

# Project Report


## *Request for Project Approval*

On Route 580, in Contra Costa and Marin Counties

Between Castro Street, Contra Costa County

And Sir Francis Drake Boulevard, Marin County

I have reviewed the right of way information contained in this report and the R/W Data Sheet attached hereto, and find the data to be complete, current and accurate:




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MARK L. WEAVER, *DEPUTY DISTRICT DIRECTOR, Right of Way and Land Surveys*

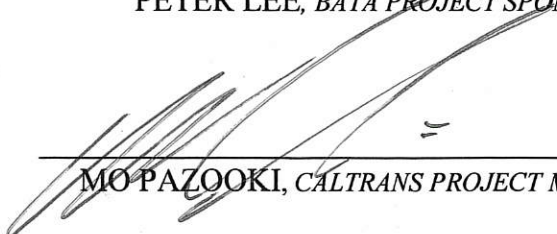
APPROVAL RECOMMENDED:




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PETER LEE, *BATA PROJECT SPONSOR,*

APPROVAL RECOMMENDED:




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MO PAZOOKI, *CALTRANS PROJECT MANAGER*

APPROVED:




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HELENA (LENKA) CULIK-CARO, *DEPUTY DISTRICT DIRECTOR DESIGN*

*August 3, 2016*  
DATE

# Vicinity Map



This project report has been prepared under the direction of the following registered civil engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.



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REGISTERED CIVIL ENGINEER

8/2/16

DATE



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## 1 INTRODUCTION

The Bay Area Toll Authority (BATA) in cooperation with the California Department of Transportation (Caltrans) is proposing to provide and improve the current multimodal access on Interstate 580 (I-580) within Marin and Contra Costa Counties, including the Richmond-San Rafael (RSR) Bridge. Proposed multimodal access improvements will accommodate bicycle and pedestrian access on the upper bridge deck (westbound), as well as a third lane on the lower deck (eastbound). The project consists of three major interrelated components:

- Element 1: A third eastbound lane between Marin County and Contra Costa County. This work consists of extending the existing Eastbound (EB) I-580 auxiliary lane downstream of the Sir Francis Drake Boulevard EB on-ramp past the Main Street off-ramp and onto the lower deck of the RSR Bridge. The third lane will terminate just past the Marine St off-ramp on the Contra Costa County side. The third eastbound lane would operate as a Peak Period Use Lane (PPUL) during PM commute hours. The hours of operations are planned to be 3:00pm to 8:00pm on weekdays. These hours may be modified by Caltrans and BATA after observing the operations of the lane.
- Element 2: Bicycle/Pedestrian Path in Contra Costa County. This work consists of installing a fixed barrier separating bi-directional bicycle and pedestrian facility on Westbound (WB) I-580 from Marine Street to Stenmark Drive (formerly Western Drive).
- Element 3: Bicycle/Pedestrian Path on RSR Bridge and in Marin County. This work consists of installing a moveable barrier separating bi-directional bicycle and pedestrian facility on WB I-580 from RSR Bridge Toll Plaza to the Main Street (San Quentin) / Francisco Boulevard intersection. This element also includes constructing a 10-ft bike/pedestrian path along Francisco Boulevard from the Main St WB off-ramp to Grange Avenue and sliver widening of the Sir Francis Drake Boulevard EB on-ramp to better accommodate bicycle traffic on the right shoulder.

The project location and project limits are shown in Appendix A. A portion of the third traffic lane (Element 1) located on the lower deck of the double-deck section of the RSR Bridge will be initiated as a 4-year pilot project. Similarly, the bicycle/pedestrian path on the upper deck and its associated connections to Stenmark Drive and Francisco Boulevard will also be part of the 4-year pilot project. Caltrans, BATA and other key stakeholders will evaluate the operation of the two elements during the 4-year pilot project and make necessary adjustments to optimize the use of the bridge. Two Decision Documents have been prepared for this pilot project. The first decision document was executed by Caltrans and BATA to approve the

evaluation of these projects elements through Project Initiation Document (PID) and Project Approval/Environmental Document (PA/ED) phases. The Second Decision Document, approved on July 28, 2016 discusses the technical aspects of the project including the approval of the use of a moveable barrier, the approval of non-standard design features, and the establishment of the performance measures for the pilot project. Refer to Appendix H for copies of both full documents.

<b>Project Limits</b>	04-CC, MRN-580-4.98/7.79, 0.0/3.29	
<b>Number of Alternatives</b>	2 including no-build	
	<b>Current Cost Estimate:</b>	<b>Escalated Cost Estimate:</b>
<b>Capital Outlay Construction</b>	\$49,881,000	\$54,520,000
<b>Capital Outlay Support</b>	\$16,210,300	\$16,210,300
<b>Funding Source</b>	<i>BATA Toll Bridge Rehabilitation</i>	
<b>Funding Year</b>	2016-2017	
<b>Type of Facility</b>	<i>Freeway</i>	
<b>Number of Structures</b>	7 Retaining Walls	
<b>Environmental Determination or Document</b>	CE/CE	
<b>Legal Description</b>	On Interstate 580 in Contra Costa and Marin Counties, in and near Richmond and San Rafael, from Castro Street in Richmond to Sir Francis Drake Boulevard in San Rafael	
<b>Project Development Category</b>	4B	

## 2 RECOMMENDATION

The selected (build) alternative is recommended for approval and the project proceed forward to the next phase. The selected alternative was chosen based on discussions with Caltrans and the affected local agencies and key stakeholders. The local agencies input was considered in the design of the project and they are generally in agreement with the proposed alternative.

## 3 BACKGROUND

The project PSR (PDS) was approved on November 6, 2015.

### 3.1 Project History

#### *Traffic Accommodation on I-580 Eastbound*

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Over the past few years traffic congestion has dramatically increased approaching the eastbound RSR Bridge in Marin County during the evening commute hours. The congestion continues through Marin to the US Route 101 (Route 101) interchange, which is approximately 2.25 miles west of the bridge approach.

A bottleneck develops on eastbound I-580 during the PM study period, on the RSR Bridge east of the San Quentin/Main Street on-ramp. This bottleneck occurs between 4:00 PM and 7:00 PM and is due to a combination of the high traffic demands accessing the freeway from the Sir Francis Drake Boulevard and San Quentin/Main Street on-ramps.

Due to the mainline congestion, approximately 500 vehicles per hour were observed exiting eastbound I-580 at the San Quentin/Main Street off-ramp only to then cross Main Street and re-enter the freeway at the on-ramp between 4:00 PM and 6:00 PM. This pattern seem to have subsided since Caltrans re-installed a left-turn only sign disallowing the through movement between the off- and on- ramp, and CHP started enforcing the no-through movement restriction. In addition, several hundred vehicles were observed originating from land uses along Francisco Boulevard and accessing eastbound I-580 and the RSR Bridge via the San Quentin/Main Street on-ramp. The high eastbound on-ramp demand at the San Quentin/Main Street intersection contributes to traffic demand exceeding capacity at the RSR Bridge bottleneck. At its peak between 5:00 PM and 6:00 PM, the queue approaching the RSR Bridge bottleneck extends west onto the southbound US 101 connector to eastbound I-580. During this one hour period, traffic was observed to use the Bellam Boulevard off-ramp from the eastbound I-580 connector and travel through the traffic signal to the Bellam Boulevard on-ramp and back to eastbound I-580. At times during this one hour, the queue approaching the traffic signal extended back to the Bellam Boulevard off-ramp gore but this generally only occurred when eastbound I-580 was queued through the area and so the off-ramp queue did not adversely impact the eastbound I-580 traffic.

The traffic signal at the Bellam Boulevard intersection also acts as a bottleneck throughout the study period for traffic from northbound US 101 destined for eastbound I-580. The queue approaching the traffic signal is maintained within the Francisco Boulevard/Bellam Boulevard off-ramp until 4:30 PM, and after 4:30 PM the queue extends back onto northbound US 101. Between 5:00 PM and 6:30 PM, the queue on northbound US 101 fluctuates between 1 and 1.2 miles extending back as

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far as the Sir Francis Drake Boulevard on-ramp to northbound US-101. After 6:30 PM the queue dissipates and no longer impacts northbound US 101 traffic.

Field observations identified another bottleneck on northbound US 101 south of the study area. The bottleneck was observed north of the Tamalpais Drive on-ramp and was consistently observed between 3:30 PM and 6:30 PM.

The RSR Bridge has two lanes in both the eastbound and westbound directions with a 12-foot right shoulder. The right shoulder was a third lane when the bridge first opened, but was converted to a shoulder during the 1978 drought when a water pipeline was placed on the bridge to convey water to Marin County. This pipeline has subsequently been removed leaving a useable 12-foot shoulder.

In fall of 2013, the Transportation Authority of Marin (TAM) engaged HNTB Corporation to perform several feasibility studies looking for solutions to the increased congestion approaching the RSR Bridge. The following studies were completed by the team:

- Widening Sir Francis Drake Boulevard to two lanes in each direction from Larkspur landing Circle to EB I-580 on-ramp.
- Direct Connector from NB Route 101 to EB I-580.
- Extending the existing EB auxiliary lane on I-580 from EB Sir Francis Drake through the San Quentin/Main Street interchange, and
- Providing an EB third lane, a shoulder running lane, on the RSR Bridge across to City of Richmond.
- Bi-directional bicycle path in Contra Costa County to allow for the implementation of the RSR shoulder running lane.

The Shoulder Running Lane is an Active Traffic Management (ATM) strategy currently used on several European and U.S. freeways to manage peak period capacity and reduce travel time. These lanes allow vehicles to use either the right or left shoulder as lanes under pre-determined traffic conditions (or when conditions warrant). Shoulder Running Lane use can be delineated to users through fixed roadside signage and variable message signs located on gantries above the shoulder.

Due to the urgent need to find a solution to the severe traffic congestion in this portion of Marin County, TAM decided to further investigate use of the Shoulder Running Lane. After working sessions with partners at Caltrans, project limits were expanded beyond Marin County, and BATA was identified as the appropriate

implementing agency. Subsequent to that decision BATA also became the sole project sponsor.

### ***Bicycle Accommodation on RSR Bridge***

The lack of bicycle and pedestrian access across the RSR Bridge represents a major gap in the 500-mile San Francisco Bay Trail (Bay Trail) that surrounds the San Francisco Bay, of which 343-miles have been constructed. The implementation of this 5.5-mile path establishes a connection to approximately 55-miles of existing/planned Bay Trail segments in Contra Costa County, and another 10 miles in Marin County. Bicycles and other non-motorized users must board regularly scheduled buses to cross the RSR Bridge. Golden Gate Transit (Routes 40 and 580) currently serves this corridor and can accommodate 5 bicycles per trip.

Although bicycles are allowed on the freeway shoulder between the Toll Plaza and the I-580 / Marine Street interchange and on the EB I-580 shoulder on the Marin County side, the use of the existing highway shoulder by bicyclists does not provide adequate conditions for all users, and pedestrians are not permitted to use the shoulders.

The desire to provide bicycle and pedestrian access on the RSR Bridge has a rich history. The most recent development culminated in a 2007 Draft PSR (unsigned) prepared by Caltrans that detailed three main alternatives, beyond the no-build alternative. The alternatives included:

- On Deck, Bi-directional Pathway, Moveable Barrier
  - On Both Decks – 10.5-foot path to alternate between eastbound and westbound decks of the bridge via deployment of moveable barriers.
  - On Upper Deck – The 10.5-foot path would only be opened during the non-peak commute hours and closed during the AM peak hours.
- On Deck, Uni-Directional Pathways, Fixed Barriers
  - On Both Decks – 5-foot path with reduced lane widths
  - On Both Decks - 5-foot path with reduced lane widths with utility trays on far side shortened to gain one-foot of traveled way.
  - On Upper Deck – 6-foot path with reduced lane widths, and utility tray on far side shortened to gain one-foot of traveled way.
- Off-Deck, Separate Bi-Directional Pathway – A separate 10- to 12-foot pathway structure constructed outside the existing limits of the bridge.



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Prior to the 2007 Draft PSR, Caltrans completed a bicycle/pedestrian access feasibility study in 1998, as part of the RSR Bridge Seismic Upgrade Project. In addition, Caltrans commissioned the Mineta Transportation Institute to study multiuse access on freeways, toll bridges, and tunnels. Both studies identified various issues with allowing multimodal access and Caltrans elected not to allow bicycle access on the bridge. Subsequently, the Bay Conservation and Development Commission (BCDC) requested further studies from Caltrans regarding bicycle and pedestrian access on the RSR Bridge, which resulted in the 2007 Draft PSR.

Similarly, several solutions have been previously discussed for providing a separated bicycle and pedestrian facility in Contra Costa County and creating a link to Point Molate. The City of Richmond, with the participation of multiuse path advocates, community interests, and consultants, developed a preferred alternative in 2013. This alternative proposed that a completely separate bi-directional multiuse path should be constructed along the south side of I-580, including a viaduct structure over Scofield Ave, and structures to accommodate the path to and from the top of Office Hill (within Chevron’s property). Currently, funding has been identified for only the preliminary engineering of this alternative, and work has been put on hold pending the result of this project.

### ***Previous Actions and Studies***

- 1998 – “Richmond-San Rafael Bridge, Public Access Feasibility Study” completed by Caltrans.
- 2001 – “Statewide Study of Bicycles and Pedestrians on Freeways, Expressways, Toll Bridges, and Tunnels” completed by the Mineta Transportation Institute (commissioned by Caltrans).
- 2001 – “Feasibility Study of Bay Trail Alternatives to Point San Pablo Peninsula” completed by Questa Engineering Corporation and submitted to City of Richmond.
- 2002 – Project Initiation Document process initiated by Metropolitan Transportation Commission (MTC)/Caltrans.
- 2004 – Technical Advisory Committee formed by MTC and Caltrans.
- 2007 – “Bicycle and Pedestrian Access on the Richmond San-Rafael Bridge draft Project Study Report (PSR)/Project Development Support (PDS) Report” completed by United Research Services (URS) and submitted by MTC to Caltrans.
- 2009 – Letter from Director Will Kempton to Marin County Supervisor Kinsey did not support the provision of a bicycle/pedestrian lane on the RSR Bridge that requires the elimination of shoulders.

BCDC Permit No. 1-97 (1997) required public access benefits to be provided in the vicinity of the Richmond-San Rafael Bridge as a condition of seismic retrofit. These improvements were completed in 2006 with the completion of a platform on Point San Quentin by the entrance to the Marin Rod and Gun Club on Main Street. Caltrans also voluntarily agreed to use its best efforts to study the feasibility of providing bicyclist / pedestrian access on the bridge.

Recent changes in transportation policies such as the Complete Streets Policy, Caltrans' endorsement of NACTO standards, and a focus on multimodal facilities with bicycle/pedestrian access, have resulted in both Caltrans and FHWA allowing the bicycle/pedestrian path on the RSR Bridge to move forward into the implementation phase. The project will be studied as a pilot project for a period of 4-years, with annual monitoring and assessment.

The efforts that TAM and BATA initiated in 2013 resulted in a Project Study Report-Project Development Support (PSR/PDS) that was approved by Caltrans on November 6, 2015.

### **3.2 Stakeholder Coordination**

Starting in 2013, a significant stakeholder coordination effort has occurred in parallel with the PA/ED phase. Several meetings were held with Caltrans, Chevron, the City of Richmond, the City of San Rafael, County of Marin, Contra Costa Transportation Authority (CCTA), Transportation Authority of Marin (TAM), Association of Bay Area Governments (ABAG), Bay Trail, Trails for Richmond Action Committee (TRAC), San Francisco Bay Conservation and Development Commission (BCDC), Marin County Bicycle Coalition (MCBC), Bike East Bay (East Bay Bicycle Coalition), California Highway Patrol (CHP) and Caltrans District 4 Bicycle and Pedestrian Advisory Committees.

Regular steering committee meetings and design review meetings were held with Caltrans to determine design details, including geometrics, signing and striping.

During the public comment period on the draft addendum to the Plan Bay Area EIR prepared for the Regional Transportation Plan, public support was overwhelming for the proposed project. In addition, the project has been closely coordinated with the active transportation groups such as Bike East Bay, Marin County Bicycle Coalition (MCBC), Bay Trail, Association of Bay Area Governments (ABAG), Trails for Richmond Action Committee (TRAC), and Caltrans Bicycle and Pedestrian committees and has received their support.

### 3.3 Existing Facility

Interstate 580 is an east-west freeway located in the San Francisco Bay Area and is the primary connection between Marin County and Contra Costa County. The project limits start at the Castro Street Interchange to the east and end at the Sir Francis Drake Boulevard to the west, a total of 6.02 miles in length. Within the project limits there are 6 existing structures; Castro Street Undercrossing (Br No 28-290 R/L/S), Marine Street Undercrossing (Br No 28-139), Scofield Avenue Undercrossing (Br No 28-140 R/L), Stenmark Drive Undercrossing (Br No 28-141 R), Richmond-San Rafael Bridge (Br No 28-100), and San Quentin Undercrossing (Br No 27-70 R/L).

On EB I-580 there are two 12-foot through lanes approaching and across the RSR Bridge, with an auxiliary lane from Sir Francis Drake to Main Street west of the RSR Bridge, EB I-580 gains a third lane from the Stenmark Drive on-ramp, approximately 0.4 miles east of the Toll Plaza. The inside shoulder tapers from 10 feet in Marin County to less than 1-foot on the RSR Bridge and varies in Contra Costa County from 6 to 12 feet. The outside shoulder starts at 10 feet in Marin County, then widens to 12 feet on the RSR Bridge and varies in Contra Costa County between 6 and 10 feet.

On WB I-580 there are three 12-foot lanes approaching the RSR Bridge, merging to two 12-foot lanes immediately beyond the Toll Plaza. The inside shoulder width varies from 1-foot in Contra Costa County and on the RSR Bridge to 8 feet in Marin County. The outside shoulder is 12 feet for most of the corridor.

I-580 within the project limits was originally constructed in the mid-1950s and the RSR Bridge was opened in 1956, as State Highway 17. Between the late 1980s and mid-1990s, the eastern approach to the RSR Bridge was upgraded from an expressway (on Cutting Boulevard) to freeway standards. On the Richmond side, Chevron Refinery and Long Wharf facilities occupy both sides of I-580 leading to the RSR Bridge.

The RSR Bridge has two decks and is a combination of truss and cantilever spans for an overall length of 4.0 miles. A major seismic retrofit of the bridge was completed in 2006.

The at-grade portions of I-580 have also undergone rehabilitation work, most recently a re-decking and resurfacing project in Contra Costa County between the Toll Plaza

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and Marine Street Interchange in 2013. In Marin County, the facility was most recently resurfaced in 2011.

Bicycle access is currently allowed on the right shoulders on both EB and WB I-580 within Contra Costa County, between the Toll Plaza and Marine Street. In Marin County, bicycles are allowed on the EB shoulder between Sir Francis Drake Boulevard and the Main Street off-ramp and on the WB Sir Francis Drake Boulevard off-ramp flyover structure. These bicycle facilities are signed for one-way only and are not barrier-separated. Pedestrians are not allowed on the shoulders.

On the Contra Costa side, bicycle access on WB I-580 is from the existing paved path underneath the Marine Street Undercrossing and connects to the freeway shoulder. Bicycles are allowed to continue on the shoulder across the Scofield Ave Undercrossing and exit at the Stenmark Drive off-ramp for continuation on Stenmark Drive to Point Molate and Point San Pablo.

On the return trip from Point Molate, bicycle access to EB I-580 is via a designated bicycle path at Stenmark Drive and crosses underneath the eastern end of the RSR Bridge, connecting to the freeway shoulder. Bicycles can use the eastbound shoulder across the Scofield Avenue Undercrossing, and then diverge onto a separate path outside the shoulder for a short distance, before merging with the 8-foot Marine Street off-ramp shoulder.

On the Marin County side, bicycles can enter the EB I-580 shoulder via the Sir Francis Drake Boulevard on-ramp, and exit at the Main Street off-ramp. For the WB direction trip, bicycles can travel in the WB lane on Francisco Boulevard East, access WB I-580 via an access opening near the approach to the WB Sir Francis Drake Boulevard Overcrossing, and traverse over I-580 on the overcrossing right shoulder separated by a painted buffer.

AADT (Annual Average Daily Traffic) for the RSR Bridge is approximately 76,000. The peak hour volume is 6000 vehicles. The WB traffic is metered at the Toll Plaza. Truck traffic constitutes about 6.9% of all motor vehicles. (2014 Traffic Volumes for all vehicles on California State Highways)

## 4 PURPOSE AND NEED

### 4.1 PROBLEM, DEFICIENCIES, JUSTIFICATION

#### **Purpose:**

- Reduce congestion and travel time on eastbound (EB) Interstate 580 (I-580)/Richmond-San Rafael (RSR) Bridge;
- Provide pedestrian and bicycle travel along the I-580/RSR Bridge corridor.

#### **Need:**

Congestion and Delay – Regional growth and local development in Marin County has resulted in significant traffic increases on EB I-580 and the RSR Bridge approach during evening peak commute periods. This results in significant traffic delays along EB Sir Francis Drake Boulevard, and Route 101 northbound (NB) south of the Sir Francis Drake exit, with an unacceptable level of service conditions occurring at the intersections of Bellam Boulevard/I-580 EB ramps, Route 101 NB ramps/Sir Francis Drake Boulevard, Larkspur Landing Circle (west)/Sir Francis Drake Boulevard, Larkspur Landing Circle (east)/Sir Francis Drake Boulevard, San Quentin Gates/Sir Francis Drake Boulevard, Anderson Drive/Sir Francis Drake Boulevard, and Main Street/I-580 EB ramps. Because substantial growth is projected to occur in this region, there is a need to improve and expand eastbound bridge capacity to reduce and avoid additional traffic congestion and delay during peak commute hours.

Accessibility for Bicyclists and Pedestrians – The current lack of bicycle and pedestrian facilities across the RSR Bridge represents a major gap in the planned 500-mile Bay Trail, with sections of the Bay Trail adjoining the bridge on both sides. Overall, an estimated 37.9 million annual trips were made on the existing Bay Trail in 2005, making it one of the most heavily used recreational and non-motorized transportation corridors in the region; however, there is currently no access available over the RSR Bridge.

### 4.2 REGIONAL AND SYSTEM PLANNING

#### **4.2.1 Identify Systems**

I-580 is part of the Interstate System, the National Highway System (NHS), and is a Strategic Highway Network (STRAHNET) route. I-580 is not part of the State Highway Extra Legal Load (SHELL) route system, which permits transport of loads exceeding limits of length, height, or weight as stated in the California Vehicle Code, Section 15. Caltrans' Interregional Transportation Plan (ITP) classifies I-580 as a "High Emphasis" route. The High-Emphasis category represents routes that have high interregional importance from a statewide perspective. This makes them a priority to

be programmed and constructed to at least the minimum facility-concept standard (for most routes, this is freeway or expressway). The interstates are included in the High-Emphasis category to highlight their critical importance to interregional travel and the State as a whole.

