LS		x		= $	-
130100	Job Site Management	LS		x		= $	-
130330	Storm Water Annual Report	EA		x		= $	-
130310	Rain Event Action Plan (REAP)	EA		x		= $	-
130320	Storm Water Sampling and Analysis Day	EA		x		= $	-
130520	Temporary Hydraulic Mulch	SQYD		x		= $	-
130550	Temporary Hydroseed	SQYD		x		= $	-
130505	Move-In/Move-Out (Temporary Erosion Control)	EA		x		= $	-
130640	Temporary Fiber Roll	LF		x		= $	-
130900	Temporary Concrete Washout	LS		x		= $	-
130710	Temporary Construction Entrance	EA		x		= $	-
130610	Temporary Check Dam	LF		x		= $	-
130620	Temporary Drainage Inlet Protection	EA		x		= $	-
130730	Street Sweeping	LS		x		= $	-

Subtotal NPDES $ 25,000

TOTAL ENVIRONMENTAL **$ 144,500**

Supplemental Work for NPDES

066595	Water Pollution Control Maintenance Sharing*	LS	1	x	25,000.00	= $	25,000
066596	Additional Water Pollution Control**	LS		x		= $	-
066597	Storm Water Sampling and Analysis***	LS	1	x	25,000.00	= $	25,000
XXXXXX	Some Item	LS		x		= $	-

Subtotal Supplemental Work for NDPS $ 50,000

*Applies to all SWPPPs and those WPCPs with sediment control or soil stabilization BMPs.

**Applies to both SWPPPs and WPCP projects.

*** Applies only to project with SWPPPs.

SECTION 6: TRAFFIC ITEMS

6A - Traffic Electrical

Item code		Unit	Quantity		Unit Price ($)			Cost
860460	Lighting and Sign Illumination	LS	1	x	250,000.00	=	$	250,000
860201	Signal and Lighting	LS	0	x		=	$	-
860990	Closed Circuit Television System	LS		x		=	$	-
86110X	Ramp Metering System (Location X)	LS		x		=	$	-
86070X	Interconnection Conduit and Cable	LF/LS		x		=	$	-
5602XX	Furnish Sign Structure (Type X)	LB		x		=	$	-
5602XX	Install Sign Structure (Type X)	LB		x		=	$	-
498040	XX" CIDHC Pile (Sign Foundation)	LF		x		=	$	-
86080X	Inductive Loop Detectors	EA/LS		x		=	$	-
8609XX	Traffic Monitoring Station (Type X)	LS		x		=	$	-
15075X	Remove Sign Structure	EA/LS		x		=	$	-
151581	Reconstruct Sign Structure	EA		x		=	$	-
152641	Modify Sign Structure	EA		x		=	$	-
860090	Maintain Existing Traffic Management System Elem	LS		x		=	$	-
86XXXX	Fiber Optic Conduit System	LS		x		=	$	-
XXXXX	Some Item	LS		x		=	$	-

Subtotal Traffic Electrical $ 250,000

6B - Traffic Signing and Striping

Item code		Unit	Quantity		Unit Price ($)			Cost
566011	Roadside Sign - One Post	EA	8	x	340.00	=	$	2,720
566012	Roadside Sign - Two Post	EA		x		=	$	-
820790	Furnish Single Sheet Aluminum Sign (0.080"	SQFT	1,680	x	20.00	=	$	33,600
560218	Furnish Sign Structure (Truss)	LB	79,600	x	4.00	=	$	318,400
150711	Remove Painted Traffic Stripe	LF		x		=	$	-
141101	Remove Yellow Painted Traffic Stripe (Hazardous	LF		x		=	$	-
150712	Remove Painted Pavement Marking	SQFT		x		=	$	-
150742	Remove Roadside Sign	EA	8	x	160.00	=	$	1,280
152320	Reset Roadside Sign	EA		x		=	$	-
152390	Relocate Roadside Sign	EA		x		=	$	-
568046	Remove Sign Structure	EA	4	x	2,700.00	=	$	10,800
840502	Thermoplastic Traffic Stripe (Enhanced Wet Night V	LF		x		=	$	-
846012	Thermoplastic Crosswalk and Pavement Marking (E	SQFT		x		=	$	-
120090	Construction Area Signs	LS	1	x	25,000.00	=	$	25,000
84XXXX	Permanent Pavement Delineation	LS	1	x	500,000.00	=	$	500,000