I-580 is a National Truck Network route and a Surface Transportation Assistance Act (STAA) route, and functions as a principal truck route between Contra Costa and Marin counties. There are no truck advisories on I-580 within the project limits.

The project is eligible to be delivered under the Stewardship and Oversight Agreement on Project Assumption and Program Oversight between the Federal Highway Administration California Division and Caltrans. The project has not been identified as a “Project of Division Interest” or “Project of Corporate Interest.” Caltrans and FHWA actions on this project follow the guidelines identified in the “Project Action Responsibility Matrix” within the stewardship agreement.

#### ***4.2.2 State Planning***

In 1985, Caltrans completed a Route Concept Report (RCR) for I-580 from Ala PM 0.07 to Mrn PM 2.31. This RCR listed widening of I-580 from 4 to 6 lanes between Ala/CC county line and I-580/Route 101 interchange in Marin County.

The I-580/Route 101 freeway to freeway connection from WB I-580 to SB Route 101 is provided by Sir Francis Drake Boulevard, a local 2-lane street. Signs on NB US-101 direct EB I-580 traffic to also use Sir Francis Drake Boulevard., with secondary signs directing Richmond Bridge bound traffic to use Francisco Boulevard/Bellam Boulevard exit as well. These movements have impacted both local and freeway traffic. Reconstruction of Route 101/I-580 interchange should be investigated. As such, the RCR stated that the California Transportation Commission (CTC) authorized (at the time) a special study of the I-580/Route 101 Interchange to evaluate needs and proposed improvements.

Transportation Corridor Concept Reports and Corridor System Management Plans were not available on the Caltrans D4 website at the time this project report was prepared.

Several studies have been conducted in the past for accommodating bicycle and pedestrian traffic on the RSR Bridge. In 1998, Caltrans completed a bicycle/pedestrian access feasibility study. In 2001, Mineta Transportation Institute

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completed a subsequent study to further evaluate bicycle/pedestrian use of freeways, toll bridges, and tunnels.

In October 2002, Bay Area Conservation and Development Commission (BCDC) adopted a motion that requested Caltrans and MTC to develop an additional study on bicycle and pedestrian access on the RSR Bridge. MTC, as the lead agency, completed the study that resulted in a 2007 Draft Project Study Report (PSR).

In March 2008, Caltrans notified BATA that reducing the shoulders on the RSR Bridge in order to construct a barrier-separated bicycle lane cannot be supported at that time.

Caltrans recently awarded a contract to paint the lower deck of the RSR Bridge. This paint contract will be completed by September 2016 and the falsework removed by February 2017. Another procurement package to paint the lower deck of the bridge at the navigational channels and towers is currently on hold due to funding shortfall. If funded, the second contract is expected to be completed in 3 to 4 years. Caltrans' in-house maintenance crew has been tasked with painting the upper deck of the RSR Bridge. This work is currently on-going with no anticipated completion date. It is assumed that painting the upper deck will continue after implementation of the RSR Access Improvement Project and that temporary closures of the bike path on the upper deck may be required.

#### ***4.2.3 Regional Planning***

The project is currently listed in the Metropolitan Transportation Commission's (MTC's) One Bay Area Plan (RTP 2040) under TIP ID 240758 and the federal Transportation Improvement Plan (TIP) ID MRN150009.

#### ***4.2.4 Local Planning***

In 2001/2002, the City of Richmond conducted a study of various alternatives for accommodating bicycles and pedestrians between Marine Street and Stenmark Drive. Currently, only bicycles are allowed to ride on the EB and WB shoulders of I-580. The study conducted several public outreach and community meetings and developed/evaluated several alternatives. At the end of this study, the preferred alternative included constructing a stand-alone bicycle/pedestrian viaduct on the south side of I-580 that connects the existing trail to the top of "Office Hill" where the proposed viaduct continues east and touches down, through another proposed



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viaduct, at the Marine Street interchange. While that study recommended an alignment, no significant funding was identified to complete the proposal.

The County of Marin is currently in the process of designing a new sidewalk on the east side of Main St between the Main St EB on-ramp and the San Quentin State Prison. This project is anticipated to be in construction in late 2016. The design of the new sidewalk and the Golden Gate Bridge Highway and Transit District (GGBHTD) bus stop at the bottom of the on-ramp has been coordinated between the two projects.

The East Bay Regional Parks District (EBRP) has secured an easement from Chevron and is currently in the process of planning and designing a new bicycle and pedestrian path that connects the existing trail under the RSR Bridge to Point Molate. The connection between the EBRP trail and the RSR bridge upper deck path has been coordinated.

The City of San Rafael has identified several bike and pedestrian improvements in their general plan, including bike lanes and sidewalks along Francisco Boulevard. Due to funding constraints, the improvements have not been prioritized in the two-year implementation plan. The City's plan also includes implementation of Class II/Class III bike facilities on Francisco Boulevard East, and Class III bike facilities on Grange Avenue in the future. The project proposal to construct a 10-ft bicycle and pedestrian path on the north side of Francisco Boulevard is consistent with the City's plan and has been coordinated with the City's staff during the environmental and design phases.

The Transportation Authority of Marin is leading a study to evaluate the possible vehicular traffic, bicycle, and pedestrian improvements that can be implemented along Sir Francis Drake Boulevard to improve access to the new traffic lane and bike/pedestrian path on the RSR Bridge. The cities of Larkspur and San Rafael, the County of Marin, and the GGBHTD have participated in this study. This TAM study also includes a proposal to modify the approaches at the intersection of Route 101/I-580 off-ramp and Bellam Boulevard. The range of improvements considered under this Sir Francis Drake Improvement Study (prepared by CSW / Stuber-Stroeh Engineering Group and HNTB Corporation in January 2016) is consistent with and will not be precluded by the implementation of the RSR Bridge Access Improvement Project.

#### **4.2.5 Transit Planning**

Currently, GGBHTD operates lines 40 and 42 within the project limits connecting the San Rafael Transit Center and the El-Cerrito/Del Norte BART Station. AC Transit line 72 stops at Castro Street interchange just to the east of the project limits. Line 40 and Line 42 buses have a capacity of 5 or 6 bicycle racks per bus to allow transporting bicycles across the bridge. Data obtained from the GGBHTD showed that in November and October 2015 respectively line 40 carried 112 and 146, and line 42 carried 504 and 577 bicycles. On December 13, 2015, GGBHTD changed their bus routing schedule and replaced line 42 with Line 580. Line 580 starts at San Rafael Transit Center and ends at the Emeryville Transit Center where Amtrak and Capital Corridor share a station. Line 40 runs daily while line 580 runs Monday to Friday during peak periods only with WB buses operating in the morning commute hours and the EB buses operating in the evening commute hours.

An existing bus stop located at the entrance of the Main St on-ramp will be impacted during construction. The Main St on-ramp is being realigned to provide a longer merge distance to I-580 EB mainline. As a result the bus stop serving line 40 and 580 may need to be relocated temporarily, and be relocated back along the on-ramp prior to project completion.

The Sonoma-Marin Area Rail Transit (SMART) is currently in the testing phase between Downtown San Rafael and Sonoma County Airport stations. SMART has plans to extend this rail line south to the Larkspur Ferry Terminal. The Federal Transit Administration (FTA) approved the Finding of No Effect in May 2015. TAM recommended allocating \$11M towards the \$40M extension and MTC increased the allocated amount to \$20M in 2014. In February 2015, an additional \$20M budget was included in the President's FY 2016 federal budget proposal under the FTA's Small Starts grant program. The FY2016 budget is pending Congress's approval.

Amtrak's Capitol Corridor runs train service from Sacramento to San Jose. The Capitol Corridor tracks run parallel to I-580 east of the project limits, with a stop at the Richmond Transit Station.

### **4.3 TRAFFIC**

#### **4.3.1 Current Traffic**

As stated in the Traffic Operations Analysis Report (TOAR), a bottleneck develops on eastbound I-580 during the PM study period on the RSR Bridge east of the San Quentin/Main Street on-ramp. This bottleneck occurs between 4:00 PM and 7:00 PM

and is due to a combination of the high traffic demands accessing the freeway from the Sir Francis Drake Boulevard and San Quentin/Main Street on-ramps. At its peak between 5:00 PM and 6:00 PM, the queue approaching the RSR Bridge bottleneck extends west onto the southbound US 101 connector to eastbound I-580. The bottleneck section on the RSR Bridge operates at LOS E while the segments upstream to the southbound US 101 to EB I-580 connector operate at LOS F. Segments on the Contra Costa County side of the RSR Bridge generally operate at LOS B in the three lane freeway segments and LOS D east of the Central Avenue off-ramp where eastbound I-580 transitions from 3 lanes to 2 lanes.

The traffic signal at the Bellam Boulevard intersection also acts as a bottleneck throughout the study period for traffic from northbound US 101 destined for eastbound I-580. The queue approaching the traffic signal is maintained within the Francisco Boulevard/Bellam Boulevard off-ramp until 4:30 PM, and after 4:30 PM the queue extends back onto northbound US 101. Between 5:00 PM and 6:30 PM, the queue on northbound US 101 fluctuates between 1 and 1.2 miles extending back as far as the Sir Francis Drake Boulevard on-ramp to northbound US-101. After 6:30 PM the queue dissipates and no longer impacts northbound US 101 traffic.

Travel times were evaluated for eastbound I-580 (including a short segment of southbound US 101 (between 2nd Street and the I-580 connector off) through the study area to the 23rd Street/Marina Bay Parkway interchange, a distance of about 10 miles. Travel speeds, about 55 mph, are at or near free flow conditions prior to 4:00 PM and after 7:30 PM, resulting in a travel time of 10-12 minutes through the corridor. As traffic demands increase during the study period and congestion develops, average operating speed deteriorates with the slowest speeds (23 mph) measured between 5:30 PM and 6:00 PM, where travel time increases to 26 minutes.

There are two recurrent weekday bottlenecks on westbound I-580, the Toll Plaza, where drivers must slow down or stop before proceeding, and the base of the RSR Bridge, where it reduces from three to two lanes. The Toll Plaza acts as the primary bottleneck during the time slices where demand is low. For the rest of the study period, from 6:45 AM to 10:15 AM, the base of the bridge becomes the controlling bottleneck. The queue approaching the Toll Plaza extends back about 1.9 miles to 2nd Street between 7:30 AM and 8:00 AM for both Cash and FasTrak drivers, and then begins to dissipate with a secondary peak (about 1.7 to 1.9 miles for FasTrak and Cash respectively) occurring between 9:30 AM and 9:45 AM. The project is not expected to change recurrent conditions.

Existing (2014) peak-hour traffic volumes on the EB I-580 within the project limit are summarized in the table below.

**Table 1 – Eastbound Existing Conditions Traffic Volumes**

Segments	3:00-4:00 PM	4:00-5:00 PM	5:00-6:00 PM	6:00-7:00 PM	7:00-8:00 PM	Total
<b>Eastbound</b>						
EB I-580 at Bellam Blvd	1781	1783	1906	1470	1203	8143
Bellam Blvd On-Ramp	354	333	306	283	249	1525
EB I-580 from Bellam Blvd to Sir Francis Drake Blvd	2135	2116	2212	1753	1452	9668
Sir Francis Drake Blvd On-Ramp	1288	1734	1414	858	853	6147
EB I-580 from Sir Francis Drake Blvd to Main St	3423	3850	3626	2611	2305	15815
Main St Off-Ramp	242	649	640	401	127	2059
Main St On-Ramp	224	984	1060	745	143	3156
EB I-580 from Main St to Stenmark Dr	3405	4185	4046	2955	2321	16912
Stenmark Dr On-Ramp	37	11	14	12	12	86
EB I-580 from Stenmark Dr to Standard Ave/Marine St	3442	4196	4060	2967	2333	16998
Standard Ave / Marine St Off-Ramp	986	1082	1114	827	515	4524
Standard Ave / Marine St On-Ramp	187	378	199	130	92	986
EB I-580 from Standard Ave / Marine St to Castro St	2643	3492	3145	2270	1910	13460

#### **4.3.2 Future Traffic**

Traffic demand along the corridor is expected to increase at a rate of less than 1% per year through design year 2040. The analysis of both existing and future No Project conditions show that demand exceeds available capacity along eastbound I-580 during weekday evening peak periods, adversely affecting travel speeds and creating bottlenecks at constrained locations. Without the Project, future congestion is expected to get worse and degrade air quality, and reduce transit service reliability along the corridor. The purpose of Project will be to reduce delay and improve efficiency by increasing the throughput capacity of the bridge.

Future (2020 and 2040) peak-hour traffic volumes on the EB I-580 within the project limit are summarized in the tables below.

**Table 2 – 2020 Future Eastbound No-Build Conditions Traffic Volumes**

Segments	3:00-4:00 PM	4:00-5:00 PM	5:00-6:00 PM	6:00-7:00 PM	7:00-8:00 PM	Total
<b>Eastbound</b>						
EB I-580 at Bellam Blvd	1900	1940	1970	1530	1290	8630
Bellam Blvd On-Ramp	360	340	310	290	270	1570
EB I-580 from Bellam Blvd to Sir Francis Drake Blvd	2260	2280	2280	1820	1560	10200
Sir Francis Drake Blvd On-Ramp	1310	1790	1480	900	900	6380
EB I-580 from Sir Francis Drake Blvd to Main St	3570	4070	3760	2720	2460	16580
Main St Off-Ramp	230	120	140	80	70	640
Main St On-Ramp	220	470	570	440	90	1790
EB I-580 from Main St to Stenmark Dr	3560	4420	4190	3080	2480	17730
Stenmark Dr On-Ramp	40	20	20	20	20	120
EB I-580 from Stenmark Dr to Standard Ave/Marine St	3600	4440	4210	3100	2500	17850
Standard Ave / Marine St Off-Ramp	1040	1150	1180	860	560	4790
Standard Ave / Marine St On-Ramp	200	410	210	140	100	1060
EB I-580 from Standard Ave / Marine St to Castro St	2760	3700	3240	2380	2040	14120

**Table 3 –2040 Future Eastbound No-Build Conditions Traffic Volumes**

Segments	3:00-4:00 PM	4:00-5:00 PM	5:00-6:00 PM	6:00-7:00 PM	7:00-8:00 PM	Total
<b>Eastbound</b>						
EB I-580 at Bellam Blvd	2290	2460	2180	1750	1560	10240
Bellam Blvd On-Ramp	370	360	310	300	340	1680
EB I-580 from Bellam Blvd to Sir Francis Drake Blvd	2660	2820	2490	2050	1900	11920
Sir Francis Drake Blvd On-Ramp	1400	1990	1690	1050	1050	7180
EB I-580 from Sir Francis Drake Blvd to Main St	4060	4810	4180	3100	2950	19100

<b>Segments</b>	3:00-4:00 PM	4:00-5:00 PM	5:00-6:00 PM	6:00-7:00 PM	7:00-8:00 PM	Total
Main St Off-Ramp	260	120	180	100	70	730
Main St On-Ramp	240	520	650	500	100	2010
EB I-580 from Main St to Stenmark Dr	4040	5210	4650	3500	2980	20380
Stenmark Dr On-Ramp	40	20	20	20	20	120
EB I-580 from Stenmark Dr to Standard Ave/Marine St	4080	5230	4670	3520	3000	20500
Standard Ave / Marine St Off-Ramp	1200	1390	1390	980	720	5680
Standard Ave / Marine St On-Ramp	250	530	230	160	100	1270
EB I-580 from Standard Ave / Marine St to Castro St	3130	4370	3510	2700	2380	16090

Under Plus Project conditions for both 2020 and 2040 analysis years, the Project's third lane provides sufficient capacity through the RSR Bridge bottleneck such that the bottleneck will no longer form, and as a result the No Project vehicle queues on southbound US 101 and eastbound I-580 will not form. Drivers will have a relatively free-flow travel time of about 10 minutes throughout the 3:00 PM to 8:00 PM study period. In year 2040, the eastbound I-580 corridor between US 101 and the RSR Bridge would operate at LOS D or better with the exception of segments west of the Bellam Boulevard off-ramp and a segment at the Main Street interchange that operate at LOS E. The RSR Bridge would continue to experience slowing because of the bridge's geometric characteristics i.e., grade, and lower speed limit. Downstream of the RSR Bridge, in Contra Costa County, the freeway segments in the three lane freeway segments would operate at LOS C or better.

With the implementation of the project (third lane in the eastbound direction), travel times through the corridor would improve. To illustrate this improvement, three routes were studied for this analysis: 1) from the southbound US 101 on-ramp at 2nd Street to the Central Avenue on-ramp on eastbound I-580, 2) from northbound US 101 at the Tamalpais on-ramp to the Bellam Boulevard off-Ramp to the Central Avenue on-ramp, and 3) northbound US 101 to Sir Francis Drake Boulevard off-Ramp to the Central Avenue on-ramp. The three routes represent the major routes used to access the RSR Bridge from Marin County. The travel time results are summarized in the table below.

**Table 4 – Corridor Travel Time Comparison**

	<b>No Project (min)</b>	<b>With Project (min)</b>	<b>% Change</b>
<b>Year 2020</b>			
From US101/2 <sup>nd</sup> St to I-580/Central Avenue	23.5	12.2	-48%
From NB US-101/Tamalpais Drive on-ramp to I-580/Central Avenue through Bellam Boulevard	22.9	14.4	-37%
From NB US-101/Tamalpais Drive on-ramp to I-580/Central Avenue through Sir Francis Drake Boulevard	21.9	16.5	-25%
<b>Year 2040</b>			
From US101/2 <sup>nd</sup> St to I-580/Central Avenue	53.0	14.6	-72%
From NB US-101/Tamalpais Drive on-ramp to I-580/Central Avenue through Bellam Boulevard	33.0	17.1	-48%
From NB US-101/Tamalpais Drive on-ramp to I-580/Central Avenue through Sir Francis Drake Boulevard	25.3	19.6	-23%

Under 2020 Plus Project conditions, many of the intersections will improve to LOS D or better operations during the peak 30 minutes, with the exception of intersections along Sir Francis Drake Boulevard between US 101 NB Ramps and San Quentin Gates which are impacted by the lane drop merge where two eastbound lanes on Sir Francis Drake Boulevard merge to a single lane. The LOS F conditions will generally dissipate by 6:00 PM, 30 minutes earlier than the No Project scenario. The LOS F conditions are caused by vehicle congestion approaching the merge extending back through the signalized intersections to the US 101 interchange. The San Quentin Gate and Anderson Drive intersections are located downstream of the lane drop merge, along the segment of Sir Frances Drake Boulevard where the Project is expected to eliminate delays by eliminating the bottleneck on I-580 that causes it.

Operations at the study intersections within Contra Costa County generally operate at Levels of Service D or better throughout the PM peak period under No Project and Plus Project conditions, with the exception of the Canal Boulevard/I-580 westbound Ramps intersection, which operates at LOS E under Plus Project conditions. The LOS at this intersection deteriorates with the project due to added traffic crossing the RSR Bridge and exiting at Canal Boulevard increasing the northbound movement and affecting the overall operations of the intersection. With signal optimization, the intersection would improve to 2020 No Project conditions.



**Table 5 Intersection Level of Service**

	2020		2040	
	No Project	With Project	No Project	With Project
Bellam Boulevard/I-580 WB ramps	B	B	B	B
Bellam Boulevard/I-580 EB ramps	F	C	F	D
Eliseo Drive-Barry Way/Sir Francis Drake Boulevard	F	D	F	F
US-101 SB Ramps/Sir Francis Drake Boulevard	C	A	B	B
US-101 NB Ramps/Sir Francis Drake Boulevard	F	E	E	E
Larkspur Landing Circle (west)/Sir Francis Drake Boulevard	F	F	F	F
Larkspur Landing Circle (east)/Sir Francis Drake Boulevard	F	E	F	F
San Quentin Gates/Sir Francis Drake Boulevard	A	A	A	F
Andersen Dr/Sir Francis Drake Boulevard	C	C	F	F
Main Street/I-580 EB ramps	D	A	A	A
Main Street/I-580 WB ramps	A	A	A	A
Marine St/I-580 EB Ramps-E. Standard Ave	B	B	B	B
Marine St/Chevron Way	A	A	A	A
Castro St/Tewksbury Avenue3	A	A	A	A
Castro St/E Standard Avenue	C	B	D	C
Castro St/Redwood Way-I-580 WB Ramps	C	C	D	D
Castro St/Richmond Lane (south)	A	A	A	A
Castro St/Richmond Lane (north)	A	A	A	A
Castro St/W Hensley Street	A	A	A	A
Hensley Street/Richmond Parkway	B	B	B	B
Richmond Pkwy/W Barrett Ave	A	A	A	A
Richmond Pkwy/W MacDonald Ave	A	A	B	B
Richmond Pkwy/S Garrard Boulevard-W Ohio Ave	B	A	B	B
Canal Boulevard/I-580 WB Ramps	D	E	F	F
Canal Boulevard/I-580 EB Ramps	C	C	C	C
Canal Boulevard/Cutting Boulevard	C	C	D	D
I-580 EB Ramps/Cutting Boulevard	B	B	B	B
I-580 WB Ramps/Cutting Boulevard	A	A	A	A
Harbour Way/Cutting Boulevard	D	D	E	E
Harbour Way/I-580 EB Ramps	A	A	A	A
Marina Bay Parkway/I-580 WB Ramps	B	B	B	B
Marina Bay Parkway/I-580 EB Ramps	A	A	A	A

In the Westbound direction, similar traffic demands exist along the corridor and are expected to increase through design year 2040. However, the existing toll plaza and lane drop will continue to meter the traffic getting on the upper deck of the RSR Bridge. The table below illustrate the traffic volumes in the current conditions and in the future years.

**Table 6 – Westbound Existing Conditions Traffic Volumes**

Segments	6:00-7:00 AM	7:00-8:00 AM	8:00-9:00 AM	9:00-10:00 AM	10:00-11:00 AM	Total
WB I-580 at 234d St/Marina Bay Parkway	2196	3132	2895	2842	2174	13239
23rd St/Marina Bay Parkway On-Ramp	201	310	202	135	91	939
WB I-580 from 23rd St/Marina Bay Parkway to Harbour Way	2397	3442	3097	2977	2265	14178
Harbour Way Off-Ramp	226	328	406	277	225	1462
Cutting Boulevard Off-Ramp	147	215	243	224	163	992
Cutting Boulevard On-Ramp	469	897	477	497	363	2703
WB I-580 from Cutting Blvd to Canal Blvd	2493	3796	2925	2973	2240	14427
Canal Blvd Off-Ramp	341	471	387	326	300	1825
Castro St Off-Ramp	273	224	214	227	235	1173
Castro St On-Ramp	1304	1146	1034	982	632	5098
WB I-580 from Castro St to Stenmark Dr	3183	4247	3358	3402	2337	16527
Stenmark Drive Off-Ramp	35	46	23	39	32	175
Stenmark Drive On-Ramp	1	12	15	14	19	61
WB I-580 from Stenmark Dr to Francisco Blvd	3149	4213	3350	3377	2324	16413

**Table 7 2020 Future Westbound No-Build Conditions Traffic Volumes**

Segments	6:00-7:00 AM	7:00-8:00 AM	8:00-9:00 AM	9:00-10:00 AM	10:00-11:00 AM	Total
WB I-580 at 234d St/Marina Bay Parkway	2290	3270	3020	2970	2270	13820
23rd St/Marina Bay Parkway On-Ramp	210	330	220	150	100	1010
WB I-580 from 23rd St/Marina Bay Parkway to Harbour Way	2500	3600	3240	3120	2370	14830

Harbour Way Off-Ramp	240	350	430	290	240	1550
Cutting Boulevard Off-Ramp	160	230	260	240	180	1070
Cutting Boulevard On-Ramp	490	940	500	520	380	2830
WB I-580 from Cutting Blvd to Canal Blvd	2590	3960	3050	3110	2330	15040
Canal Blvd Off-Ramp	360	500	410	350	320	1940
Castro St Off-Ramp	290	240	230	240	250	1250
Castro St On-Ramp	1370	1200	1080	1030	660	5340
WB I-580 from Castro St to Stenmark Dr	3310	4420	3490	3550	2420	17190
Stenmark Drive Off-Ramp	40	50	30	50	40	210
Stenmark Drive On-Ramp	10	20	20	20	30	100
WB I-580 from Stenmark Dr to Francisco Blvd	3280	4390	3480	3520	2410	17080

**Table 8 –2040 Future Westbound No-Build Conditions Traffic Volumes**

Segments	6:00-7:00 AM	7:00-8:00 AM	8:00-9:00 AM	9:00-10:00 AM	10:00-11:00 AM	Total
WB I-580 at 234d St/Marina Bay Parkway	2600	3710	3430	3360	2570	15670
23rd St/Marina Bay Parkway On-Ramp	240	370	240	160	110	1120
WB I-580 from 23rd St/Marina Bay Parkway to Harbour Way	2840	4080	3670	3520	2680	16790
Harbour Way Off-Ramp	270	390	480	330	270	1740
Cutting Boulevard Off-Ramp	180	260	290	270	200	1200
Cutting Boulevard On-Ramp	560	1070	570	590	430	3220
WB I-580 from Cutting Blvd to Canal Blvd	2950	4500	3470	3510	2640	17070
Canal Blvd Off-Ramp	410	560	460	390	360	2180
Castro St Off-Ramp	330	270	260	270	280	1410
Castro St On-Ramp	1550	1360	1230	1170	750	6060
WB I-580 from Castro St to Stenmark Dr	3760	5030	3980	4020	2750	19540
Stenmark Drive Off-Ramp	50	60	30	50	40	230
Stenmark Drive On-Ramp	10	20	20	20	30	100
WB I-580 from Stenmark Dr to Francisco Blvd	3720	4990	3970	3990	2740	19410

### 4.3.3 Collision Analysis

The traffic accident history for I-580, between PM 0.000 and PM 3.290 (Marin County) and between PM 4.980 and PM 7.786 (Contra Costa County), was reviewed

based on the data obtained from TASAS – TSN (Traffic Accident Surveillance and Analysis System – Transportation System Network). The report, summarized below, included accident data for the 36-month period from July 1, 2011 to June 30, 2014. The following table provides a summary of the actual fatality, fatality plus injury, and total accident rates on both sides of Contra Costa County and Marin County compared with the statewide average.

Overall, I-580 mainline within these study limits has a lower accident rate than the statewide average, except on the westbound direction in Contra Costa County, as summarized in the table below.

**Table 9 I-580 Mainline Accident Rates**

Location	County	Direction	Total Acc.	Fatality Acc.	Injury Acc.	Actual Accident Rates			Average Accident Rates		
						FAT	F+I	TOT	FAT	F+I	TOT
Mainline I-580	Marin	EB	69	0	25	0	0.2	0.56	0.006	0.24	0.67
		WB	30	0	17	0	0.14	0.24			
	Contra Costa	EB	43	0	14	0	0.13	0.41	0.005	0.26	0.81
		WB	111	0	37	0	0.35	1.06			

FAT = number of fatal accidents per million vehicle miles (MVM)

F+I = number of fatal plus injury accidents per MVM

TOT = total number of accidents per MVM

All ramps within these study limits have lower accident rates than the statewide average, except at the EB Main Street on-ramp, the EB Standard Ave/Marine St on-ramp, and the EB Stenmark on-ramp.

**Table 10 Ramp Accident Rates**

County	Location	PM	Total Acc.	Fatality Acc.	Injury Acc.	Actual Accident Rates			Average Accident Rates		
						FAT	F+I	TOT	FAT	F+I	TOT
Marin	WB Main St Off-Ramp	2.529	1	0	1	0	0.5	0.5	0.001	0.17	0.54
	EB Main St On-Ramp	2.540	1	0	1	0	0.68	0.68	0.002	0.22	0.63
	EB Main St Off-Ramp	2.817	0	0	0	0	0	0	0.001	0.17	0.54
	WB Main St On-Ramp	2.861	0	0	0	0	0	0	0.001	0.13	0.46
	WB Sir Francis Drake Blvd Off-Ramp	3.087	2	0	1	0	0.06	0.13	0.004	0.16	0.49

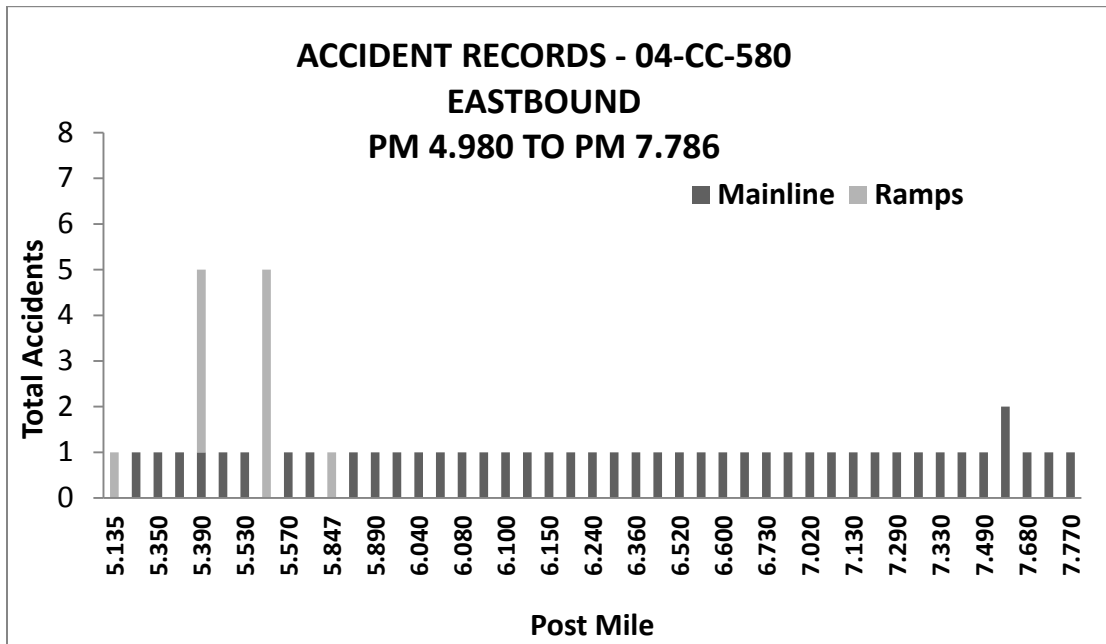
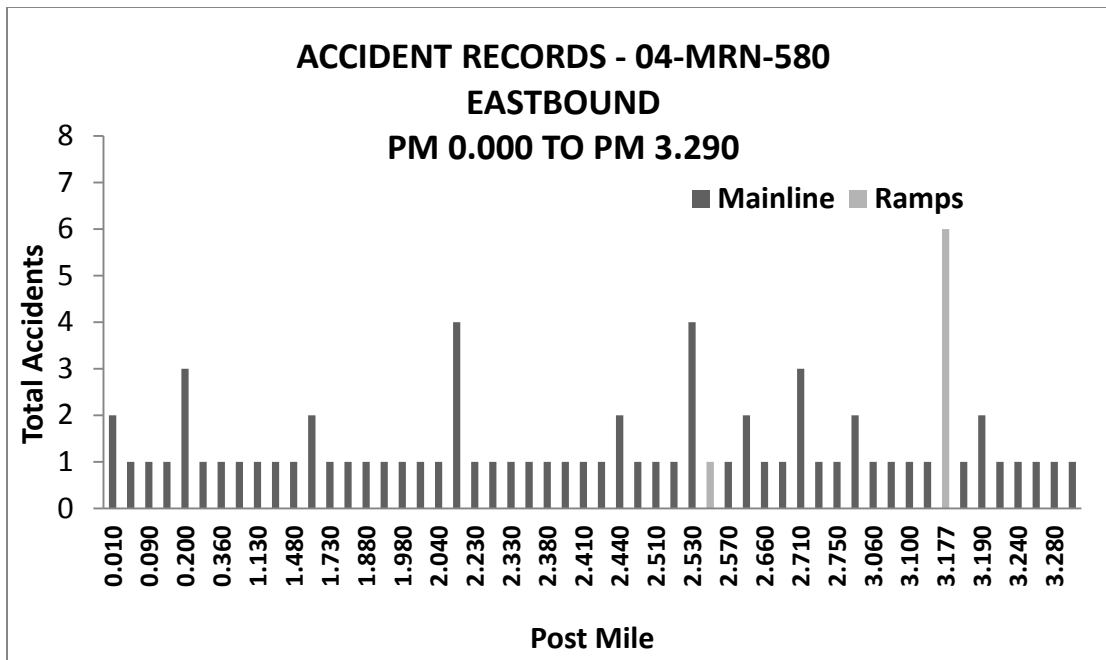
County	Location	PM	Total Acc.	Fatality Acc.	Injury Acc.	Actual Accident Rates			Average Accident Rates		
						FAT	F+I	TOT	FAT	F+I	TOT
	EB Sir Francis Drake Blvd On-Ramp	3.177	6	0	2	0	0.15	0.44	0.003	0.18	0.57
Contra Costa	WB Castro St Off-Ramp	4.981	1	0	1	0	0.19	0.19	0.003	0.35	1.01
	WB Castro St On-Ramp	5.128	4	0	0	0	0	0.57	0.003	0.24	0.72
	East Standard Ave	5.135	1	0	0	0	0	0.11	0.004	0.19	0.72
	EB Standard Ave / Marine St On-Ramp	5.390	4	0	2	0	0.6	1.2	0.003	0.24	0.72
	EB Standard Ave / Marine St Off-Ramp	5.560	5	0	1	0	0.11	0.57	0.003	0.35	1.01
	EB Stenmark Dr On-Ramp	5.847	1	0	0	0	0	2.08	0.003	0.14	0.41
	WB Stenmark Dr Off-Ramp	6.000	0	0	0	0	0	0	0.004	0.24	0.75
	WB Stenmark Dr On-Ramp	6.098	0	0	0	0	0	0	0.001	0.13	0.46

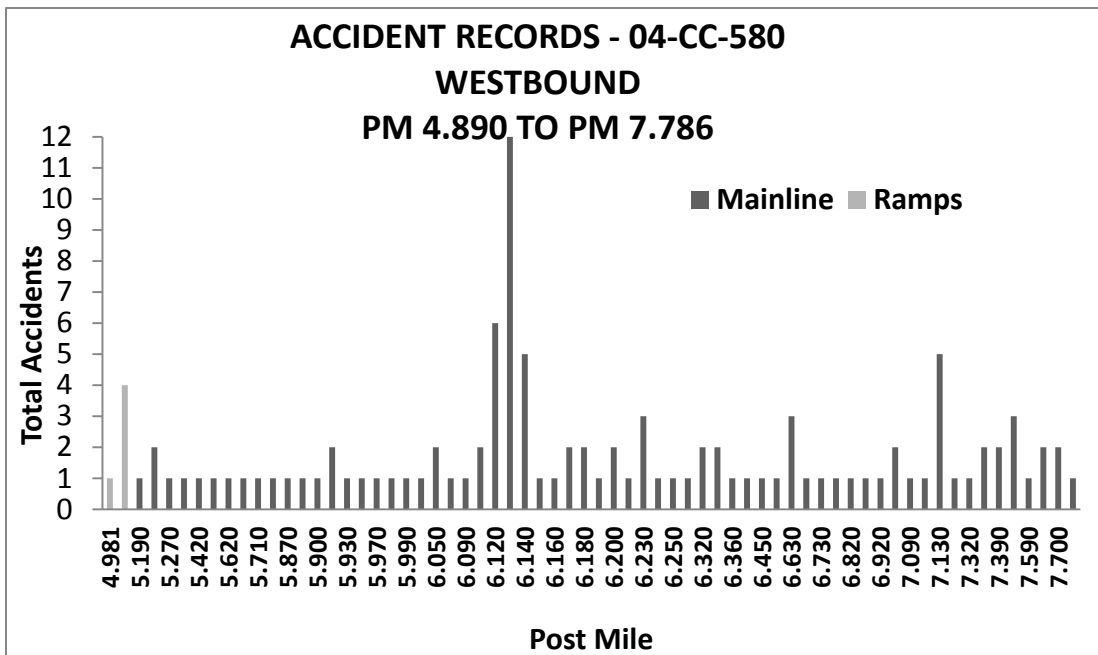
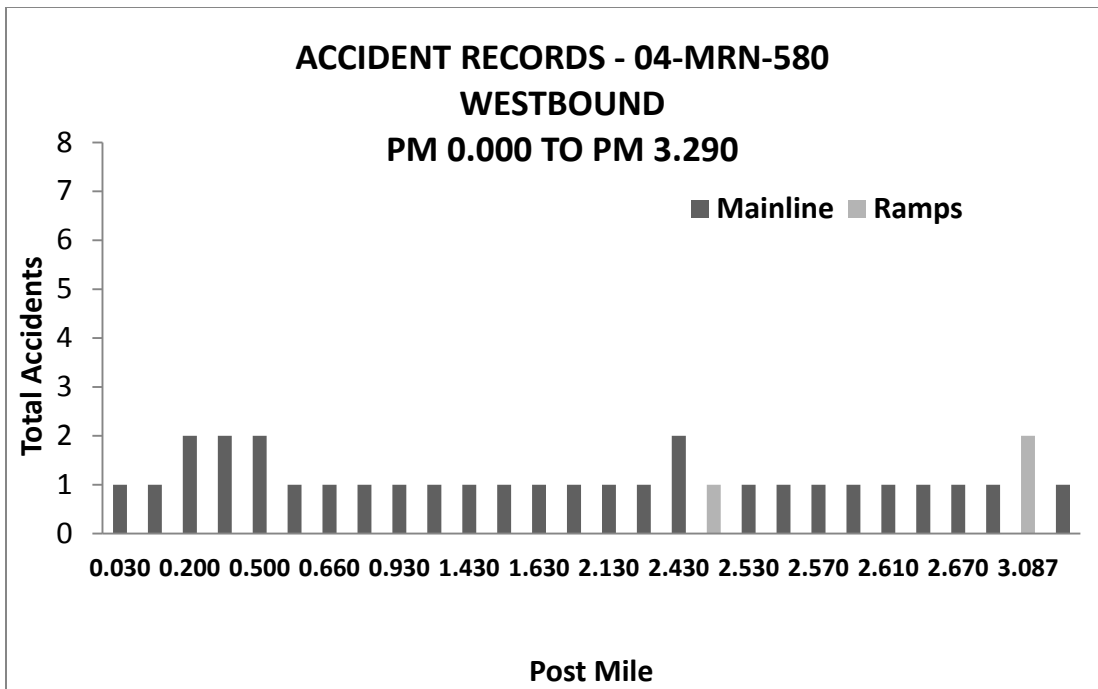
FAT = number of fatal accidents per million vehicle (MV)

F+I = number of fatal plus injury accidents per MV

TOT = total number of accidents per MV

Since the proposed improvements are different in nature and scope between eastbound and westbound, the accident data is further analyzed for each direction and location in the figures below.





***Eastbound I-580 Mainline***

As shown in Table 9, EB I-580 mainline within these study limits has a lower accident rate than the statewide average in both Marin and Contra Costa Counties. I-580 mainline in eastbound direction had a total of 112 accidents, which 69 accidents occurred on the Marin County side and 43 on the Contra Costa County side. Many of



the reported accidents along the existing I-580 were rear-end collisions, which are often indicative of congestion-related incidents. 71 or 63% of accidents were rear-end collisions, 14 (13%) were hit object, 13 (12%) were sideswipe, 9 (8%) were other or unstated, 4 (4%) were broadside, and 1 (1%) was overturn. 58% of the accidents were caused by speeding, 19% by other violations, 10% by improper turn, 8% by DUI, 8% by other than driver and 1% by unknown reasons.

The figures above indicate that these accidents spread out fairly evenly on the EB I-580 mainline throughout the length of the project limits, except on the Marin County side where accidents were concentrated near Main Street on-ramp (PM 2.53) and on the RSR Bridge (PM 2.13). All accidents near Main Street on-ramp and 75% of accidents on the RSR Bridge were rear-end collisions, which are often indicative of congestion-related incidents. Currently, there is a bottleneck east of the Main Street on-ramp which causes significant congestion along the EB I-580 corridor. This bottleneck occurs between 4:00 PM and 7:00 PM and is due to a combination of the high traffic demands accessing the freeway from the Sir Francis Drake Boulevard and San Quentin/Main Street on-ramps. The project proposes to extend the eastbound I-580 auxiliary lane to beyond the Main Street off-ramp, continuing as a third PPUL on the RSR Bridge during the weekday PM peak period. The additional third lane will provide sufficient capacity through the RSR Bridge bottleneck such that the bottleneck no longer forms. With reduction of congestion and elimination of bottleneck and improving the stopping sight distance at this location, these rear-end collisions are expected to decrease.

### ***Westbound I-580 Mainline***

As shown in Table 9, WB I-580 mainline in Marin County has a lower accident rate than the statewide average. However on the Contra Costa County side, the accident rate is higher than the statewide average, which is consistent with the accident concentration occurring between Scofield Avenue Undercrossing to RSR mostly due to bottleneck generated by the toll booths operation. Of the 141 accidents on the westbound direction, 111 accidents occurred on the Contra Costa side, and 30 on the Marin side. Many of the reported accidents along the existing I-580 were rear-end collisions, which are often indicative of congestion-related incidents. 88 or 62% of accidents were rear-end collisions, 28 (20%) were sideswipe, 19 (13%) were hit object, 2 (1%) were other or unstated, 1 (1%) was broadside, 1 (1%) was overturn, 1 was auto-pedestrian (1%), and 1 was head-on (1%). 57% of the accidents were

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caused by speeding, 24% by other violations, 7% by improper turn, 6% by following too closely, 2% by DUI, 1% by improper driving, 1% by other than driver and 1% by unknown reasons.

The figures above indicate that these accidents spread out fairly evenly throughout the length of the project limits, with a couple spikes at PM 6.120 and 6.130, which are located just before and after the toll booths at PM 6.125, where drivers must slow down or stop before proceeding. The project proposes to add dynamic sign with “Stopped Traffic Ahead” message at the upstream of the Toll Plaza. Furthermore, the posted speed limit will be reduced to 45 mph at the Toll plaza and 55 mph on the RSR Bridge. This will eliminate an abrupt stop at the Toll Plaza and will decrease the risk of collisions along the corridor.

### ***Ramps***

As indicated in Table 10, all ramps within these study limits has a lower accident rate than the statewide average in both Marin and Contra Costa Counties, except at the EB Main Street on-ramp, the EB Standard Ave/Marine St on-ramp, and the EB Stenmark on-ramp. Moreover, though less than average accident rate of similar facility statewide, figures above indicate that the accident concentration occurred on the EB Sir Francis Drake Boulevard on-ramp.

On the EB Main Street on-ramp, there was one accident with a total accident rate of 0.68 acc/mv, which is higher than average rate of 0.63 acc/mv for a similar facility statewide. The accident was a rear-end collision which was caused by speeding. The project proposes to install ramp metering on this on-ramp which would ensure that the on-ramp merge into the mainline would not cause congestion of the mainline traffic. It is also proposed to install additional signing on the mainline upstream of this on-ramp to alert through-traffic drivers of on-ramp traffic merging ahead. These will significantly improve merging condition on this on-ramp. Furthermore, the ramp will be reconstructed with a parallel taper to partially mitigate for the stopping sight distance as the occurrence of rear-end collision is also often an indication that the stopping sight distance is limited. By providing such improvements, safety conditions will improve as a result.

On the EB Stenmark Drive On-Ramp, there was one accident with a total accident rate of 2.08 acc/mv, which is higher than average rate of 0.41 acc/mv of similar facility statewide. The accident was a hit object collision which was caused by an improper turn. Traffic on this on-ramp mainly consists of trucks entering the freeway

from the nearby quarry. The demand forecast conveys that traffic will remain consistently minimal for this on-ramp through 2040. At a peak demand of 40 vehicles per hour, this on-ramp is one of the least utilized freeway entrances in the area. The accident occurred when it was dark with no street lighting in July 2013. The re-decking and resurfacing project between the Toll Plaza and Marine Street Interchange installed lighting at this location in 2013, which improved lighting condition on this on-ramp.

On the EB East Standard Avenue / Marine Street on-ramp, there were four accidents with a total accident rate of 1.20 acc/mv, which is higher than average rate of 0.72 acc/mv of similar facility statewide. There were two hit object, one overturn, and one auto-pedestrian type of collisions. Two accidents occurred on the ramp itself and the other two occurred at the intersection area. The current ramp configuration features Marine St. traffic merging with the left lane of the two lanes from WB Standard Ave. The project proposes to reconfigure East Standard Avenue to change one of the two westbound lanes to an eastbound lane, which will eliminate the merge issue between the Marine St traffic and the Standard Avenue traffic around the tight curve. In addition, the project proposes to construct a bike and pedestrian path along Standard Avenue separated from traffic lane by a concrete barrier, therefore minimizing the chances of conflicts between pedestrians and auto traffic. The project will also provide ramp metering and lighting enhancement on this on-ramp. By providing these improvements, safety conditions will improve consequently.