Subtotal Traffic Signing and Striping $ 891,800

6C - Traffic Management Plan

Item code		Unit	Quantity		Unit Price ($)			Cost
12865X	Portable Changeable Message Signs	EA/LS		x		=	$	-

Subtotal Traffic Management Plan $ -

6C - Stage Construction and Traffic Handling

Item code		Unit	Quantity		Unit Price ($)			Cost
120199	Traffic Plastic Drum	EA		x		=	$	-
12016X	Channelizer (Type X)	EA		x		=	$	-
120120	Type III Barricade	EA		x		=	$	-
129100	Temporary Crash Cushion Module	EA		x		=	$	-
120100	Traffic Control System	LS	1	x	500,000.00	=	$	500,000
129110	Temporary Crash Cushion	EA		x		=	$	-
129000	Temporary Railing (Type K)	LF		x		=	$	-
120149	Temporary Pavement Marking (Paint)	SQFT		x		=	$	-
82010X	Delineator (Class X)	EA		x		=	$	-
XXXXXX	Some Item	Unit		x		=	$	-

Subtotal Stage Construction and Traffic Handling $ 500,000

TOTAL TRAFFIC ITEMS **$ 1,641,800**

SECTION 7: DETOURS

Includes constructing, maintaining, and removal

Item code		Unit	Quantity		Unit Price ($)			Cost
190101	Roadway Excavation	CY		x		=	$	-
19801X	Imported Borrow	CY/TON		x		=	$	-
390132	Hot Mix Asphalt (Type A)	TON		x		=	$	-
26020X	Class 2 Aggregate Base	TON/CY		x		=	$	-
250401	Class 4 Aggregate Subbase	CY		x		=	$	-
130620	Temporary Drainage Inlet Protection	EA		x		=	$	-
129000	Temporary Railing (Type K)	LF		x		=	$	-
128601	Temporary Signal System	LS		x		=	$	-
120149	Temporary Pavement Marking (Paint)	SQFT		x		=	$	-
80010X	Temporary Fence (Type X)	LF		x		=	$	-
XXXXXX	Detour	LS	1	x	250,000.00	=	$	250,000

TOTAL DETOURS	**$**	**250,000**

SUBTOTAL SECTIONS 1 through 7	$	30,253,100

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items							
ADA Items				1.0%	$	302,531	
8B - Bike Path Items							
Bike Path Items				1.0%	$	302,531	
8C - Other Minor Items							
Other Minor Items				8.0%	$	2,420,248	
Total of Section 1-7	$	30,253,100	x	10.0%	= $	3,025,310	

TOTAL MINOR ITEMS	**$**	**3,025,400**

SECTIONS 9: MOBILIZATION

Item code								
999990	Total Section 1-8	$	33,278,500	x	10%	=	$	3,327,850

TOTAL MOBILIZATION	**$**	**3,327,900**

SECTION 10: SUPPLEMENTAL WORK

Item code		Unit	Quantity		Unit Price ($)			Cost
066670	Payment Adjustments For Price Index Fluctuations	LS		x		=	$	-
066094	Value Analysis	LS		x		=	$	-
066070	Maintain Traffic	LS		x		=	$	-
066919	Dispute Resolution Board	LS		x		=	$	-
066921	Dispute Resolution Advisor	LS		x		=	$	-
066015	Federal Trainee Program	LS		x		=	$	-
066610	Partnering	LS		x		=	$	-
066204	Remove Rock and Debris	LS		x		=	$	-
066222	Locate Existing Crossover	LS		x		=	$	-
XXXXXX	Some Item	Unit		x		=	$	-
	*Cost of **NPDES** Supplemental Work specified in Section 5D*					=	$	50,000
	Total Section 1-8	$	33,278,500		5%	=	$	1,663,925

TOTAL SUPPLEMENTAL WORK	**$**	**1,714,000**

SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

Item code		Unit	Quantity		Unit Price ($)		Cost
066105	Resident Engineers Office	LS		x		=	$0
066063	Traffic Management Plan - Public Information	LS		x		=	$0
066901	Water Expenses	LS		x		=	$0
8609XX	Traffic Monitoring Station (X)	LS		x		=	$0
066841	Traffic Controller Assembly	LS		x		=	$0
066840	Traffic Signal Controller Assembly	LS		x		=	$0
066062	COZEEP Contract	LS		x		=	$0
066838	Reflective Numbers and Edge Sealer	LS		x		=	$0
066065	Tow Truck Service Patrol	LS		x		=	$0
066916	Annual Construction General Permit Fee	LS		x		=	$0
XXXXXX	Some Item	Unit		x		=	$0
	Total Section 1-8		$ 33,278,500		4%	=	$ 1,331,140