On the EB Sir Francis Drake Boulevard on-ramp, there were 6 accidents with a total accident rate of 0.44, which is lower than average rate of 0.57 acc/mv of similar facility statewide. There were 5 rear-end collisions and 1 hit object collision, which 4 were caused by speeding, one caused by following too close and one by improper turn. The occurrence of rear-end collision is also often an indication that the stopping sight distance is limited. Currently, the queuing of the mainline traffic on the freeway mainline spills back onto Sir Francis Drake Blvd during the evening commute hours, hence explaining the rear-end collisions at this on-ramp. With the implementation of the peak period use lane, it is anticipated that the queues on the mainline will not exist anymore eliminating the suspected main reason for these rear-end collisions. In addition, to improve the stopping sight distance and the safety of bicyclists, the project proposes to widen the on-ramp to the left to provide continuous standard 4-foot inside and 8-foot outside shoulders with use of rumble strip, delineators, and additional lighting around this curve to accommodate a 6-foot bike lane. Also, the existing metal beam guardrail on the left will be replaced with the concrete barrier

Type 60C when the side slope is greater than 4:1. By providing such improvement, safety conditions will also improve as a result.

## 5 VIABLE ALTERNATIVES

After evaluating various alternatives for the third lane and the bike path, the Project Development Team selected the preferred Build Alternative described below during the May 2016 PDT meeting, and rejected the other alternatives as explained in the following sections of this report.

### 5.1.1 Build Alternative

As stated in Section 1 - Introduction, this project proposes to convert the existing shoulders on the Richmond-San Rafael (RSR) Bridge to accommodate bicycle and pedestrian access on the upper bridge deck (westbound), and a third lane on the lower deck (eastbound). Bicycle and pedestrian access on the upper deck of the RSR Bridge would be provided by installing a barrier to separate bicyclists and pedestrians from vehicles. The project connects the Bay Trail between Contra Costa County and Marin County.

The build alternative proposes multimodal improvements to Interstate 580 within Marin and Contra Costa Counties, including the segment on the Richmond-San Rafael (RSR) Bridge. Three elements, as previously mentioned, make up the build alternative. The three elements are:

- Element 1 – A third eastbound lane between Marin County and Contra Costa County
- Element 2 – Bicycle/Pedestrian Path in Contra Costa County on WB I-580 from Marine Street to Stenmark Drive / Stenmark Drive.
- Element 3 – Bicycle/Pedestrian Path on RSR Bridge and connections to the RSR Bridge at both Marin County and Contra Costa County

Appendix B includes the project geometric design plans.

### ***Project Element 1 – Eastbound I-580 Third Lane (including RSR Bridge Pilot Project)***

Project Element 1 of the proposed project would provide a new third travel lane by converting the existing shoulder of the eastbound lower deck of the RSR Bridge to a travel lane. The new lane will begin immediately downstream from the Main Street EB off-ramp in Marin County and terminate on the Contra Costa County side of the

RSR Bridge, slightly downstream of the Marine Street/East Standard Avenue EB off-ramp in Richmond. The portion of the third lane on the lower portion of the double deck section of the RSR Bridge will operate during peak hours only (as part of the pilot project). The hours of operations are planned to be 3:00pm to 8:00pm on weekdays. These hours may be modified by Caltrans and BATA after observing the operations of the lane. The off-Bridge portion of the third lane will operate 24 hours a day, 7 days per week. Electronic and static signs will be used to operate and manage the lane during the hours of operations and are included in the project description below. The third travel lane on the RSR Bridge is part of a pilot project with Project Element 3, which will run for up to four years and is intended to test and evaluate the performance and use of the third travel lane. After four years, the third lane on the RSR Bridge will be evaluated to determine if it is to remain a peak period use lane (PPUL), be converted to a full-time use lane, or return to function as a shoulder. All other constructed components of Project Element 1 would be permanent. The EB I-580 third lane would include the following work elements:

- Modify roadside post mounted signage on EB I-580 and install new roadside signs.
- Widen EB Sir Francis Drake Boulevard on-ramp to provide for a continuous 8-foot outside shoulder around the last curve prior to merging with EB I-580. The outside shoulder will include installation of the 6-inch rumble strip along the edge of traveled way, and Type FG 300 delineators offset by 2-feet onto the shoulder. This is to provide a 6-foot Class II bike lane and will improve safer condition for bicyclists accessing onto EB I-580 shoulder. The rumble strip from the EB Sir Francis Drake Boulevard will continue all the way to the gore area of the EB Main Street Off-ramp.
- Install new electronic signs on the bridge to communicate to drivers when the third travel lane may be used. An Electronic Changeable Message Sign (CMS Model 500 Panel) will be installed near the Main Street off-ramp west of Main Street as part of the Caltrans Traffic Operations System for motorist information (e.g. traffic conditions on the bridge including indicating whether the lane is open or closed). In addition, a Variable Message Sign (VMS) will be installed along the east bound on-ramp from Main Street, to notify motorists of Traffic Conditions on the Bridge, as part of the Caltrans Traffic Operations System.
- Modify striping on the EB Main Street/San Quentin off-ramp to extend the existing Sir Francis Drake auxiliary lane beyond the Main Street interchange. The extension of the auxiliary lane necessitates shifting of the median barrier approximately 10 feet northerly to improve stopping sight distance for mainline eastbound traffic, at the approach to the RSR Bridge.
- Widen Main Street between the eastbound and westbound ramps to accommodate two 5-foot Class II bike lanes, maintaining the 5-foot sidewalk.

A Type 7 (L-shaped) retaining wall will be constructed on the west side (southbound side) of Main Street under I-580 (Retaining Wall No.1). This element will be a permanent feature and is not part of the pilot test.

- Realign the EB Main Street on-ramp to merge with the proposed travel lane. A Type 7 (L-shaped) retaining wall will be constructed along the left side of the ramp (Retaining Wall No.3). Standard construction methods will be used.
- Reconstruct the Main Street/EB on-ramp. This will require constructing two new retaining walls: A new Type 7 wall on the north side of the new on-ramp (Retaining Wall No.2) and a new Type 5 retaining wall along the south side of the on-ramp to preserve access to the electrical substation at the Caltrans Maintenance Yard (Retaining Wall No.6).
- Construct a new sidewalk along the east side of Main Street, from the sidewalk constructed by Marin Public Works prior to this project (approximately 25 feet south of the EB on-ramp) to the EB on-ramp intersection. A new Golden Gate Transit bus stop will be constructed at the bottom of the modified on-ramp
- Remove the existing 362.5-foot retaining wall along EB I-580, immediately downstream of the Scofield Avenue Undercrossing. A new soil nail retaining wall will be constructed approximately 15 feet south of the existing edge of pavement (Retaining Wall No.4). The new wall will improve the stopping sight distance along mainline EB I-580. An additional soil nail retaining wall will be constructed 30 feet east of Retaining Wall No. 4, providing additional shoulder and lane width (Retaining Wall No. 7). The new wall will require the removal of 85 feet of the existing retaining wall along EB I-580. Additional shoulder and lane width requires that the 8-foot by 7-foot utility tunnel running under EB I-580 be extended by 17 feet. This includes 8 feet of tunnel extension and 9 feet of access structure. This utility tunnel is located between Retaining Walls No. 4 and No. 7. The utilities in the tunnel consist of abandoned pipes, and live power and communications lines connecting the refinery facilities on the south side of I-580 (on Office Hill) to the main refinery facilities on the north side of the freeway. Portions of the abandoned pipes in conflict with the tunnel extension will be removed. Chevron will relocate the power and communications lines prior to extending the tunnel.
- Reconfigure the Marine Street off-ramp exit nose to accommodate continuation of the eastbound travel lane and widen the inside of the existing off-ramp to provide additional storage for vehicle queuing.
- Reconfigure East Standard Avenue between Marine Street and Castro Street to change one of the two westbound lanes to an eastbound lane by reconstructing the existing median barrier approximately 12 feet northerly. A permanent, Type 60 series concrete barrier will also be installed to separate the bicycle and pedestrian path from vehicular traffic. The barrier will extend along the south side of East Standard Avenue between Marine Street and Castro Street to the existing bicycle and pedestrian paths, linking the bicycle facilities on Tewksbury Avenue and Castro Street. Minor sliver widening will

be required along East Standard Avenue to accommodate the full street configuration including shoulders.

- Modify traffic signal and intersection operations, including upgrading, replacing, or adding new controller cabinets, traffic signal posts, and other intersection control equipment at three locations: EB I-580/Marine Street off-ramp, EB East Standard Avenue/Castro Street and WB I-580/Castro Street off-ramp. It is anticipated that any controller cabinets or traffic signal poles would be installed within the existing operational transportation right-of-way.
- Install loop traffic monitoring stations in the pavement of the upper and lower bridge decks. Due to the thin depth of the bridge deck, a shallow saw cut loop installation detail is proposed.
- Mount CCTV cameras with eastbound and westbound views along the Bridge. CCTV cameras with eastbound views will begin on I-580 East in Marin County and end at the Marine Street interchange in Contra Costa County. CCTV cameras with westbound views will begin on the westbound RSR Bridge, westerly of the Toll Plaza, and end near the Main Street off-ramp. All CCTV cameras will have Pan/Tilt/Zoom capabilities. However, due to their locations and the height at which they are installed, some cameras will have better views of sections and directions on the bridge than others due to the many structural elements obstructions.
- To connect the TOS elements on the bridge, the project will install 144-strand fiber optic lines connecting the Caltrans paint yard on the west end to the Toll Plaza on the east end. The communication will then be transferred to Caltrans Traffic Management Center in Oakland and BATA's Regional Operational Center in San Francisco via existing AT&T lines.
- Install ramp metering at two on-ramp locations: the eastbound Main Street single-lane on-ramp and the eastbound Standard Avenue/Marine St two-lane on-ramp.

All improvements for Project Element 1 will be within existing local and state right-of-way.

### **Project Element 2 – Bicycle/Pedestrian Path in Contra Costa County**

The proposed Class I bi-directional bicycle and pedestrian path in Contra Costa County would be constructed along the north side of westbound (WB) I-580 from the Marine Street interchange in Contra Costa County to Stenmark Drive and the Toll Plaza where it would then connect to Project Element 3. The Class I bi-directional bicycle and pedestrian path would be implemented along the existing WB I-580 and Stenmark Drive shoulders and would replace the existing one-way Class II bicycle lanes on both EB and WB I-580 shoulders between Marine Street and the Toll Plaza. The proposed bi-directional bicycle and pedestrian path would be separated from

vehicle traffic by a continuous concrete barrier. Implementation of the path would include the following work elements:

- Install a Class I bi-directional path for bicycles and pedestrians separated from automobile traffic by a permanent concrete barrier. The path will begin at the existing bike lane and sidewalk at the Marine Street EB off-ramp and continue parallel with WB I-580 to the Stenmark Drive off-ramp.
- Widen the north side of the existing Stenmark Drive off-ramp to provide an inside shoulder, a vehicle lane, an outside shoulder, a concrete barrier, and a 10-foot bi-directional bicycle/pedestrian path. A new retaining wall will be constructed along the north side of the bi-directional bicycle and pedestrian path (Retaining Wall No.5).
- Install a crosswalk at Stenmark Drive to continue the Class I bi-directional bicycle and pedestrian path further west on the south side of Stenmark Drive. This portion of the bike path will be 14 feet wide (10-foot path with 2-foot shoulders on both sides). Widen a portion of the existing bicycle trail parallel to Stenmark Drive from 10 feet to 14 feet in order to connect the proposed 14-foot path to the 14-foot Point Molate Trail being constructed by EBRP District (separate project).
- Construct a new earth filled gabion wall (Retaining Wall No. 8) adjacent to the existing bicycle/pedestrian path near Marine Street UC to provide standard bike path stopping sight distance.
- Replace existing railings on the Scofield Avenue Undercrossing with a Transportation Security Administration (TSA) approved visual screen (similar to a chain-link fence) or wall to physically and visually block access to the adjacent Chevron fuel pipelines. The visual screen or wall will be designed to prevent the general public from dropping objects onto Chevron's petroleum facilities below.
- PG&E will relocate utility poles and overhead wires along Stenmark Drive to a location of their choice, within local and state right-of-way (may be underground). Currently the poles are within the footprint of the multi-use path.
- Project Element 2 is expected to require installation of new roadside signs and relocation or removal of existing signs.

All improvements for Project Element 2 will be within existing local and state right-of-way, except along the south side of Stenmark Drive where easement will be needed from Chevron.

### **Project Element 3 – Bicycle/Pedestrian Path on RSR Bridge and Related Connections to RSR Bridge (Pilot Project)**

Project Element 3 includes the continuation of the proposed Class I bi-directional bicycle and pedestrian path from the Stenmark Drive off-ramp to East Francisco



Boulevard. The portion of the bi-directional bicycle and pedestrian path from Stenmark Drive to the Main Street off-ramp would be part of the pilot project that would run for four years, intended to evaluate the performance and use of a bicycle and pedestrian path on the RSR Bridge. After four years, the bi-directional bicycle and pedestrian path on the RSR Bridge may be made permanent, or may return to functioning as a shoulder. All other portions of Project Element 3 would be permanent. Bicycle and pedestrian access improvements are also included in this project element to improve multimodal circulation and connections to the RSR Bridge. Implementation of Project Element 3 would include the following work elements:

- Install a 10-foot wide Class I bi-directional bicycle and pedestrian path from Stenmark Drive west of the Toll Plaza Maintenance Buildings on an easement through Chevron property, connecting to the bicycle and pedestrian path on the RSR Bridge.
- Convert the existing shoulder to a 10-foot wide Class I bi-directional bicycle/pedestrian path on the westbound upper deck of the RSR Bridge, separated from motor vehicle traffic by a 42-inch high moveable concrete barrier. The 18-inch wide moveable barrier would start near the end of the maintenance facility and continue across the RSR Bridge to the Marin County side of WB I-580. The barrier would be movable to provide emergency access, access for RSR Bridge maintenance, and other safety considerations.
- Raise the outside bridge railing to approximately 42 inches above the utility tray (approximately 54 inches above the RSR Bridge deck) to provide additional fall protection for bicyclists and pedestrians. The increased height will be achieved by installing three or four strands of cable-railing attached to new vertical elements attached to the existing bridge railing. Install necessary signage to properly guide pedestrian and bicycle traffic onto and off the bike path.
- Widen westbound Main Street off-ramp for continuation of the 10-foot wide Class I bicycle/pedestrian path and to connect to Francisco Boulevard as a 10-foot wide bikeway on sidewalk. Construct sidewalk on north side of Francisco Boulevard between Main Street and Grange Avenue. At the Francisco Boulevard and Grange Avenue intersection, install a pedestrian only crossing from the northeast curb return to the existing sidewalk at the northwest corner. Moreover, install a bicycle only crossing from the northeast curb return to a new bicycle path on the south side of Francisco Boulevard, which connects to the existing paved path feeding onto the westbound Sir Francis Drake Boulevard off-ramp.
- Install bike detection systems on the westbound upper deck of the Bridge. The bike detection system for the bicycle/pedestrian path on the Bridge will be located at the Marin side approach to the Bridge at the East Francisco

Boulevard off-ramp. The bike detection system for the bicycle/pedestrian path in Contra Costa County will be located near the Toll Plaza.

- Project Element 3 is expected to require installation of new roadside signage, and relocation or removal of existing signs.
- Install new emergency call boxes on the left side (South side) of the upper deck. These call boxes will have wireless communication and will be solar-powered.

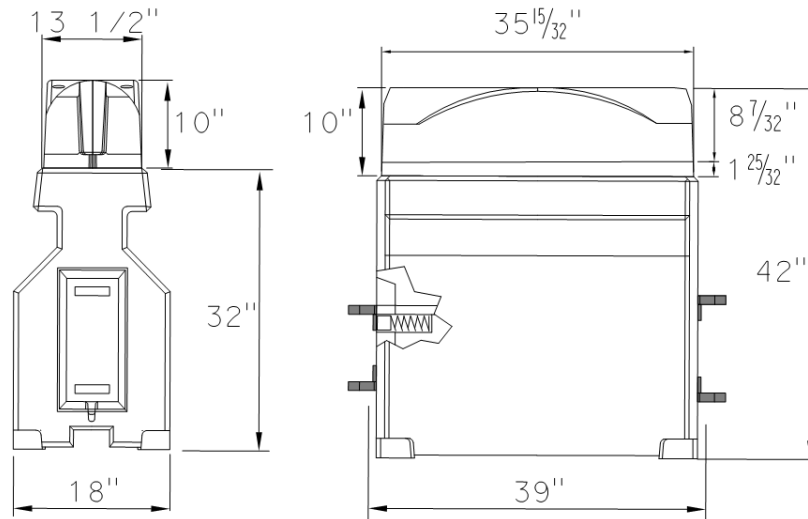
With the exception of the segment of the bicycle/pedestrian path adjacent to the maintenance facility located on an easement to be provided by Chevron, all improvements for Project Element 3 will be located within local and state right-of-way.

### **5.1.2 Barrier Transfer Machine and Moveable Barrier**

The Barrier Transfer Machine (BTM) will most likely be stationed on the Marin side when the barrier is deployed and the path is open to pedestrian and bicycles. Because the BTM moves at a rate of only 5 to 10 mph when moving the barrier, it will take approximately 45 minutes for someone to start up the BTM and complete the full pass for the entire length of the bridge. Therefore, it is not anticipated that BTM will be utilized in an incident scenario during the early stages of the response period. However, if a major accident occurs on the bridge that will require moving the barrier, Caltrans Maintenance crews can manually disconnect the individual barrier units and push the barrier out of the way using a utility vehicle or a small pickup truck. Once the incident is cleared, the barrier units are manually reconnected together, and the BTM operators can run the machine through to place the barrier back into the right position. Based on conversations with Caltrans Maintenance, the BTM will be mostly likely stored at the existing Caltrans Paint Yard on the Marin side, and at the Caltrans maintenance yard on the Richmond side.

The anticipated moveable barrier to use for this project is Concrete Reactive Tension System-Quickchange Moveable Barrier, manufactured by Lindsay Barrier Systems. Each barrier element of the CRTS-QMB is 32" high, 18" wide and 39" long as shown in the figure below. The individual elements weigh approximately 1500 pounds and rest on four rubber feet to increase the coefficient of friction between the barrier element and the road surface. The barrier elements are connected in an end-to-end fashion with tensioning hinge mechanisms and steel pins that are at least 1.3" in diameter. The Road Zipper System and Quickchange Moveable Barrier information is provided in Appendix K and FHWA approval is provided in Appendix J

In order to meet the minimum height requirement for a bicycle/pedestrian facility, the barrier QMB barrier height will be increased by another 10”, for a total height of 42”. The height extension will be achieved by affixing a “topper” to the barrier sections. This “topper” will have the same length and width of the individual barrier sections and will be attached to the barrier through a set of anchors/screws.



**Typical Movable Barrier**

### **5.1.3 Non-Standard Design Features**

The following Mandatory and Advisory standards, for which design exceptions are requested, are based on the Highway Design Manual (HDM), 6<sup>th</sup> Edition (U.S Customary (English) units).

Since the bike path and the third eastbound lane on the RSR Bridge will be initiated as a pilot program, any nonstandard features associated with this pilot program will be documented in the second Decision Document executed by both Caltrans and BATA. See Appendix H for the second Decision Document.

A kickoff meeting was held with Caltrans Headquarter Division of Design on March 3, 2015 to discuss the overview of proposed geometry and related design exceptions. Several focus meetings were held to discuss the geometry at the challenging areas of the project. A meeting was held on August 13, 2015 to discuss about the comments received from Caltrans on July 22, 2015. The discussion was primarily focused on the design exceptions at EB Main Street on- and off-ramps, East Standard Avenue, WB Stenmark off-ramp, and EB I-580 at Scofield. A follow-up meeting was held on September 30, 2015 to come to an agreement on the geometric configurations at EB

Main Street off-ramp and East Standard Avenue. The review comments from all of the focus meetings have been incorporated into the project geometry and this report

The 2015 Stewardship Agreement between Caltrans and FHWA has delegated to approval of design exceptions on all highways, including interstate, to Caltrans.

### 5.1.3.1 Mandatory Design Standards

The following mandatory exceptions were identified for the project. Fact Sheets for mandatory design exceptions have been prepared and approved by Caltrans District 4 on March 10th, 2016.

- The project proposes non-standard highway design speed and stopping sight distance (HDM Index 201.1, Table 201.1 and Index 203.1) at locations summarized in the table below:

**Table 11 Design Speed and Stopping Sight Distance**

Location	Station	Design Speed			Stopping Sight Distance		
		Standard (mph)	Existing (mph)	Proposed (mph)	Standard (ft.)	Existing (ft.)	Proposed (ft.)
EB I-580 Marin*	EB “MRN” 245+20 to “MRN” 248+90	55**	45	52	500	365	470
WB I-580 Stenmark Drive off-ramp*	WB “WST” 1010+00 to “WST” 1014+40	45	52	42	360	470	323
EB I-580 Contra Costa*	EB “CC-E” 1015+50 to “CC-E” 1018+40	55**	54	50	500	490	430
WB I-580 Contra Costa*	WB “CC-W” 1015+00 to “CC-W” 1017+95	50**	49	37	430	425	270
WB I-580 Contra Costa*	WB “CC-M” 1024+00 TO “CC-M” 1038+00	50**	41	41	430	315	315
East Standard Avenue*	EB “ESTD” 1043+50 TO “ESTD” 1045+70	35	15	15	250	103	102
Bikeway on EB Sir Francis Drake On-Ramp	N/A	25	14	14	150	90	90

\*\* Feature restricting sight distance is a concrete barrier. At these locations highway lighting is present, or proposed, such that a driver will be able to see over the barrier at all times and observe another vehicle in their lane or adjacent shoulder within the standard stopping sight distance. (Driver’s eye- 3.5’ – object height 4.25’)

\*\* A reduced “posted speed” is being proposed as part of the mitigation.

- The project proposes non-standard highway design speed (HDM Index 101.2) and vertical stopping sight distance (HDM Index 201.1) for the Main Street on-ramp. The proposed design speed on Main Street on-ramp is 25 mph for a 200-foot vertical crest. The standard is 35 mph.