TOTAL STATE FURNISHED **$1,331,200**

SECTION 12: TIME-RELATED OVERHEAD

Total of Roadway and Structures Contract Items excluding Mobilization $241,046,320 (used to calculate TRO)

Total Construction Cost (excluding TRO and Contingency) $263,401,560 (used to check if project is greater than $5 million excluding contingency)

Estiamted Time-Releated Overhead (TRO) Percentage (0% to 10%) = **10%**

Item code		Unit	Quantity		Unit Price ($)		Cost
070018	Time-Related Overhead	WD	0	X	#DIV/0!	=	$0

TOTAL TIME-RELATED OVERHEAD **$0**

Note: If the building portion of the project is greater than 50% of the total project cost, then TRO is not included.

SECTION 13: ROADWAY CONTINGENCY

Recommended Contingency: (Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Total Section 1-12	$	39,651,600	x	**50%**	=	$19,825,800

TOTAL CONTINGENCY **$19,825,800**

II. STRUCTURE ITEMS

	Bridge 1		Bridge 2		
DATE OF ESTIMATE	03/14/18		03/14/18		00/00/00
Bridge Name	Main Causeway		ON/OFF Ramps		xxxxxxxxxxxxxxxxxx
Bridge Number	57-XXX		57-XXX		57-XXX
Structure Type	PC/PS Girders		PC/PS Girders		xxxxxxxxxxxxxxxxxx
Width (Feet) [out to out]	97 LF		29 LF		0 LF
Total Bridge Length (Feet)	5444 LF		3760 LF		0 LF
Total Area (Square Feet)	530246 SQFT		109040 SQFT		0 SQFT
Structure Depth (Feet)	6 LF		6 LF		0 LF
Footing Type (pile or spread)	Large diameter steel pile		Large diameter steel pile		xxxxxxxxxxxxxxxxxx
Cost Per Square Foot	$250		$250		$0
COST OF EACH	**$132,561,400**		**$27,260,000**		**$0**

DATE OF ESTIMATE	00/00/00		00/00/00		00/00/00
Name	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Bridge Number	57-XXX		57-XXX		57-XXX
Structure Type	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Width (Feet) [out to out]	0 LF		0 LF		0 LF
Total Length (Feet)	0 LF		0 LF		0 LF
Total Area (Square Feet)	0 SQFT		0 SQFT		0 SQFT
Structure Depth (Feet)	0 LF		0 LF		0 LF
Footing Type (pile or spread)	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Cost Per Square Foot	$100		$0		$0
COST OF EACH	**$0**		**$0**		**$0**

TOTAL COST OF BRIDGES		**$159,821,400**
TOTAL COST OF BUILDINGS		**$0**
Structures Mobilization Percentage	10%	**$15,982,140**

Recommended Contingency: (Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Structures Contingency Percentage	30%	**$47,946,420**
TOTAL COST OF STRUCTURES		**$223,749,960**

Estimate Prepared By: _____ _____

XXXXXXXXXXXXXXXX ------ Division of Structures — Date

Attachment D

EA: DS-123456 PID: DS1234567

III. RIGHT OF WAY

Fill in all of the available information from the Right of Way data sheet.

A)	A1)	Acquisition, including Excess Land Purchases, Damages & Goodwill, Fees	$	2,800,000
	A2)	SB-1210	$	0
B)		Acquisition of Offsite Mitigation	$	0
C)	C1)	Utility Relocation (State Share)	$	0
	C2)	Potholing (Design Phase)	$	0
D)		Railroad Acquisition	$	0
E)		Clearance / Demolition	$	0
F)		Relocation Assistance (RAP and/or Last Resort Housing Costs)	$	0
G)		Title and Escrow	$	0
H)		Environmental Review	$	0
I)		Condemnation Settlements 0%	$	0
J)		Design Appreciation Factor 0%	$	0
K)		Utility Relocation (Construction Cost)	$	3,000,000

L)	**TOTAL RIGHT OF WAY ESTIMATE**	**$5,800,000**
M)	**TOTAL R/W ESTIMATE: Escalated**	
N)	**RIGHT OF WAY SUPPORT**	**$11,561,120**

Support Cost Estimate Prepared By _____ Project Coordinator[1] _____ Phone

Utility Estimate Prepared By _____ Utiliy Coordinator[2] _____ Phone

R/W Acquistion Estimate Prepared By _____ Right of Way Estimator[3] _____ Phone

Note: Items G & H applied to items A + B

[1] When estimate has Support Costs only [2] When estimate has Utility Relocation [3] When R/W Acquisition is required

Attachment D

DO NOT PRINT THIS SHEET AS PART OF COST ESTIMATE ATTACHMENT TO PROJECT INITIATION OR APPROVAL DOCUMENTS.

EA: DS-123456 PID: DS1234567

IV. SUPPORT COST ESTIMATE SUMMARY

Note: Use PRSM project data.

Total by FY		Escalated Support Cost for Estimate To Completion (ETC)				
		PA&ED	PS&E	RW	CON	Total $
< 2010	Expended					
	ETC					
2011	Expended					
	ETC					
2012	Expended					
	ETC					
2013	Expended					
	ETC					
2014	Expended					
	ETC					
2015	Expended					
	ETC					
2016	Expended					
	ETC					
2017	Expended					
	ETC					
2018	Expended	$5,202,504	$23,122,240	$11,561,120	$34,683,360	$74,569,224
	ETC					
2019	Expended					
	ETC					
2020	Expended					
	ETC					
2021	Expended					
	ETC					
2022	Expended					
	ETC					
2023	Expended					
	ETC					
2024	Expended					
	ETC					
2025 >	Expended					
	ETC					
EAC (Expended + ETC)		$5,202,504	$23,122,240	$11,561,120	$34,683,360	$74,569,224
Approved Budget (PRSM)						
Difference (Budget - EAC)		-$5,202,504	-$23,122,240	-$11,561,120	-$34,683,360	-$74,569,224
Support Ratio (EAC / Cap Cost)		1.8%	8.0%	4.0%	12.0%	25.8%

Total Capital Cost:	**$289,028,000**
Total Capital Outlay Support Cost:	**$74,569,224**
Overall Percent Support Cost:	**25.80%**

PRSM workplan hours/costs verified against approved MWA:

Office Chief - _____ Date _____

Approved by:

Project Control - _____ Date _____

Attachment E

Petaluma

116

Petalu

101

Tolay

121

Novato

37

Novato Creek

San Pablo Bay

State Route 37

Major Highway

Railroad

Historical Baylands Boundary

N

0 1 2 Miles

SFEI AQUATIC SCIENCE CENTER

ATTACHMENT F – COST ESTIMATE ASSUMPTIONS

1. SLR elevation is 21.8'. Elevation includes SLR, 3' wave run up and 2' freeboard.
2. Assume truck scale will be replace in kind for EB and WB SR 37.
3. Ramp and intersection reconstruction is for the US 101 interchange.
4. Roadway pavement section assumed to be 0.67' AC and 1.67' AB.
5. Bike path pavement section assumed to be 0.33' HMA and 0.5' AB.
6. Access road pavement section is 0.5' HMA and 0.75' AB.
7. Roadway embankment slope assumed to be 4:1. Assumed 15' from bottom of slope to proposed right of way.
8. Novato Creek Bridge Limits is 620 feet.
9. Simmons Slough Bridge Limits is 600 feet
10. Assumed spacing of bents for the typical causeway structures is of 150'-0".
11. Maximum structure depth for typical causeway structure is 6'-0".
12. Large diameter steel pipe piles are assumed for superstructure support.
13. 30% contingency is added to all Structure estimates.
14. ROW cost assumes area within 15' of clearance between toe of slope and proposed ROW. Price is assumed at $500k per acre.
15. Assume civil contingency is 50%.
16. Drainage contingency is 15% of roadway and structure items.
17. Assumes all access roads are at existing grade.
18. Assume no upgrades to existing storm drain systems. Therefore, cost has not been estimated for this.
19. The environmental report cost for Alternative 1 and 2 are assumed to be the same as alternatives lays within the same corridor. Typical development cost for the PR/ED is in the range of 2.5% of the overall project. For this study, the range was reduced to 1.5% to 2% due to the high capital outlay costs.