- The project proposes to maintain the existing non-standard superelevation rates (HDM Index 202.2) at locations summarized in the table below:

**Table 12 Non-Standard Superelevation Rates**

Location	Station	Curve Radius (ft)	Curve Length (ft)	Standard Superelevation Rate	Existing / Proposed Superelevation Rate
Sir Francis Drake Blvd EB On-Ramp	N/A	520	550	12%	8%
Sir Francis Drake Blvd WB Off-Ramp	N/A	840	734	11%	8%
Francisco Blvd WB On-Ramp	N/A	50	72	12%	10%
Main St EB Off-Ramp	“MAIN01” 234+47 to “MAIN01” 236+33	1,042	186	10%	7%
Main St WB Off-Ramp	“MAIN03” 245+08 to “MAIN03” 247+77	960	268	10%	7%
Stenmark Dr WB On-Ramp	N/A	103	223	12%	7%
Stenmark Dr WB Off-Ramp	“WST” 1009+28 to “WST” 1012+86	490	107	12%	10%
Marine St EB Off-Ramp	“MRNE01” 1038+20 to “MRNE01” 1039+92	560	172	12%	8%

- The project proposes non-standard traveled lane widths (HDM Index 301.1) at locations summarized in the table below:

Location	Existing Lane Width	Proposed Lane Width
“CC-W” 1014+00 to “CC-M” 1034+50	12’	11’ & varies
“CC-E” 1007+39 to “CC-E” 1020+96	12’	11’ & varies

- The project proposes nonstandard shoulder (HDM Index 302.1), horizontal clearance (HDM Index 309.1(3)(a)), and median (HDM Index 305.1(3)(a)) widths at locations summarized in the table below:

**Table 13 Non-standard shoulders**

Location	Station	Inside/ Outside	Standard Shoulder Width	Existing Shoulder Width	Proposed Shoulder Width
EB I-580	“MRN” 247+94 to “MRN” 286+47	Outside	10’	4’ to 15’	0’ to 10’
	“MRN” 249+90 to “MRN” 286+47	Inside	10	0’	0’
EB/WB I-580	“MRN” 223+23 to “MRN” 249+90	Inside	10’	5’ to 10’	0’ to 10’
EB/WB I-580	“CC-E”/“CC-W” 1011+00 to “CC-M” 1039+42	Inside	10’	1’ to 4’	1’ to 4’
WB I-580	“CC-W” 1004+00 to “CC- M” 1034+50	Outside	10’	2’ to 10’	2’ to 10’
EB/WB East Standard Ave	“ESTD” 1045+00 to “ESTD” 1056+00	Inside	4’	2’	0’
EB East Standard Ave	“ESTD” 1045+00 to “ESTD” 1056+00	Outside	4’	7’	2’
WB East Standard Ave	“ESTD” 1049+14 to “ESTD” 1052+42	Outside	8’	8’	5.5’
EB I-580	“CC-M” 1039+42 to “CC- M” 1046+00	Outside	10’	10’	2’ to 5’
EB/WB I-580	“CC-M” 1039+42 to “CC- M” 1060+00	Inside	10’	2’ to 10’	2’ to 10’
Sir Francis Drake EB Blvd On-Ramp	N/A	Inside	4’	2’ to 4’	2’ to 4’
		Outside	8’	5’ to 8’	5’ to 8’
Sir Francis Drake Blvd WB Off-Ramp	N/A	Outside	8’	4’ to 8’	4’ to 8’
Francisco Blvd WB On-Ramp	N/A	Inside	4’	2’ to 4’	2’ to 4’
		Outside	8’	2’ to 8’	2’ to 8’
Main St EB Off-Ramp	“MAIN01” 234+52 to “MAIN01” 240+71	Inside	4’	2’	2’
Stenmark Dr WB On- Ramp	N/A	Outside	8’	0’	0’
Stenmark Dr WB Off- Ramp	“WST” 1007+15 to “WST” 1012+24	Inside	4’	2’ to 4’	2’ to 4’

- The project proposes to maintain the existing non-standard interchange spacing (HDM Index 501.3) of 3,000 feet between Sir Francis Drake Boulevard and Main Street Interchange; 1,500 feet between Marine Street and Stenmark Drive Interchange; and 1,600 feet between Marine Street and Castro Street Interchange. The standard interchange spacing in urban areas is one mile.
- The project proposes to maintain the existing non-standard isolated off-ramps and partial interchanges (HDM Index 502.2). The existing I-580 Main Street WB off-ramp terminates at the intersection of Main Street and Francisco Boulevard with the WB on-ramp located 1,100 feet downstream on Francisco Boulevard. This is considered an isolated off-ramp. The project also proposes

to maintain the existing nonstandard partial interchanges at Stenmark Drive, Marine Street, and Castro Street.

- The project proposes to maintain the existing non-standard freeway entrance (HDM Index 504.2(1)) at Western Drive EB on-ramp, which is located on the left side of EB I-580 mainline traffic. The standard entrance shall connect to the right of through traffic.
- The project proposes non-standard ramp deceleration length (HDM Index 504.2(2)) at the Marine Street EB off-ramp and the Stenmark Drive WB off-ramp. The deceleration length for the Marine Street EB off-ramp is 400 feet which is less than the standard 570 feet. The deceleration length for Stenmark Drive WB off-ramp is 162 feet which is less than the standard 470 feet.
- The project proposes to maintain the existing non-standard curve radiuses (HDM Index 504.3(3)) of 150 feet at the Marine Street EB on-ramp and 50 feet at the Francisco Boulevard on-ramp. The standard curve radius is 425 feet for 35 mph design speed.
- The project proposes non-standard Class I Bikeway Horizontal Clearance (HDM Index 1003.1(2) and 1003.1(2)) for the proposed 10-foot wide Class I bicycle path located in the Contra Costa County side adjacent to WB I-580 from Castro to Stenmark, along the connections to the RSR Bridge, and East Standard Avenue. The two-way bike path consists of 8-foot paved path with 1-foot shoulder on each side, and is enclosed by a concrete barrier on one side, and a retaining wall or bridge railing on the other. The standard shoulder for Class I bike path is 2 feet.
- The project proposes 1.5% cross slope on the shoulders of the bike paths adjacent to WB I-580 from Castro to Stenmark, along the connections to the RSR Bridge, and East Standard Avenue. The standard cross slope for Class I bike path is from 2% to 8%.

#### 5.1.3.2 Advisory Design Standards

The following mandatory exceptions were identified for the project. Fact Sheets for advisory design exceptions have been prepared and approved by Caltrans District 4 on April 20, 2016.

- The project proposes non-standard decision sight distance on a horizontal curve (HDM Index 201.7 and Table 201.7) at the WB I-580 Stenmark Drive off-ramp in Contra Costa County as summarized in the table below:

**Table 14 – Non-standard decision sight distance**

Location	Station	Design Speed			Decision Sight Distance		
		Standard (mph)	Existing (mph)	Proposed (mph)	Standard (ft)	Existing (ft)	Proposed (ft)
Western Drive I-580 WB off-ramp	WB "CC-W" 1020+00 to "CC-W" 1015+00	60	26	15	990	430	255

- The project proposes non-standard 2:1 embankment slope (HDM Index 304.1) adjacent to the Class I bike path at the Stenmark Drive off-ramp. The standard slope is 4:1 or flatter.
- The project proposes non-standard vertical curve length (HDM Index 204.4) of 200 feet at the Main Street on-ramp. The minimum vertical curve length for the design speed is 300 feet.
- The project proposes non-standard lane drop transition (HDM Index 206.3) rate of 32:1 for the Main Street on-ramp. The standard rate of convergence is 50:1.
- The project proposes non-standard design speed and alignment consistency at inlet nose (HDM Index 504.2 (4)(b)) at the Main Street EB on-ramp. The proposed vertical crest on the Main Street EB on-ramp limits the design speed to a maximum of 25 miles per hour at the inlet nose. The minimum speed at the inlet nose is 50 miles per hour.
- The project proposes to end the added lane on EB I-580 on the Marine Street Undercrossing. The standard is to not drop the mainline lanes through a local service interchange (HDM Index 504.6).

#### **5.1.4 Ramp Metering Policy Non-Compliance Features**

The following ramp metering policies, for which policy exceptions are requested, are based on the Ramp Meter Design Manual (RMDM) 2000. There are four on-ramps in the EB directions and two on-ramps in the WB directions within the project corridor. This project proposes to add capacity only in the EB direction. Consequently, this Ramp Metering Fact Sheet only addresses EB on-ramps within the limits of the proposed project. The four on-ramps in the EB direction are listed below:

**Table 15 – Ramp Metering Exceptions**

County	Direction	Post Mile	On-Ramp	Type of Work
Mrn	EB	2.53	Main Street	Ramp Metering / Ramp Modification
CC	EB	5.36	Marine Street	Ramp Metering / Modification
Mrn	EB	3.16	Sir Francis Drake Boulevard	No Work
CC	EB	5.84	Stenmark Drive	Restriping



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The following ramp metering exceptions were identified for the project. Fact Sheets for ramp metering exceptions have been prepared and approved by Caltrans District 4 on April 29, 2016.

- The project proposes to maintain the existing policy non-compliance feature of not including High Occupancy Vehicle (HOV) preferential lanes (RMDM Section 504.3) at Main Street and Marine Street on-ramps, where the ramp meters are provided. Policy requires an HOV preferential lane be provided at all ramp meter locations.
- The project proposes to maintain the existing policy non-compliance feature (RMDM Appendix IX) of not including ramp metering at Sir Francis Drake Boulevard and Stenmark Drive on-ramps. Policy indicates that if the project proposes a modification of the existing interchange, regardless of funding source, provisions for ramp meters should be included.

### ***5.1.5 California Highway Patrol Enforcement Areas***

With the conversion of the shoulders to a travel lane on the lower deck and to a bike/pedestrian path on the upper deck, California Highway Patrol will not be able to pull the vehicles over on the bridge. Instead, CHP may utilize the shoulders on the ramps and mainline downstream of the bridge to conduct enforcement activities. In addition, even with the re-designation of the lower deck right shoulder to a travel lane, CHP will be able to tow any disabled vehicles off the bridge immediately, even if the vehicle pulls over into the lane outside the peak period hours because disabled vehicles on bridges and tunnels can be towed away immediately.

### ***5.1.6 Park and Ride Facilities***

Park and ride facilities are not located within the project limits and the project does not propose any new ones.

### ***5.1.7 Utility and Other Owner Involvement***

Several utilities are found within the project limits. The project has identified and applied for approval for Encroachment Policy Variance Request (EPVR) for existing AT&T conduits, PG&E conduits and overhead electrical lines, East Bay Municipal Utility District (EBMUD) waterlines, and Marin Municipal Water District waterlines, Chevron oil, salt water transite and steam pipes, and telecommunication and electrical lines, City of Richmond sewer line, and Trans Bay Cable submarine cable to remain in place within the State right-of-way. The following utilities will be relocated under this project:

- A portion of the existing 12-kV PG&E overhead electrical lines along the Stenmark Dr. off-ramp
- A 12” EBMUD water line along Stenmark Dr off-ramp
- A 12-kV PG&E distribution lines along E. Francisco Boulevard in San Rafael
- AT&T and Comcast cables along Francisco Boulevard E. in San Rafael
- Water line along Francisco Boulevard E. in San Rafael
- Gas line along Francisco Boulevard E. in San Rafael
- Electrical and communications lines owned by Chevron across I-580 and on Office Hill (Chevron property south-east of Scofield Bridge)

The utilities requested for exceptions are not in conflict with the proposed work nor will they affect traffic on I-580. An Encroachment Policy Variance Request (EPVR) was prepared to document the utility findings and a conceptual approval was received from Caltrans Division of Design on 6/30/2016.

#### ***5.1.8 Railroad Involvement***

Railroad involvement is not anticipated within the project limits.

#### ***5.1.9 Highway Planting***

The project will have minimal impact to existing planting and vegetation as most of the construction will occur within the existing right-of-way where much of the existing terrain has been already disturbed and paved. For areas where the project will impact existing vegetation, the project will replant and re-vegetate these areas with similar plants and shrubs that match the existing vegetation. Landscape and irrigation plans have been prepared for the project and reviewed by Caltrans Landscape Unit. The replacement and mitigation tree planting will be irrigated by bubblers or drip from irrigation systems served by existing potable water meters. The plant establishment period for replacement and mitigation tree planting will be Type 2 with a 250 working day period.

#### ***5.1.10 Storm Water Management***

The project would avoid Environmentally Sensitive Areas (ESAs) in or adjacent to the project limits. The proposed ESAs include designated biological habitat and wetlands, and other waters of the U.S. and the state. Measures would be employed to prevent construction material or debris from entering surface waters or their channels. Best Management Practices (BMPs) for erosion control would be implemented and be in place prior to, during, and after construction in order to ensure that no silt or sediment enters surface waters.

Erosion control measures will be applied to all exposed areas during construction, including the trapping of sediments within the construction area through the placing of barriers, such as silt fences, at the perimeter of downstream drainage point or through the construction of temporary detention basins. Other methods of minimizing erosion impacts include the implementation of hydro-mulching and/or limiting the amount and length of exposure of graded soil.

Permanent erosion control measures would be applied to all new or exposed slopes in consideration of downstream effects. Permanent erosion control BMPs would be addressed as part of the project design process.

Further discussion of temporary and permanent erosion control measures proposed for use with other BMPs that avoid/minimize impacts to water quality can be found in Section 6.5.9. The Storm Water Data Report prepared for this project is included in Appendix H.

#### ***5.1.11 Non-motorized and Pedestrian Features***

As previously stated, the project will propose a 10-foot bicycle/pedestrian path in Contra Costa County (Element 2) and on the RSR Bridge and E. Francisco Boulevard in Marin County (Element 3). This bicycle and pedestrian path will add another 5.5 miles of new trails to the already constructed 343-mile San Francisco Bay Trail (Bay Trail) that surrounds the entire San Francisco Bay. The 5.5 mile connection will tie to 55 miles of existing/planned Bay Trail segments in Richmond and another 10 miles of existing trails in Marin. The proposed bicycle/pedestrian path will be compliant to the America with Disabilities Act (ADA) with Design Information Bulletins (DIB) 81 and 82.

On the Contra Costa County side, the project will connect the existing bike and pedestrian facilities on Castro St and Tewksbury Ave to the proposed Point Molate trail through a new bike/pedestrian path on E. Standard Ave and the new path on the north side of I-580. This path will replace the current bike access to the I-580 shoulders in both directions. On E. Standard Ave, a concrete barrier will separate the two-way bicycle and pedestrian traffic from the traffic lanes. The existing connection from E. Standard Ave to Tewksbury Ave will be maintained. The intersection at Tewksbury/Standard/Castro will also be improved to provide better connection from the proposed path to the existing bus stop.

A Class I 14-ft bike and pedestrian path will be constructed along the south side of Stenmark Drive to provide connection from the path on the Stenmark Dr off-ramp to

the Point Molate Trail and the existing path under the RSR Bridge. The path along Stenmark Dr will be separated from the travel lanes by a wide buffer.

On the Marin County side, the 10-ft Francisco Boulevard Class II bikeway on sidewalk will connect the proposed upper deck path to Grange Avenue and the bike path on the westbound Sir Francis Drake Boulevard off-ramp. This path will be built following City of San Rafael standards for sidewalk design and therefore will be built behind a curb and at a higher elevation than the adjacent roadway surface.

In the eastbound direction, the Sir Francis Drake EB on-ramp will be widened slightly on the left side to allow shifting the traffic lanes and providing a wider right shoulder around the curve. A 6-inch wide rumble strip will be installed along the outside edge of traveled way with flexible pavement delineators installed 2-ft into the shoulder, leaving a 6-ft one-way bicycle lane. The rumble strip from the EB Sir Francis Drake Boulevard will continue all the way to the gore area of the EB Main Street Off-ramp. The use of delineators and the rumble strips will warn the drivers entering the freeway at this location of the potential bicycle traffic riding along the shoulder at this location.

The project signage plans include destination signs (including trail maps) that direct the users to the various scenic destinations that can be reached with the new path and the approximate distance to these destinations. Additional information signs about the scenic views from the RSR Bridge or the connecting paths may be added to the project to provide information about the landmarks that can be seen from the new path.

#### ***5.1.12 Needed Roadway Rehabilitation and Upgrading***

There will be minor widening along the EB mainline and shoulder for Element 1 improvements and widening at Scofield Avenue Undercrossing for Element 2 improvements. Based on visual inspection, the existing pavement in areas of where the project is widening have recently been resurfaced and is in acceptable condition. Therefore, no rehabilitation work on existing facilities is required. As discussed in section 3.3, the at-grade portions of I-580 in Contra Costa County between the Toll Plaza and Marine Street Interchange has been resurfaced during the Scofield Re-decking Project in 2013 and segments in Marin County were most recently resurfaced in 2011.

### 5.1.13 Structural Pavement Recommendation

The pavement design was performed in accordance to standard Caltrans procedures as outlined in Highway Design Manual, Section 630. The recommended flexible and rigid structural pavement sections are tabulated in the following tables.

**Table 16 – Pavement Structural Sections**

Location	T.I	R-value	Flexible Structural Pavement Section (ft)											
			Option 1*					Option 2				Option 3		
			RHMA-G	HMA	ATPB	HMA	LCB	AS	RHMA-G	HMA	AB	AS	RHMA-G	Full Depth HMA
Main Line	12	10	0.15	0.65	-	-	0.35	1.30	0.15	1.40**	0.35**	-	0.20	1.35
	12.5		0.15	0.7	-	-	0.35	1.35	0.15	1.40**	0.35**	-	0.20	1.40
I-580 (EB) Main Street/San Quentin On-Ramp	10		-	-	-	-	-	-	0.15	0.40	0.75	1.10	-	-
I-580 (EB) Marine Street Off-Ramp	10.5		-	-	-	-	-	-	0.15	0.40	0.85	1.15	-	-
I-580 (WB) Western Drive Off-Ramp	7		-	-	-	-	-	-	0.15	0.20	0.55	0.70	0.20	0.65
Main Street	9.5		-	-	-	-	-	-	0.15	0.35	0.75	1.00	0.20	1.00
Francisco Blvd	9.5		-	-	-	-	-	-	-	0.50	0.75	1.00	-	1.20
Bike Path	5		-	-	-	-	-	-	-	0.25	0.35	0.45	0.20	0.40
I-580 (WB) Main Street Off-Ramp	8		-	-	-	-	-	-	0.15	0.25	0.65	0.80	-	-
E. Standard Ave (Westbound)	11		0.15	0.30	0.25	0.10	0.35	0.65	-	-	-	-	-	-
E. Standard Ave (Eastbound)	9		0.15	0.30	0.25	-	0.35	0.65	-	-	-	-	-	-
Castro Street (Southbound)	11		-	-	-	-	-	-	0.15	0.45	0.85	1.20	0.20	1.20
Castro Street (Northbound)	9		-	-	-	-	-	-	0.15	0.30	0.75	0.95	0.20	0.95
I-580 (EB) Sir Francis Drake On-Ramp	9		-	-	-	-	-	-	0.15	0.30	0.75	0.95	0.20	0.95

\* Depth of HMA has been adjusted to match the existing pavement above ATPB layer.

\*\* Depth of HMA and AB has been adjusted to match the existing pavement. TI - Traffic Index

RHMA-G – Rubberized Hot Mix Asphalt – gap-graded HMA - Hot Mix Asphalt (Type A)

ATPB - Asphalt Treated Permeable Base

AB - Aggregate Base (Class 2) with R-value of 78 LCB - Lean Concrete Base

AS - Class 2 Aggregate Subbase

### 5.1.14 Estimated Cost

A summary of estimated cost for each element is summarized below. See Appendix C for detailed estimate cost breakdown.

<u>Estimated Construction Cost:</u>	<u>ELEMENT 1</u> <u>(3rd EB Lane)</u>	<u>ELEMENT 2</u> <u>(Bike/Ped Path-CC)</u>	<u>ELEMENT 3</u> <u>(RSRB Bike/Ped)</u>
Roadway Items:	\$ 19,796,323	\$ 4,713,817	\$ 15,100,241
Structures Items:	\$ 7,676,247	\$ 2,325,105	\$ 2,838,905

Subtotal:	\$ 27,472,570	\$ 7,038,922	\$ 17,939,146
<u>Right-of-way Cost:</u>			
Right-of-Way Capital:	\$ 1,257,438	\$ -	\$ 810,810
Total Capital Outlay:	\$ 28,731,000	\$ 7,038,922	\$ 18,750,000
<u>Engineering Costs:</u>			
Engineering (PID, PA&ED, PS&E)	\$ 4,499,100	\$ 603,800	\$ 206,500
Right-of-Way Support:	\$ 30,000	\$ -	\$ 70,000
Project Oversight @ 10%	\$ 2,514,100	\$ 644,100	\$ 1,641,700
Construction Admin @ 12.5%	\$ 3,143,700	\$ 805,200	\$ 2,052,100
Subtotal:	\$ 10,186,900	\$ 2,073,100	\$ 3,970,300
Total:	\$ 38,950,000	\$ 9,100,000	\$ 22,750,000

\* Operating and Maintenance Cost for the moveable barrier (Element 3) is estimated at \$275,000 per year, including \$21,000 per month rental cost of the Barrier Transfer Machine.

## 5.2 REJECTED ALTERNATIVES

The following alternatives were considered and rejected since they do not support the project needs.

### 5.2.1 *The No Project Alternative*

The “No Project” alternative assumes no construction on the I-580 Richmond-San Rafael Bridge corridor between Richmond Parkway in Contra Costa County and Sir Francis Drake Boulevard in Marin County. Under this alternative, the existing I-580 would remain unchanged. The no-project alternative is not recommended because it does not meet the purpose and need of the project and will provide no improvements compared to the existing or future conditions.

### 5.2.2 *Shuttle Alternative*

This alternative proposes that the project provide a bicycle shuttle from the RSR Bridge Toll Plaza to the Richmond Parkway off-ramp during the PM peak hours and maintain bicycle access to the shoulders of I-580 outside the PM peak hours (when the peak period use lane is not in operation).

Given the fact that bicycle access is currently allowed on the shoulders of I-580, the use of shuttle service was not deemed a viable alternative as a permanent feature to

accommodate bicycle and pedestrian use along this corridor, following conversion of the shoulder to a traffic lane.

### **5.2.3 Other Rejected Alternatives Studied**

The following alternatives were studied as part of Element 2, variation of bike paths in Contra Costa County between the Toll Plaza and Marine Street. These alternatives were eliminated from further study because they do not provide the same value of the elements selected to go forward.

#### **5.2.3.1 Southside Alternatives (Along EB I-580)**

All the south side alternatives utilize the existing paths under the eastern abutment of the RSR Bridge and along the south shoulder of I-580 at the Toll Plaza leading to the Scofield Avenue Undercrossing, and provide a bicycle/pedestrian path connection from Marine Street to the existing Bay Trail.