Summary Table - SLR Studies - Segment A Cost Comparrison								
		Route 37 - Segment A Sea Level Rise Corridor Improvement Study - TAM/HNTB June 2018		State Route 37 Integrated Traffic, Infrastructure and Sea Level Rise Analysis - UC Davis/AECOM October 2015		SR 37 Transportation and Sea Level Rise Corridor Improvement Plan - Kimley Horn/AECOM February 2018		
		(2032 Costs)		(2032 Costs)		(2032 Costs)		
		Sea Level Rise Elev. (year 2100) = 21.8 feet (NAVD 88)		Sea Level Rise Elev. (year 2100) = 15 feet (NAVD 88)		Sea Level Rise Elev. (year 2050) = 12.5 ft.- 12.9 ft (NAVD 88)		
Bridge Structure (Box Girder/Causeway)								
	Cost Items	**Linear Foot (LF) of Improvement**	**Causeway**	**Linear Foot (LF) of Improvement**	**Box Girder/Causeway**	**Linear Foot (LF) of Improvement**	**Box Girder/Causeway**	**Comments**
1A	Structure Costs	36,780 LF	$2,019	26,790 LF	$993	no information	No back-up costs provided	1. See Structure Cost Comparrison Table 2. See notes 3,4.
2A	Roadway Costs	8,095 LF	$219	3,160 LF	$184	no information	No back-up costs provided	Roadway cost increases with higher SLR elevation
3A	Right of Way Costs	N/A	$23	N/A	$12	N/A	No back-up costs provided	Right of way impacts increase as roadway profile rise with higher SLR elevation projections.
4A	Support Costs	N/A	$372	N/A	$295	N/A	No back-up costs provided	Support Costs is a function of capital outlay cost and increases as capital costs increases. See Note 5.
	TOTAL Costs for Causeway Option (millions)		**$2,632**		**$1,483**		**$1,697**	
Levee Alternatives								
	Cost Items	**Linear Foot (LF) of Improvement**	**Hybrid Alternative ***	**Linear Foot (LF) of Improvement**	**Levee/Embankment Alternative**	**Linear Foot (LF) of Improvement**	**Levee Alternative**	**Comments**
1B	Structure Costs	15749 LF	$1,150	3,020 LF	$119	no information	No back-up costs provided	
2B	Roadway Costs	22,395 LF	$483	29,745 LF	$235	no information	No back-up costs provided	Roadway cost increases with higher SLR elevation
3B	Right of Way Costs	N/A	$29	N/A	$16	N/A	No back-up costs provided	Right of Way impacts increase as roadway profile rise with higher SLR elevation projections.
4B	Support Costs	N/A	$280	N/A	$112	N/A	No back-up costs provided	Support Costs is a function of capital outlay cost and increases as capital costs increases. See Note 5.
	TOTAL Costs for Levee Options (millions)		**$1,942**		**$482**		**$446**	

* Combination of Levee and Structures

1 HNTB considers the historical tide limits to determine design limits.
2 All sea level rise elevation assumes 100-year storm surge.
3 HNTB cost assumes structure will be on precast.
4 UC Davis cost assumes structure will be cast-in-place.
5 All alternatives include support costs (Environmental Approval, Final Design, Right of Way and Construction Support Costs)
6 Item 1a and 1B includes LF of ramps at the US 101/SR Interchange.
7 LF of roadway comparrison is for SR 37 only, no access roads are included.

Attachment H

Structure Cost Comparison Table						
		TAM/HNTB (2032 Costs)		**UC Davis/AECOM (2032 Costs)**		
		Square Foot (SF) of Improvement	**HNTB (Includes 10% mobilization and 30% contingency)**	**Square Foot (SF) of Improvement**	**UC Davis (Includes 22% contingency and no mobilization)**	**Cost Difference**
1	Causeway	2,722,038	$1,484,296,279	2,415,204	$920,818,264.22	$563,478,015
	Novato Creek Bridge		*Included in Causeway Cost*		*$39,592,634*	
	Atherton Bridge		*Included in Causeway Cost*		*$8,768,897*	
2	Petaluma Creek Bridge	full bridge replacement	$429,131,219	widen existing bridge	$71,921,542	$357,209,677
3	101 Ramps Reconstruction		$105,317,039		not included	$105,317,039
	TOTAL Cost Difference (millions)					**$1,026,004,731**