##### **Alternative S-1A – At-Grade Alternative with Widening of Scofield Avenue Undercrossing**

This alternative proposes to widen the I-580/Scofield Avenue Undercrossing to accommodate a 14-foot bi-directional bike path along eastbound I-580 separated from the traffic lanes by a concrete barrier. After the bike path crosses the Chevron pipes and Scofield Avenue, the alignment will loop down along the south side of I-580 (along the slopes of Office Hill) and cross underneath I-580 at-grade along the eastside of Scofield Avenue. When the bike path reaches the north side of I-580, the path alignment climbs back up along the I-580 embankment and connects to the existing bike path at Marine St. This section of the alignment will also be separated from the traffic lanes by a concrete barrier.

Alternatively, and in lieu of the north side alignment along the embankment of I-580, a protected and secured at-grade path alignment through the Chevron property can be considered to connect the bike path from Scofield Avenue to Marine Street. This alternative was rejected by Chevron because this alignment passes through the high-security areas within the Chevron refinery.

##### **Alternative S-1B – At Grade Alternative with Separate Scofield Avenue Structure**

Similar to Alternative S-1A, this alternative proposes a separate bike path overcrossing structure across Scofield Avenue and the Chevron pipes parallel to and south of I-580.

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**Alternative S-2A – Standard Geometry Bike Path Alternative On-top of Office Hill**

This alternative proposes to widen the I-580/Scotfield Avenue Undercrossing to accommodate a 14' bi-directional bike path separated from the traffic with a concrete barrier. After the bike path alignment crosses the Chevron pipes and Scotfield Avenue, the bike path will climb up the slopes of Office Hill (Chevron properties) through a curved path to reach the top of the retaining walls on the south side of I-580. The curvature and grade of this path meets the standard design geometry for path design and will require a larger footprint that includes acquiring an easement from Chevron. The bike path alignment continues eastward and travels on an elevated structure adjacent to and above the shoulder of the I-580 EB off-ramp to Marine Street. This elevated structure will connect the bike path from the top of the hill to the at-grade elevations on the south side of I-580 Marine Street interchange.

**Alternative S-2B - Non-Standard Geometry Bike Path Alternative On-top of Office Hill**

This alternative is similar to Alternative 2A except that the curved alignment between the Scotfield Avenue Undercrossing and the top of the existing retaining wall is replaced with smaller radius switch-back alignment that will require approval of several design exceptions and construction of retaining walls between the switch-backs. This alternative would require less R/W take from the Chevron properties.

**Alternative S-3 – At Grade Alternative with Widening of I-580 EB Shoulder**

This alternative proposes to widen eastbound I-580 and construct a 14-foot two-way bike path separated by a concrete barrier from traffic in the eastbound direction. This option will require widening the Scotfield Avenue Undercrossing and reconstructing the existing retaining walls further away from the existing edge of the traveled way to accommodate the bike path. Widening Scotfield Ave Undercrossing will require constructing additional bent and foundation support to extend the deck. These columns and foundations will require significant measures to protect the Chevron pipes and may require relocating some of the pipes to create the space needed for the footings. Reconstructing the wall further away to accommodate both the bike path and the stopping sight distance around the curve would result in the tie-backs extending beyond the existing Caltrans right-of-way and result in the need for an easement from Chevron. The segment west of the Scotfield Avenue Undercrossing is the same as in alternatives S-2A and S-2B.



**Alternative S-4 - City of Richmond’s San Francisco Bay Trail–Castro Street to the Richmond-San Rafael Bridge Study – Separate study sponsored by City of Richmond.**

The proposed trail alignment for this segment between Marine Street and the Toll Plaza involves construction of two elevated trail structures primarily within State Right-of-Way, the first of which begins just west of Marine Street and climbs above the existing retaining walls along the south side of the freeway. The second elevated trail structure crosses briefly through Chevron-owned property over Scofield Avenue and the Long Wharf facility ending in the State Right-of-Way on the freeway shoulder south of the Toll Plaza.

The proposed alignment would include approximately 500 feet of barrier-separated trail at the base of the existing retaining wall to a 1,200-foot long elevated structure climbing at a grade of 5% or less to the hillside above western-most retaining wall. An 800-foot long section of at-grade hillside trail above the retaining wall would lead to a 1,000-foot long elevated structure descending at a grade of 5% or less to the south shoulder of the freeway.

As mentioned at the end of Project History section, this study was put on hold because the implementation of the RSR Access Improvement Project will negate the need to continue studying this alternative. In addition, the lack of available funding reduces the feasibility of constructing this S-4 alternative which is significantly more expensive than the alternative adopted in the RSR Access Improvement Project. The difference in cost between the two alternatives is attributed to the large number of structures that will need to be built under Alternative S-4.

***5.2.3.2 Northside Alternatives (Along I-580 WB)***

**Alternative N-1** proposes to widen westbound I-580 and construct a two-way bike lane separated by a concrete barrier from the traffic lanes in the westbound direction between the existing Marine Street bicycle access and Stenmark Drive off-ramp. This option will require widening of the Scofield Avenue Undercrossing, and reconstruction of retaining walls towards Chevron’s property. In order to accommodate the structure widening, at least 4 Chevron pipes will need to be relocated.

This alternative has been removed from consideration for the following reasons:

- Cost to relocate these Chevron pipes. There are no feasible locations to re-route these pipes crossing I-580.

- Scofield Avenue Undercrossing will require substantial retrofitting to accommodate additional loads.

The existing I-580 alignment was constructed adjacent to these Chevron pipes with minimum horizontal and vertical clearances due to prior rights.

**Alternative N-2** proposed a 4.75' wide two-way bicycle-only alternative on the upper deck of the Richmond San Rafael Bridge. This alternative maintained a narrow right shoulder on the bridge. This alternative was not supported by the active transportation groups and did not close the gap in the Bay Trail on the bridge because it did not provide pedestrian access. Ultimately, this alternative was removed from further consideration during the environmental phase.

## 6 CONSIDERATIONS REQUIRING DISCUSSION

### 6.1 HAZARDOUS WASTE

The soils and groundwater under I-580 within the project limits is likely contaminated with petroleum hydrocarbons and heavy metals (including aurally deposited lead). Portions of the ROW may have been constructed above a land fill area. Due to the age of structures in the ROW (excluding the Richmond-San Rafael Bridge itself), there is the potential for presence of asbestos-containing material (ACM) and Lead-based paint (LBP). A mitigation plan outlining health and safety measures and soil and groundwater management procedures will need to be developed by the contractors prior to construction. No other existing or potential sources of hazardous waste contamination were identified.

### 6.2 VALUE ANALYSIS

Seven value analysis (VA) alternatives were developed by the VA team for improvements to the project. The seven VA alternatives are as follows:

- Use K-rail barrier in lieu of movable barrier in the bike path
- Use Type 60GA permanent bike lane barrier on the bridge in lieu of movable barrier
- 2.1 Construct Retaining Wall #4 as a separate contract
- 2.2 Eliminate Retaining Wall #4
- 3.0 Prepare temporary support design prior to bid to expedite schedule
- 4.0 Eliminate active traffic management in eastbound direction and keep third lane open full time
- 5.0 Maintain existing bridge railing/barrier height

The project team considered the VA team recommendations and decided to implement recommendation #3 – Prepare Temporary Support Design Prior to Bid. The other VA recommendations were rejected because they did not meet the project purpose or did not provide the estimated benefit without compromising other design criteria.

### **6.3 RESOURCE CONSERVATION**

The energy impacts of transportation projects are typically divided into two areas: (1) the direct energy required for ongoing operations in this case, the use of petroleum-based fuels and alternative fuels for motor vehicle travel within the project area, - and (2) the indirect energy required to produce the materials for and to carry out construction of the project. In the long term, the direct, or operating, energy requirements are usually greater and of primary importance.

The proposed project will improve traffic operations and facilitate traffic movements through the project area. The lessening of congestion and related traffic delay is associated with faster average travel speeds and more efficient vehicle operation compared to no-build conditions. Improved operations are likely to reduce vehicle energy use, whether in the form of petroleum fuels or alternative sources of energy.

In addition, the accommodation of the bike and pedestrian traffic on the RSR Bridge would provide the opportunity to shift some of the trips made by personal auto to a bicycle trip. For these reasons, the proposed project would be anticipated to have a beneficial or, at worst case, neutral effect on direct energy use.

No major facilities can be salvaged or relocated from this project. However, whenever possible, existing roadway items such as signs, light standards, guardrails, and other associated hardware will be relocated or stockpiled to be used at a later date. Removal of existing asphalt concrete pavement is anticipated to be negligible for this project. There will be concrete removal due to the demolition and reconstruction of Retaining Walls #4 and #7.

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## 6.4 RIGHT-OF-WAY

### 6.4.1 *Right of Way Required*

The project will acquire an easement from Chevron for the portion of the bicycle/pedestrian path that will be constructed within Chevron's property by the Caltrans maintenance yard along Stenmark Drive in Richmond.

Existing overhead electrical line owned by PG&E along the I-580 Stenmark Drive Road off-ramp have been identified to be in conflict with construction of proposed retaining wall(s). The power line poles will be relocated within the existing Caltrans and City of San Rafael right-of-way.

On the San Rafael side, the project will have minor impact to existing landscaping and irrigation systems located along Francisco Blvd. These systems will be adjusted to accommodate the required improvements. In addition, a total of seven driveways will be modified to conform to the new widened sidewalk, which will include the bike path, on the north side of E. Francisco Blvd. It is envisioned that the modifications to the landscaping and irrigation systems, and driveways will be done under a "permit to enter and construct" arrangement with the property owners.

There is an existing opening in access control that allows bicycles to enter Caltrans right of way from Francisco Blvd and ride on the Sir Francis Drake Blvd WB off-ramp fly-over right shoulder. This opening in access control allows continuous bicycle access from San Rafael to Larkspur through Sir Francis Drake Blvd. The project will maintain this access opening. The following private and public access openings have been documented in an encroachment exception approval request memorandum submitted to Caltrans for approval on 05/02/2016.

- Bicycle access from Francisco Blvd to Sir Francis Drake
- Chevron access to Gate 90 off Stenmark Dr off-ramp
- Bicycle and pedestrian access from Stenmark Dr to the existing bike path underneath the RSR bridge

Refer to Appendix E for the project right-of-way data sheet.

### 6.4.2 *Utilities*

Several utilities are found within the project limits. The project has identified and applied for approval for Encroachment Policy Variance Request (EPVR) for existing AT&T conduits, PG&E conduits and overhead electrical lines, East Bay Municipal Utility District (EBMUD) waterlines, and Marin Municipal Water District waterlines, Chevron’s oil, salt water transite, and steam<sup>1</sup> pipes, telecommunication and electrical lines, City of Richmond’s sewer line, and Trans Bay Cable submarine cable to remain in place within the State right-of-way.

The following utilities will be relocated under this project:

- A portion of the existing 12-kV PG&E overhead electrical lines along the Stenmark Dr. off-ramp. PG&E’s overhead electrical line crosses I-580 just east of the sign bridge at the toll plaza to a pole on the north side of I-580 and then follows westerly along the State right-of-way, more or less. This pole and the pole immediately to the west are in conflict with the proposed bike path and there is not sufficient space in which to relocate the pole within the right-of-way. This portion of the PG&E line will be relocated underground within the existing right of way.
- A 16” EBMUD water line along Stenmark Dr off-ramp
- A 12-kV PG&E distribution lines along E. Francisco Boulevard in San Rafael
- AT&T cables along Francisco Boulevard E. in San Rafael
- Marin Municipal Water District 8” and 6” water lines along Francisco Boulevard E. and Main Street in San Rafael
- PG&E 1.25” to 2” distribution gas line along Francisco Boulevard E. in San Rafael

The utilities requested for exceptions are not in conflict with the proposed work nor will they affect traffic on I-580. An Encroachment Policy Variance Request (EPVR) was prepared to document the utility findings and Caltrans Division of Design is in the process of reviewing. If exceptions are not granted, the subject utilities will have to be relocated.

### 6.4.3 *Relocation Impact Studies*

The proposed project does not require relocation of any residences and businesses and therefore will not need a final relocation impact study/statement (FRIS).

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<sup>1</sup> The Chevron steam line is used to (usually) heat the crude or refined product that is being transported from the plant to the tanker (ship) or vice versa. The transite salt water line is used to made of transite material and carry salt water to the refinery.

#### **6.4.4 *Airspace Lease Areas***

There is one airspace lease located at FLA # Mrn-101 BT 43 within the limits of the project area.

### **6.5 ENVIRONMENTAL**

The environmental document prepared for the project is a Categorical Exemption under the General Rule Exemption (CCR 15061[b][3]) of the State CEQA Guidelines and Categorical Exclusion under the National Environmental Policy Act (NEPA) 23 CFR 771.117[a) and NEPA Assignment 23 USC 237. The project is expected not to have a significant impact or environmental effects. See Appendix G for CE/CE certification form.

The following environmental technical documents were prepared for the project.

- Air Quality Report (AQR)
- National Environment Study (NES)
- Noise Study Report (NSR)
- Noise Abatement Decision Report (NADR)
- Location Hydraulic Study (LHS)
- Community Impact Assessment Memo (CIA)
- Environmentally Sensitive Area Action Plan (ESA)
- Historical Property Survey Report (HPSR)
- Historical Resources Evaluation Report (HRER)
- Paleontological Identification Report (PIR)
- Preliminary Geotechnical Report (PGR)
- Storm Water Data Report (SWDR)
- Minor Level Visual Impact Assessment (VIA)
- Water Quality Report (WQR)
- Wetland Delineation
- Archaeological Survey Report (ASR)
- Phase I Initial Site Assessment (ISA)
- Extended Phase I Archeological Report (XP1)
- Finding of Effect (FOE)

#### **6.5.1 *Cultural Resources***

Cultural resource studies identified one historic built resource and three archaeological resources within the Area of Potential Effects (APE). The Richmond-San Rafael Bridge was found eligible for the National Register of Historic Places

(NRHP) under Criterion C and the California Register of Historical Resources under Criterion 3 as a significant representation of a long span, cantilever truss bridge built in the 1950's. The State Historic Preservation Officer concurred with this determination on March 10, 2016. Three archaeological resources were assumed eligible for the NRHP pursuant to Stipulation VIII.C.3 of the January 2014 First Amended Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation regarding compliance with Section 106 of the National Historic Preservation Act, as it pertains to the administration of the Federal-Aid Highway Program in California (Section 106 PA).

All project activities affecting the Richmond-San Rafael Bridge will comply with the Secretary of the Interior's Standards (SOIS), pursuant to Stipulation X.B.1.b of the Section 106 PA. The archaeological resources will be avoided and protected through the establishment and effective enforcement of vertical and horizontal Environmentally Sensitive Areas (ESA), pursuant to Stipulation X.B.1.a and Attachment 5 of the Section 106 PA. The vertical ESA restricts any subsurface work below 3 feet from ground surface. The project will result in a finding of No Adverse Effect pursuant to Stipulation X.B.1 of the Section 106 PA.

### ***6.5.2 Visual Impact Assessment***

The project will result in less than significant visual impacts. The project will result in new, panoramic views of the San Francisco Bay for bicyclist and pedestrians on the Bridge and will result in minor additions to the bridge and existing roadway. The largest visual changes will take place around proposed retaining walls. Net visual resource change is anticipated to be negligible. Any native tree species removed during construction will be replaced at an approximate ratio of 1:1 to mitigate visual impacts.

### ***6.5.3 Air Quality Report***

The project was presented to the MTC's Air Quality Conformity Task Force on February 25 and April 28, 2016 and was determined not a project of air quality concern (POAQC) and would not cause or contribute to new, localized PM<sub>2.5</sub> violations or cause violations of the National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO). CO hot-spot modeling found that local violations of the National Ambient Air Quality Standards (NAAQS) would not occur as a result of the project. The hot-spot modeling results satisfy the Project Level Conformity requirements identified in 40 CFR 93.116(a). VII Mobile source air

toxics (MSAT) and greenhouse gas (GHG) emissions were modeled using estimates of eastbound and westbound peak period and off-peak period traffic volumes and speeds. Emissions for all MSATs are projected to decrease over existing conditions, with the exception of the diesel particulate matter where there will be a slight increase over the existing conditions. There will be no change in the Average Annual Daily Traffic (AADT) between the Build and No-Build alternatives in the Opening year (2020) or the Horizon Year (2040); there will be an increase in the traffic volumes during the peak periods. Emissions under the Build Alternative would be slightly lower than the No-Build scenario. GHG emissions were predicted both without and with the Pavley and Low Carbon Fuel Standard (LCFS) requirements. The net difference between the existing and Build scenario shows that the GHG emissions are predicted to be reduced due mostly to the Pavley and LCFS requirements. For the GHG emissions, the slightly higher traffic volumes and speed during the peak period under the Build Alternative will result in lower GHG emissions when compared to the No-Build scenario.

Construction emissions would not be significant with the implementation of feasible control measures as specified in the BAAQMD California Environmental Quality Act (CEQA) Guidelines. Implementing appropriate dust control measures, along with measures to reduce diesel exhaust, would satisfy BAAQMD CEQA requirements for transportation projects. Caltrans special provisions and standard specifications will include the requirement to minimize or eliminate dust through application of water or dust palliatives.

#### **6.5.4 Community Impact Assessment**

The project improvements takes place within an existing highway facility in a previously built up area and will not lead to land use or growth changes. All project elements will be constructed within the existing right-of-way, except for a portion of the bicycle pedestrian path in Contra Costa County which will connect through an easement through Chevron property. The project will not relocate or displace residences, negatively impact or disrupt community character or cohesion, or impact local businesses. Potential construction period impacts include short term single-lane westbound and eastbound RSR Bridge closure. The project is consistent with both the San Rafael and Richmond General Plans.

Disadvantaged communities are not within the project limits on either the Marin or Contra Costa sides of the Bridge.



### **6.5.5 Preliminary Geotechnical Report**

Geotechnical investigations of the project site found that the subsurface soils and bedrock generally consist of soft to hard clay and silt with interbedded layers of loose to dense clayey sand, silty sand and gravel, underlain by dense to very dense sand or weathered shale/ claystone/siltstone/sandstone. Groundwater was encountered between elevation +90.8 feet and +93.4 feet and between 7 feet and 18 feet below the existing ground during drilling. The proposed project is located in a seismically active area, with peak ground accelerations (PGAs) ranging from 0.60g to 0.68g for the bridge structures. No known active faults pass through the project alignment. The liquefaction potential is considered to be “Low” to “Moderate” in general along the project corridor; however portions of the project cross narrow zones that are “Very High”. Retaining walls 4 and 7 will replace the existing tie back wall, where there is a potential susceptibility to landslides between Western Avenue and Marine Street.

### **6.5.6 Paleontology Identification Report**

The analysis of paleontological resources on the project site concluded that earthmoving is unlikely to reveal fossils/ fossil assemblages in situ because the project area is underlain by recent artificial fill over Quaternary marine deposits, Cretaceous Franciscan Complex sedimentary rocks, and Jurassic or older Franciscan Complex mélangé. A Paleontological Mitigation Plan is not required; however the information for a qualified paleontological firm should be kept on hand in the unlikely event that any fossils are encountered.

### **6.5.7 Natural Environmental Study**

#### **Protected Species**

With the incorporation of the following avoidance and minimization measures (AMMs), the project will have a no adverse impact” on protected species or their habitat:

- The rare San Francisco gumplant (*Grindelia hirsutula* var. *maritima*) was found within Marin County near the project. The proposed project will completely avoid the area where the San Francisco gumplant population occurs.
- Tree removal or alterations will be avoided wherever possible. Prior to any tree removals or alterations, a survey will be conducted to identify potential structural issues that could result in safety hazards, and ensure remaining trees can withstand strong winds. In order minimize impacts to nesting bird habitat, for removal of trees within Caltrans ROW, the goal of landscaping will be to replace native trees at a 3:1 ratio. Trees will be replaced in-kind or with trees

from other native species; they will be planted close to the original removal location if possible, or at minimum within the same county. Tree removals will not have a net impact on availability of nesting habitat because of the amount of conserved habitat nearby, and by the replanting of native tree species nearby.

- No more than 2 weeks prior to tree removal, a qualified biologist will conduct a preconstruction survey of trees with 12 inches or greater diameter at-breast-height (dbh) for crevices and cavities that can provide roosting habitat or support active roosts. The concrete portions of the bridge structure will also be surveyed for roosting bats no more than 2 weeks prior to start of bridge work. If potential roosting habitat or active roosts are identified, the project will implement AMMs determined in consultation with CDFW.
- Accidental discharge of pollutants will be prevented by implementing water pollution control measures that are incorporated into the project design and construction, as described in Section 4.1.3 and in the Stormwater Data Report (HNTB, 2016). The Contractor(s) performing work on the RSR Bridge will be required to comply with Caltrans' Construction Site Best Management Practices, "Material and Equipment Use Over Water NS-13" (Caltrans 2003) to prevent construction-related debris from falling off the bridge.
- The majority of the work on the Bridge will be restricted to the upper side of both decks. The only work that will take place below the surface of the lower deck will be in the utility tray and to run electrical cables to the substations below Piers 34 and 48. During the breeding season, the following AMMs are required to prevent impacts to special-status birds:
  - a. Pre-construction surveys for nesting birds will be conducted by a qualified biologist no more than 72 hours prior to the commencing construction activities during the breeding season (February 15 to August 31). Surveys will cover any potential nesting substrates within 300 feet of construction activity.
  - b. If an active nest is observed either during pre-construction surveys or in the course of project construction, a non-disturbance buffer will be established 300 feet around active raptor nests, 100 feet around cormorant nests, or 50 feet around active passerine nests, or larger if necessary to eliminate the effects of the disturbance on the nesting birds. If any work was proposed to occur within established buffer zones, a nest monitoring plan must be prepared and approved by CDFW and USFWS prior to implementation.
  - c. If it is necessary for construction to prevent any birds from nesting at a specific location, a nesting bird exclusion plan will be prepared by the Contractor. It will specify what Caltrans-approved exclusion measures can be used under what conditions. The exclusion plan will be approved by Caltrans and CDFW and/or USFWS prior to implementation.

- Harbor seals, protected marine mammals, are known to utilize Castro Rocks near the RSR Bridge as a haul-out site during low tides. The following AMMs will be required to protect the harbor seals:
  - a. Year-round:
    - (1) Work is not allowed under the lower deck between Piers 52-57.
    - (2) Daytime work between Piers 52 and 57 that generates noise levels greater than or equal to 90 dBA will be limited to 2 hours before high tide until 2 hours after high tide.
    - (3) Nighttime work between Piers 52 and 57 that generates noise levels greater than 72 dBA will be limited to 2 hours before high tide until 2 hours after high tide.
  - b. During pupping season (March 15 to August 1):
    - (1) Work between Piers 52-57 is only allowed on the north side of the upper deck (north of the broken line between the 2 existing travel lanes).
  - c. Outside of pupping season (August 2 to March 14):
    - (1) Work is allowed on the north side of both decks at any time of the day
    - (2) Work on the south side (south of the broken line between the 2 existing travel lanes) of both decks, between Piers 52-57, is limited to 2 hours before high tide until 2 hours after high tide. No work is allowed between Piers 52-57 outside of the 4 hour high tide window.
    - (3) Work that requires construction crews to be visible to Castro Rocks will be limited to periods of high tide between Piers 52 and 57. With approval from Caltrans, a visual screen of fabric or a structure could be erected in this area during high tide to shield the work crews from view by the harbor seals.

### ***6.5.8 Wetlands and Floodplain***

Permanent or temporary impacts are not anticipated to wetlands or waters of the United States. Five potential wetlands/waters of the U.S. were found near the project in Marin. Based on the wetland delineation conducted for the NES, these aquatic features likely fall under the jurisdiction of the USACE (based on Section 404 of the federal Clean Water Act (CWA), and the RWQCB (based on Section 401 of the federal CWA and the Porter-Cologne Water Quality Control Act). With the incorporation of AMMs, the proposed project will not have direct or indirect effects to these potentially jurisdictional areas; therefore Section 404 permits and 401 certifications are not required.

During construction, ESA fencing will be installed around these features and any contractor encroachment into these ESAs will be prohibited. ESA provisions will be

implemented as a first order of work and will remain in place until all construction is completed. Additionally, as part of complying with the NPDES Construction General Permit, the contractor will also install best management practices (BMPs) for erosion, sediment, non-stormwater, and tracking controls prior to, during, and after construction to avoid any discharges of polluted water into these wetlands/waters.

In Contra Costa County, there are two existing stormwater treatment basins on Chevron property regulated by the San Francisco Bay RWQCB through an NPDES permit, which are not Section 404 or 401 jurisdictional features.

### ***6.5.9 Water quality and Stormwater Runoff***

Most of the project site is paved and the project will only increase the impervious area by 2.27 acres, with an additional 1.38 in reworked impervious area. The effect on the flow rate and surface runoff will be negligible in comparison to the overall Central San Francisco and San Pablo Bay watersheds. There will not be any changes to the existing drainage pattern with project construction. Existing drainage facilities throughout the proposed project limits will be extended, replaced, repaired, and/or improved as necessary. Without any proposed fill, there will be no change in the water surface elevation in Central San Francisco Bay or San Pablo Bay. The project is exempt from hydromodification mitigation requirements because the runoff drains to the tidal areas. Additionally, based on the criteria presented in the Caltrans Hydromodification Requirements Guidance, the project does not require a Rapid Stability Assessment because the project does not include any stream crossings. No potentially incompatible floodplain development will occur as result of this project, nor will the project have any impacts on the natural and beneficial flood plain values. No traffic interruptions from the base flood are expected at the project site.

The primary potential impact to water quality in and around the project is eroded soils and suspended solids being introduced into the waterways. With the incorporation of design pollution prevention, treatment, construction site, and maintenance BMPs, impacts to water quality, storm water runoff, and groundwater recharge will not be substantial in comparison to the overall watershed.

### ***Design***

Stormwater discharges from Caltrans' transportation properties, facilities, and activities are regulated through National Pollutant Discharge Elimination System (NPDES) Statewide Storm Water Permit for State of California Department of Transportation Order 2012-0011-DWQ NPDES No. CAS000003. In compliance

with this permit, long-term erosion and sediment controls will be addressed by the pollution prevention and treatment BMPs that have been incorporated into the project's design. The project will also comply with Construction General Permit (NPDES No. CAS000002).

Concentrated flow conveyance systems, such as ditches, berms, dikes, and swales, as well as outlet protection/velocity dissipation devices (e.g. overside drains and flared end sections), are some of the design pollution prevention BMPs that will be implemented to intercept and divert surface flows. These systems will allow flows to be conveyed or discharged with minimal soil erosion. The project design will also maximize the protection of desirable existing vegetation within the project limits for erosion and sediment control.

This project is required to consider the use of treatment BMPs because it is not classified as an emergency project, does not directly discharge to surface waters, and would result in the addition or reworking of more than one acre of impervious area. The treatment BMP strategy for this project will comply with the Caltrans Statewide NPDES Permit, which prioritizes treatment in the following order:

- Infiltrate, harvest and reuse, and/or evapotranspire stormwater runoff,
- Capture and treat the stormwater runoff using flow-through treatment devices,
- Conventional volume-based or flow based treatment devices.

The portion of the project within the City of Richmond is within the Contra Costa County Phase I MS4 under the MRP. The portion of the project within the City of San Rafael is within the Phase II Small MS4 General Permit. Under these Permits, projects are required to provide stormwater treatment for the combined added and reworked impervious areas, for a total of 3.65 ac. Water quality treatment BMPs, such as biofiltration swales, have been incorporated into the project design to increase rates of infiltration and evapotranspiration. There are six biostrip/bioswale treatment BMPs delineated for this project, which will treat the water runoff from a total of 4.30 ac of impervious surface. There is over 100% treatment for this project, providing a net increase in infiltration and evapotranspiration as a result of this project.

### *Construction*

Project construction could potentially result in temporary/short-term impacts to water quality and storm water runoff from increased erosion and subsequent transport of sediment to surface waters. Spills and fluid leaks from construction vehicles, equipment, or materials may also occur during construction. In order to determine

stormwater compliance requirements for the project, the risk level is determined based on the site-specific risk of sediment transport and discharge, as well as the existing levels of sediment pollution in the receiving water. The project's sediment risk was calculated using the Revised Universal Soil Loss Equation and is classified as having a high sediment risk. The project is classified as having a low receiving water risk because San Pablo and Central San Francisco Bays are not identified as being impaired for sedimentation/siltation on the 303(d) list, nor does either receiving water have the combined existing beneficial uses of COLD, SPWN, and MIGR. Based on the high sediment and low receiving water risks, the project as a whole will have a Risk Level 2.

As part of the NPDES permit requirements for Risk Level 2 projects, the contractor will need to develop and implement a SWPPP, which includes identification of the following:

- Soil stabilization BMPs (eg. hydraulically applied mulch or rolled erosion control products) will be applied to disturbed soil areas to prevent erosion. For slopes determined to be at high risk for erosion or failure, temporary cover or netting will be installed. Wherever possible, early installation of permanent erosion control will be performed.
- Sediment control measures will include silt fence, fiber rolls, and contour grading. Linear sediment barriers or interruption devices (eg. silt fence, fiber rolls) will be installed at the toe of all excavation and embankment slopes, and at the top of all cut slopes. This will limit sediment movement on site to control run-on from off-site sources. Slope interruption devices such as fiber rolls will be installed at intervals as specified in the Caltrans Standard Specifications, and soil stabilizer would be hydraulically applied. Storm drain inlet protection will be deployed throughout the project to prevent sediment from being released into the MS4 systems.
- Off-site tracking of sediment will be controlled by placing stabilized construction entrances in combination with regular street sweeping and vacuuming. Stabilized construction roadways will be used at designated access points.
- Non-stormwater sources such as dewatering, vehicle washing, and irrigation will require management to prevent untreated water from being discharged from the site. Dewatering may be needed at locations for structure footings in areas of shallow water table. It is not anticipated that active treatment systems (ATS) will be necessary for this project. The project contractor may have to apply for waste discharge requirements (WDR) with potential treatment (to address potential hydrocarbons) or collect and take to local publicly owned treatment works (POTW).

- General construction site maintenance will be used throughout the duration of the project. These “housekeeping” BMPs include managing waste products, materials handling, stockpile protection, and spill prevention.
- A stormwater sampling and analysis plan will be developed to monitor the effectiveness of installed BMPs.

### *Maintenance*

Drainage inlet markers are required for all inlets along the pathway and wherever inlets are accessible to pedestrian and bicycle traffic. Caltrans approved markers will be placed in accordance with the 2010 Caltrans Standard Plans.

With the incorporation of design pollution prevention, treatment, construction site, and maintenance BMPs, as well as ESAs, the proposed project will comply with all water quality standards and waste discharge requirements, and the impact to water quality would be less than significant.

#### **6.5.10 Noise**

A technical noise study was conducted to assess noise impacts at sensitive receivers in the vicinity of the Project and to identify preliminary noise abatement measures necessary for the project to comply with state and federal noise abatement/mitigation requirements. The study included noise measurements, calculations of future noise levels with the construction and operation of the project, and identification of measures to reduce construction noise levels and to abate traffic noise levels at adjacent receptors. This study follows Federal Highway Administration (FHWA) and California Department of Transportation (Caltrans) policies that address traffic noise impacts and noise abatement. This includes FHWA regulations (Title 23, Part 772 of the Code of Federal Regulations [23CFR772]) and the Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects (Protocol or TNAP) (Caltrans 2011). The Protocol addresses both federal and State environmental statutes with regard to noise

Noise levels resulting from the Year 2040 Build Alternative were calculated to be 0 to 1 dBA Leq[h] higher than existing noise levels. Noise level increases predicted from the Project would not be considered substantial. Noise levels at the Little Public Sea Shore Park in San Rafael and at many first row residences along Tewksbury Avenue in the Point Richmond area continue to approach or exceed the NAC under Year 2040 Build conditions. Noise abatement, in the form of new noise barriers, was assessed

for receptors where noise levels would approach or exceed the NAC. A total of two potential barriers were evaluated for feasibility and acoustical reasonableness (achieve the Caltrans noise reduction goal). Both of the assessed barriers were found to be acoustically feasible and to achieve the Caltrans noise reduction design goal (minimum 7 dB reduction for at least one receptor). The total reasonable allowance for Barrier 1 was calculated to be \$80,000 for barrier heights of 14 and 16 feet. The total reasonableness allowance for Barrier 2 ranged from \$400,000 to \$1,760,000 for barrier heights of 8 to 16 feet. However, after estimating the construction cost for these barriers at different heights, none of the barriers met the feasibility and reasonableness criteria established by 23 CFR 772, and as a result no noise abatement measures were proposed and included in the project. .

The table below summarizes the findings from the Noise Abatement Decision Report.

**Table 17 – Noise Abatement Decision Results**

Barrier	Location	Length (feet)	Height (feet)	Total Cost	Reasonableness Allowance	Feasible?
1	WB I-580 edge of shoulder, west of RSR bridge	925	14	\$1,260,000	\$80,000	No
		925	16	\$1,421,000	\$80,000	No
2	EB-I-580 ROW from end of Tewksbury Ave. to Castro St.	1,720	8	\$2,816,000	\$400,000	No
		1,720	10	\$3,110,000	\$560,000	No
		1,720	12	\$3,441,000	\$800,000	No
		1,720	14	\$3,768,000	\$1,520,000	No
		1,720	16	\$4,153,000	\$1,760,000	No

## 6.6 TITLE VI CONSIDERATIONS

Title VI was considered during preparation of the Community Impact Assessment (CIA). The report found that the project is not expected to have severe, long-term impacts to surrounding communities and no disproportionate impacts to minority and low-income populations, so no separate Environmental Justice report was deemed necessary or appropriate for the project.



## **7 OTHER CONSIDERATIONS AS APPROPRIATE**

### **7.1 PUBLIC HEARING PROCESS**

This project will not require a public hearing. The local agencies, elected officials, and project stakeholders have been informed through the regular one-on-one or group meetings, various advisory and standing committees meetings, and the BATA Oversight Committee meetings regarding the proposed project.

### **7.2 ROUTE MATTERS**

There are existing freeway agreements between Caltrans and Marin County (dated October 11, 1955), City of San Rafael (dated October 17, 1955), and City of Richmond (dated February 10, 1986). The project does not constitute a change in access, does not establish new access, and does not require relinquishment of existing right of way. As a result no new or modified freeway agreement or change in access agreement is required. The project also does not require any Route Adoption action.

### **7.3 PERMITS**

The project will require the following permits

- The project is within the 100-foot shoreline band that constitutes the jurisdiction of the BCDC per the McAteer-Petris Act, and therefore will require a permit. Initial discussions with BCDC staff suggested that the project can apply for an amendment to the existing major permit that Caltrans has obtained for the seismic retrofit project
- The contractor will apply for permit coverage under the NPDES Construction General Permit (Order No. 2009-0009-DWQ, and amended by Order No. 2012-0006-DWQ).
- City of San Rafael and City of Richmond Construction Permits

### **7.4 COOPERATIVE AGREEMENTS**

#### ***7.4.1 Construction Agreement***

The project is sponsored and funded by BATA. The existing BATA-Caltrans Cooperative Agreement will reimburse Caltrans for project oversight related costs for the PA/ED and PS&E phases. The project will be advertised, awarded, and administered by BATA. BATA and Caltrans are in the process of finalizing the details of the construction agreement. The Master Cooperative Agreement and a draft Construction Cooperative Agreement are included in Appendix L.

### **7.4.2 Other Agreements**

Two cooperative agreements will be required for the Traffic Incident Management Plan – one between BATA and Caltrans and another one between Caltrans and the California Highway Patrol (CHP). The agreement will include detail specific operational roles, responsibilities, and requirements for normal as well as incident conditions. In addition, the agreement between BATA and Caltrans needs to outline the cost of operations and detail who is responsible for each cost.

BATA may also choose to execute an agreement with the moveable barrier manufacturer to maintain the barrier transfer machine and the moveable barrier system for the duration of the pilot project.

Additional agreements that will be needed for the project include:

- Agreements with other emergency response agencies to operate specialized equipment such as utility vehicles during incident response activities.
- Agreements with Caltrans to maintain the Stenmark Drive Path
- Agreements with Chevron to establish roles and responsibilities during construction
- Agreements with Caltrans for maintenance and operation of the third lane and the bike path on the upper deck

## **7.5 TRANSPORTATION MANAGEMENT PLAN**

For construction of all three Project Elements, no full main line or bridge closure is anticipated. The project will only require lane and ramp closures to construct project features. A traffic management plan was developed for the project. See Appendix D for a more detailed discussion.

## **7.6 STAGE CONSTRUCTION**

For all three elements of the project, lane and ramp closures will be required to construct retaining walls, widen shoulders, modify/restripe lanes, modify/install railings, and install signage and electrical conduit. The project does not expect to have any full main line or bridge closures. Total anticipated construction duration for the project is 12 to 24 months.

The contract plans have been separated into two packages (Package A and Package B). Package A consists of the bike path within Contra Costa County and the third lane on the lower deck of the Richmond San Rafael Bridge. Package B consists of the bike path connection from Stenmark Drive to the Richmond-San Rafael Bridge,

pedestrian and bicycle/pedestrian path on the upper deck of the Richmond-San Rafael Bridge and EB Main St. off-ramp.

The project will utilize existing access routes for construction and most of the project will be built from within the existing transportation right of way. The most significant new construction for the project will be the removal and replacement of the existing retaining wall along eastbound I-580 between the Scofield Avenue Undercrossing and the Marine Street off-ramp (part of Stage 1 of Package A). The construction of this new soil nail wall is envisioned to be “top-down” construction where the existing wall will be demolished starting at the top, earthwork will be excavated behind the existing wall, and the new soil nail wall will be built by applying shotcrete to the new vertical surface and installing the soil nails. For this work, access to the top of the retaining wall will be required. An access road approximately 15 feet in width beginning on the eastern end of the existing retaining wall will be constructed for use. Because the existing retaining wall is held in place by a single row of tie-backs at the top of the wall, a temporary set of tie-backs will have to be installed at different elevations into the existing wall before the existing tie-backs are removed. This would allow demolition of the existing wall in short lifts from top to bottom while the new soil nail wall is being built behind it. The sequence of construction will need to be shown on the contractor’s proposed stage construction plans.

The following staging areas are available within the existing right of way and will be used during construction: the pull out area on the shoulder of EB I-580 in San Rafael, between the Sir Francis Drake Boulevard on-ramp and Main Street off-ramp; and the pull out area on the right shoulder of EB I-580, south of the toll booths. If additional staging areas are required by the contractor, the contractor will be required to determine their location and complete any necessary environmental clearance.

## **7.7 ACCOMMODATION OF OVERSIZE LOADS**

The project proposes to improve and modify an existing freeway and bridge. The project does change the existing accommodation of oversize loads on I-580 within the project footprint. Overhead signage installed above the lower deck of the RSR Bridge will be contained within the existing upper deck structural envelope and will not change the vertical clearance above the lower deck.

## 7.8 GRAFFITI CONTROL

Graffiti control features will be incorporated into the design, and these features could include rough texturing of concrete surfaces (fractured fin), staining or coloring surfaces of concrete and retaining wall with earth-tone colors, future planting of vines adjacent to retaining walls, and anti-graffiti coatings on bridge railings that allow easier clean-up and maintenance.

## 7.9 INCIDENT MANAGEMENT PLAN

An incident management plan was prepared for the project and discussed with Caltrans Maintenance, CHP, San Rafael and Richmond Fire Marshals, and other appropriate agencies/personnel. The plan involves utilizing either the existing travel lanes or the bike path to access the incident location. The plan assumes access will be in the same direction of travel as long as traffic is still flowing through the incident location. In the cases where the traffic has come to a complete stop as a result of the incident, access from the opposing side of the bridge is considered. With the re-purposing of the shoulders in both directions, it is BATA's intent to enhance the existing incident response practice with additional resources and strategies to help the responsible agencies with performing these roles. These additional resources include providing additional CCTV and traffic monitoring stations on the bridge which will allow for earlier visual identification of the incident and plan the right response activity, providing utility vehicle emergency response carts that can be stationed at either end of the bridge and can be driven in the bike path to accelerate response time to the incident location, and provision to allow for stationed tow trucks on both ends of the bridge for access to the incident. The tow trucks will be provided by Caltrans.

For ease of discussion these strategies are separated by direction of travel.

### 7.9.1 *Incident in Westbound Direction (Upper Deck)*

In the case of an incident in the westbound direction on the upper deck of the bridge, the following details how the various response agencies would be responsible.

#### 7.9.1.1 *California Highway Patrol Response*

Currently there is a shoulder on the upper deck that can be utilized for responding to incidents. However, once this project is constructed, the shoulder will have been eliminated and converted to the bi-directional bike/ped path. Additionally, the existing shoulder on Westbound I-580 from Marine St to Scofield Bridge is also being eliminated and converted to the bi-directional bike/pedestrian path.

The elimination of the shoulders will increase the response time of the Oakland CHP to incidents on the bridge during time of high congestion. One potential mitigation option would be for the Marin CHP to respond to the westbound incident on the bridge by traveling eastbound on I-580 to the Toll Plaza and then reversing direction and travelling westbound to the incident. Another alternative would be to have CHP stationed at the Toll Plaza during morning rush hours to respond to the westbound incidents.

In case of an incident blocking one lane of traffic in the WB direction on the upper deck, CHP will have the option of sending a CHP cruiser through the remaining open lane of traffic to the incident location. Alternatively, a CHP motorcycle can also respond to this incident by driving in the bike/pedestrian path. BATA, the project sponsor, is also evaluating the option of purchasing one or more utility vehicles, such as the one shown in the picture below, which can be retrofitted with basic CHP equipment to operate as a CHP incident response vehicle.



### **Potential Incident Management Utility Vehicle**

If both WB traffic lanes are blocked, initial access to the incident location will be from the bike path. CHP will use a motorcycle CHP and/or a small utility vehicle to respond. If a CHP can get to the Contra Costa maintenance yard or the toll plaza from the WB lanes, they can then retrieve the utility vehicle and travel to the incident on the bike path in the direction of traffic. If not, a CHP officer from the Marin side shall go to the Marin maintenance yard to retrieve the utility vehicle, then travel on the upper deck opposite the direction of travel in the bike path to get to the incident.

Once on the scene, a CHP officer would evaluate the situation and determine if additional emergency personnel from the appropriate side of the bridge are needed

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due to injury or fatality. If deemed necessary, the officer can stop all traffic in the WB direction and signal for additional emergency personnel to respond from the Marin side.

#### ***7.9.1.2 Fire and Rescue Response***

Fire Department and Emergency Medical Services will face the same challenges as CHP and therefore a similar incident response procedure would be in order. If traffic is still moving through the incident location, a fire truck or a smaller utility vehicle can drive to the scene and respond to the incident. However, if both lanes are blocked, either Richmond or San Rafael fire departments will access the incident using a smaller fire response vehicle, if one is available, from the bike path. Otherwise, the fire departments will wait for the CHP signal to clear all traffic downstream of the incident and then respond to the incident by driving from the opposite end of the bridge. It is worth noting that standard size fire trucks cannot make a full 180 degree turn on the bridge today due to its narrow width, which will not change after the project is implemented. Depending on the location of the incident, fire trucks may have to drive in reverse to get to the incident. However, the local fire marshals confirmed that they have been able to respond to most incidents without having to drive in reverse on the bridge.

In conversations with the local fire marshals, it was requested that mileposts and/or markers be placed on the bridge and that a map of those marker locations be provide to the fire marshals to facilitate locating the incident and determining the appropriate emergency response strategy.

#### ***7.9.1.3 Emergency Response***

Ambulances and other emergency vehicles will follow the same procedure as fire trucks and CHP vehicles to clear the incidents. BATA is considering purchasing smaller utility vehicles that can be driven in the bike path and that are customized to transport injuries or people with medical conditions off the bridge as shown in the picture below. In case of incidents on the bike path, CHP will come from the Richmond side and evaluate the situation to determine if additional emergency personnel and/or utility vehicles are needed.



### **Potential Incident Management Utility Vehicle**

BATA and Caltrans will discuss with the local authorities who will operate this vehicle.

#### ***7.9.1.4 Caltrans Maintenance Response***

Caltrans currently stations a tow truck on the Contra Costa side to assist with incident response on the Richmond-San Rafael Bridge. With the implementation of the project, the shoulder space on the upper deck will no longer be accessible for vehicular traffic on the bridge (due to the moveable barrier). While the shoulder space on the lower deck will still operate as a shoulder outside the operating hours of the peak period use lane, Caltrans maintenance staff indicated that they would treat any closure of the lane as a regular lane closure, instead of a shoulder closure, even during the hours when the lane is not in operation. Vehicles can no longer park on the bridge shoulder during the hours of operations of the third lane. . Therefore, Caltrans can tow any disabled or parked vehicle off the bridge immediately prior to opening or during operation of the lane. The project will provide traffic signs indicating no parking any time on the bridge. With the help of CCTV cameras, call boxes on the bridge and the 511.org website update, Caltrans will be notified of the incidents on the bridge and can dispatch appropriate respond vehicles such as tow trucks, fire trucks, utility vehicles or emergency medical services.

Access to an incident or disabled vehicle on the upper deck will not be possible from the shoulder. Therefore, the tow truck will have to travel using the remaining open lane to an incident location. If both lanes are blocked, the tow truck will be traveling



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from the opposite side of the bridge to get to an incident after obtaining a signal from CHP that it is ok to do so.

Alternatively, it may be possible to drive the tow truck in the bike path and manually break the moveable barrier open at the incident location to allow the tow truck to enter the traffic lanes. The moveable barrier can then be reconnected together manually. This option is to be further discussed and coordinated with Caltrans.

#### **7.9.1.5 Use of Utility Vehicles**

A variety of utility vehicles makes and models are being considered for this project. Similar types of utility vehicles are currently in use on the Golden Gate Bridge for traffic incident response. Gas and Diesel powered models with manual or automatic transmissions are available from different manufacturers. It is recommended that gasoline powered automatic transmission utility vehicles shall be used for Richmond-San Rafael bridge incident response plan since automatic transmission is more user-friendly and versatile.

#### **7.9.2 Incident in Eastbound Direction (Lower Deck)**

With the implementation of the third eastbound lane on the lower deck of the Richmond-San Rafael Bridge, the existing shoulder will be re-designated to be a lane during the evening peak period. Outside the peak period, the lane will be closed therefore maintaining the existing space for emergency response to be similar to the current emergency response practice. Dynamic Message Signs (DMS) will be mounted over the peak period use lane to provide an opportunity to open the Peak Period Use Lane (PPUL) to traffic in case of an incident happening during the non-peak period and blocking one or two eastbound lanes.

During the peak period, the shoulder will be used as PPUL and the emergency response in the case of an incident will be in the same direction of traffic utilizing the existing lanes that are still open to traffic.

CHP, fire trucks, emergency response vehicles, and Caltrans vehicles will all respond from Marin County side to the incident location. Disabled vehicles, injuries, and fatalities will be towed towards the Contra Costa side in clearing the incident.

### **7.10 TRAINING AND MAINTENANCE**

Training and technical support are key components for a functional and operational Richmond-San Rafael Bridge Access Improvement. Traffic Incident Management (TIM) training refers to the interagency, multi-disciplinary training required to enable



a high degree of coordination and ensure the efficient use of resources available for managing traffic incidents. The overall goal of TIM training is to initiate a common, coordinated response to traffic incidents that builds partnerships, enhances safety for emergency personnel, reduces secondary collisions, and improves the efficiency of the transportation system. Multi-agency training is essential to responder safety as well as to maintaining and improving overall TIM quality. Regardless of roles, it is extremely important that all responding agencies be involved in joint TIM training.

As part of TIM plan, it is integral to provide training to Caltrans, CHP, Fire Department, Emergency Response Personnel and other related agencies on the incident response procedure after implementation of the project. Use of small utility vehicle to access and provide emergency response is critical. Purchase contracts with the utility vehicle suppliers should require these suppliers to provide proper operational and maintenance training.

It is assumed that Caltrans will operate the BTM. Therefore, the manufacturer of the moveable barrier should provide training to Caltrans personnel on how to operate the BTM and conduct minor maintenance activities on the machine. The contract with the manufacturer should also specify the major maintenance requirements.

### **7.11 OPERATIONS PLAN**

BATA and Caltrans will put in place an operational strategy in order to address detailed scheduling, manpower, materials, and equipment to allow Caltrans to estimate operational and maintenance funding requirements each year. The operation plan will include the roles, responsibilities, and procedure for the following:

- Open/close the bike and pedestrian path on the upper deck
- Open/close the peak period use lane on the lower deck
- Control, monitor, and provide additional feed from the CCTV cameras on the bridge
- Dispatch information to emergency personnel and CHP during an incident
- Open and close lanes on the bridge during maintenance
- Operation and maintenance of barrier transfer machine and utility vehicles
- Public notification of events, incidents, and closures on the bridge
- Temporary closure of Stenmark Dr off-ramp and Contra Costa bike path to allow Chevron access to their gate off the Stenmark Drive off-ramp.

## 8 FUNDING/PROGRAMMING

The project is currently funded through BATA toll bridge funds which are local funding source. No state or federal funding is used for this project.

### 8.1 Capital Outlay Project Estimate

	Range of Estimate		STIP Funds		Other Funds	
	Construction	Right-of-Way	Construction	Right-of-Way	Construction	Right-of-Way
Build Alternative	\$52.5M	\$ 2.1M			\$52.5M	\$ 2.1M

## 9 SCHEDULE

Project Milestones	Scheduled Delivery Date
Completed PSR/PDS	November 2015
Complete PA/ED	August 2016
Complete PS&E	August 2016
Right of Way Certification	August 2016 (Package A) May 2017 (Package B)
Ready to List	N/A
Complete Construction and Open to Traffic	Package A: Fall 2017 Package B: Spring 2018

## 10 RISKS

Given the history of the project and its location, there are several risks that will need to be avoided or mitigated. A detailed risk register is attached to this PR (see Appendix F). Below is a summary of some of the key risks

- Presence of sensitive habitat for nesting birds and seals/sea lions on the RSR Bridge will limit the construction windows. Project will need to implement measures to prevent nesting activities or incorporate construction methods that do not have an impact on the seals and sea lions.
- Presence of contaminated soil/materials will result in significant cost increase and schedule delay to the project design and construction phases.

- Right-of-way acquisitions and/or easements will also extend the project schedule.
- Use of 2010 Standard Specifications and Standard Plans in lieu of the 2015 standards.

## 11 FHWA COORDINATION

Meetings were held between Caltrans and FHWA on December 10, 2014, and January 22, 2016. FHWA is in support of implementing the project as currently designed and evaluating the performance of the pilot project. Caltrans and FHWA are in the process of publishing a new guideline for the design and implementation of shoulder running lanes.

This project is considered to be a High Profile Project (HPP) in accordance with the current Federal Highway Administration (FHWA) and Department of Transportation (Caltrans) Joint Stewardship and Oversight Agreement. As such, Design Coordinators have been replaced with Project Delivery Coordinators. Robert Effinger is the Project Delivery Coordinator for District 4.

## 12 PROJECT REVIEWS

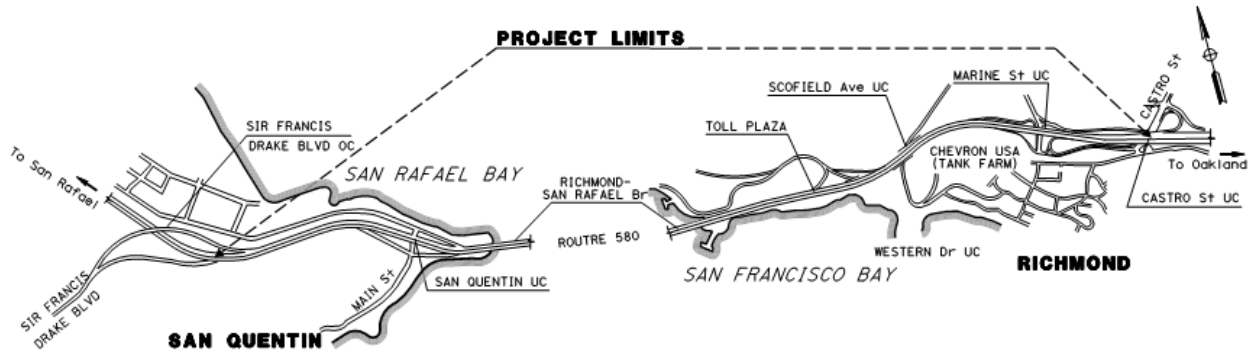
Scoping Team Field Review		<u>Date</u>	
District Maintenance	Ramses Sargiss	<u>Date</u>	
Headquarters Project Delivery Coordinator	Robert Effinger	<u>Date</u>	
Project Manager	Mo Pazooki	<u>Date</u>	May 2016
FHWA	Lanh Phan/Jeff Holm	<u>Date</u>	
District Safety Review	Emily Tang	<u>Date</u>	June 2016
District Pedestrian and Bicycle Coordinator	Sergio Ruiz	<u>Date</u>	
Constructability Review	Frank Guros	<u>Date</u>	April 2016
Highway Operations Review	Rod Oto	<u>Date</u>	April 2016

### 13 PROJECT PERSONNEL

Name	Title	Phone #
Chris Lillie	BATA Project Manager	(415) 778-6737
Brenton Smith	BATA Project Engineer	(415) 778-6629
Dan Cherrier	TAM	(415) 450-5157
Ross Chittenden	CCTA	(925) 256-4735
Mo Pazooki	Caltrans Project Manager	(510) 286-5118
Robert Effinger	Caltrans Project Delivery Coordinator (D4)	(916) 653-4937
Rod Oto	Caltrans Highway Operations	(510) 286-4540
Evelyn Gustavo	Caltrans Highway Operations	(510) 286-4939
Roland Au-Yeung	Caltrans Traffic	(510) 286-4560
Vince Bonner	Caltrans Design	(510) 286-5648
David Wilkerson	Caltrans Design	(510)-622-5737
Sergio Ruiz	Caltrans Pedestrian and Bicycle Coordinator	(510) 622-5773
Chadi Chazbek	HNTB Project Manager	(510) 587-8629
James Pun	HNTB Design Lead	(510) 587-8658
Anthony Silva	HNTB Project Engineer	(408) 346-9269
Erik Okada	HNTB Structures Design Lead	(510) 587-8626
Stephanie Schuster Minyoung Kim Edwin Xie Ryan Littell Marcelo Vargas Kieran Kelly-Sneed Rod DeLeon Kristen Johnson Rosanna McGuire	HNTB Engineers, Planners, and CAD staff	(510) 208-4599

### 14 APPENDICES

## Appendix A. Site Location and Project Limits



## **Appendix B. Geometrics – Typical Cross Sections, Layouts, Profiles, and Pavement Delineations**

STATE OF CALIFORNIA  
**DEPARTMENT OF TRANSPORTATION**  
**PROJECT PLANS FOR CONSTRUCTION ON**  
**STATE HIGHWAY**  
**IN CONTRA COSTA AND MARIN COUNTIES**  
**IN AND NEAR RICHMOND AND SAN RAFAEL**  
**FROM CASTRO STREET IN RICHMOND TO**  
**SIR FRANCIS DRAKE BOULEVARD IN SAN RAFAEL**

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010

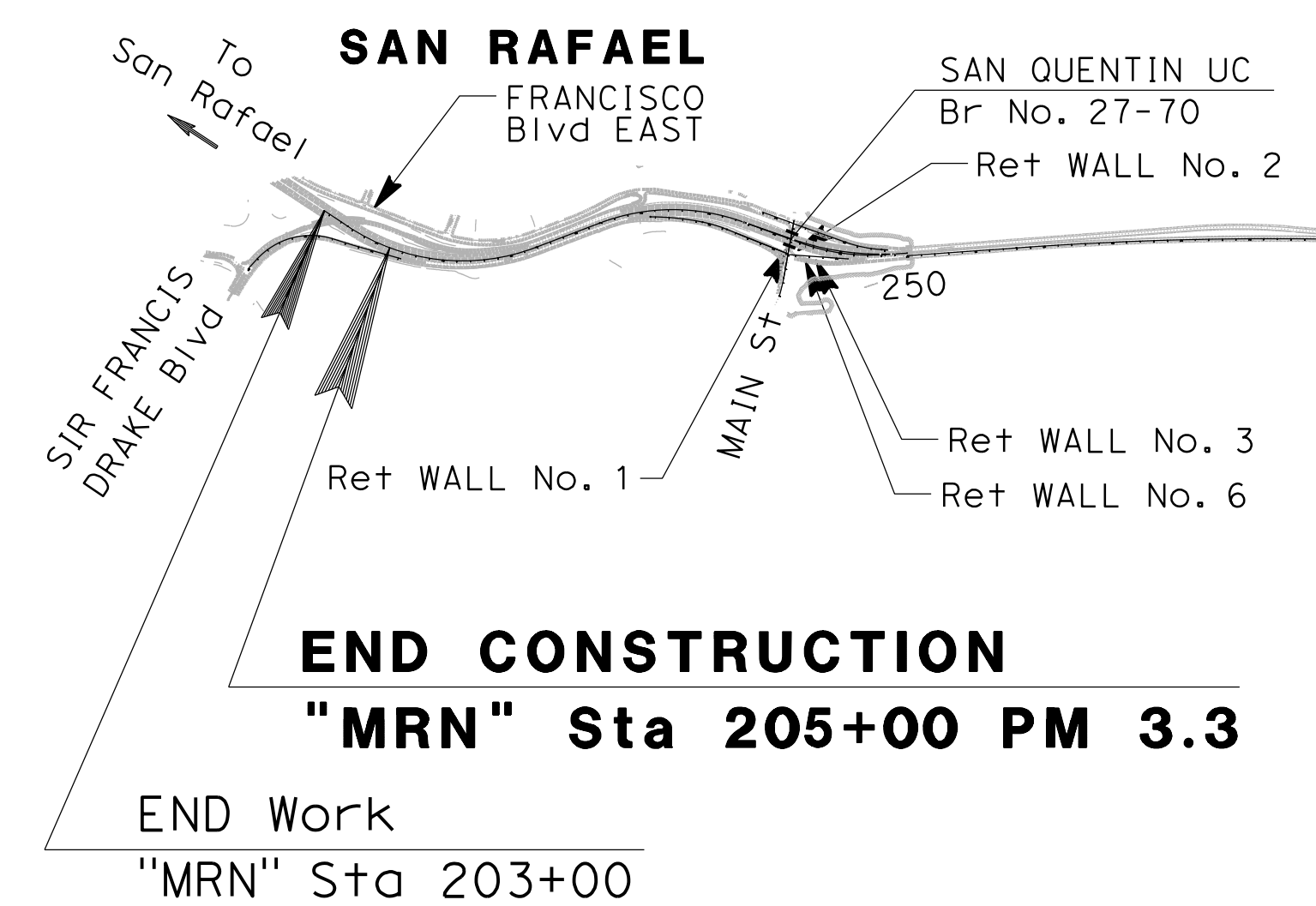
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	1	564

LOCATION MAP

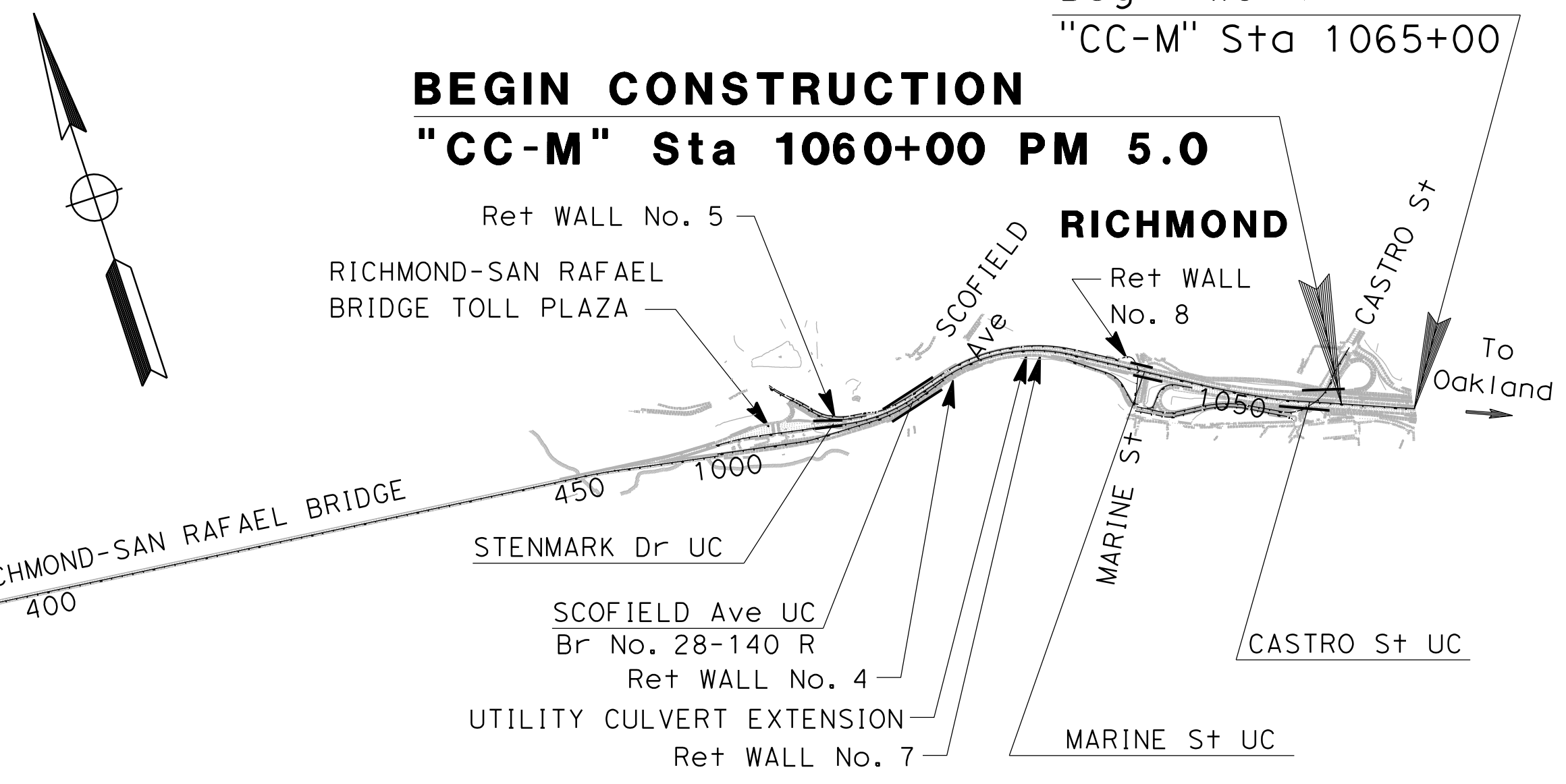
INDEX OF PLANS

SHEET NO.	DESCRIPTION
1	TITLE AND LOCATION MAP
2-15	TYPICAL CROSS SECTIONS
16	KEY MAP AND LINE INDEX
17	PROJECT CONTROL
18-41	LAYOUTS
42	PROFILES
43-45	PROFILES AND SUPERELEVATION DIAGRAMS
46-84	CONSTRUCTION DETAILS
85-95	TEMPORARY WATER POLLUTION CONTROL PLANS AND QUANTITIES
96-122	DRAINAGE PLANS, PROFILES, DETAILS AND QUANTITIES
123-146	UTILITY PLANS
147	CONSTRUCTION AREA SIGNS
148-157	MOTORIST INFORMATION PLAN AND QUANTITIES
158-186	STAGE CONSTRUCTION TRAFFIC HANDLING DETOURS PLANS, QUANTITIES AND DETAILS
187-218	PAVEMENT DELINEATION PLANS, DETAILS AND QUANTITIES
219-254	SIGN PLAN, DETAILS AND QUANTITIES
255-258	SUMMARY OF QUANTITIES
259	RETAINING WALL No. 8
260-267	IRRIGATION SCHEDULE, PLAN, DETAILS AND QUANTITIES
268-271	PLANTING LIST, PLANS AND QUANTITIES
272-284	EROSION CONTROL LEGEND, PLANS, DETAILS AND QUANTITIES
STRUCTURAL PLANS	
285-286	RETAINING WALL KEY MAP, LINE INDEX AND GENERAL NOTES
287	RETAINING WALL No. 1, Br No. 27E0068
288	RETAINING WALL No. 2, Br No. 27E0069
289	RETAINING WALL No. 3, Br No. 27E0070
290-297	RETAINING WALL No. 4, Br No. 28E0215
298-303	RETAINING WALL No. 5, Br No. 28E0216
304-307	RETAINING WALL No. 6, Br No. 27E0071
308-313	RETAINING WALL No. 7, Br No. 28E0217
314-317	RETAINING WALL DETAILS
318-329	SCOFIELD AVENUE UNDERCROSSING (MODIFY), Br No. 28-140R
330-333	SAN QUENTIN STREET UNDERCROSSING (MODIFY), Br No. 27-70
334-337	UTILITY CULVERT EXTENSION
338-345	RICHMOND-SAN RAFAEL BRIDGE (MODIFY), Br No. 28-0100
346-349	LOG OF TEST BORINGS
350-357	RETAINING WALL DETAILS
ELECTRICAL PLANS	
358-360	ELECTRICAL INDEX, NOTES, ABBREVIATIONS, SYMBOLS AND LEGEND
361-406	MODIFY EXISTING ELECTRICAL SYSTEM
407-425	ELECTRICAL DETAILS
426-427	ELECTRICAL QUANTITIES
428	ELECTRICAL NOTES, SYMBOLS AND LEGEND
429-432	LIGHTING
433-434	TRAFFIC OPERATIONS SYSTEM
435-448	SIGNAL AND LIGHTING
449-457	TEMPORARY WOOD POLES
458-564	REVISED STANDARD PLANS

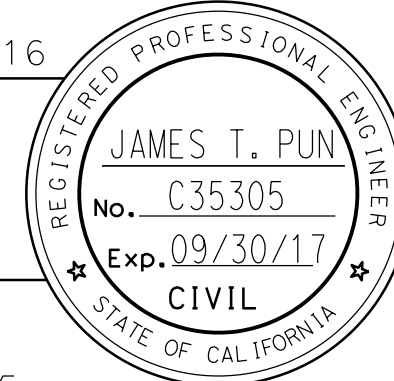
THE STANDARD PLANS LIST APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE NOTICE TO BIDDERS AND SPECIAL PROVISIONS BOOK.



**PS&E SUBMITTAL**  
**JULY 15, 2016**



PROJECT ENGINEER DATE 7/13/16  
 REGISTERED CIVIL ENGINEER  
**7/26/16**  
 PLANS APPROVAL DATE  
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



HNTB CORPORATION  
 1111 BROADWAY, 9TH FL  
 OAKLAND, CA 94607  
 BAY AREA TOLL AUTHORITY  
 375 BEALE STREET, SUITE 800  
 SAN FRANCISCO, CA 94105

CONTRACT No.	<b>04-2J6804</b>
PROJECT ID	<b>0414000552</b>

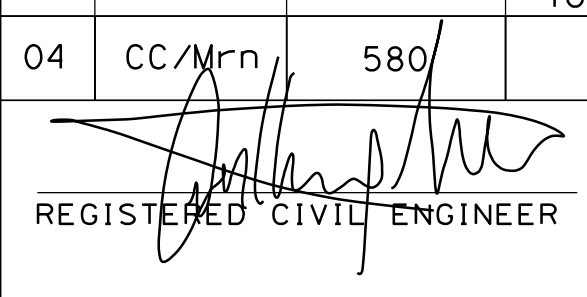
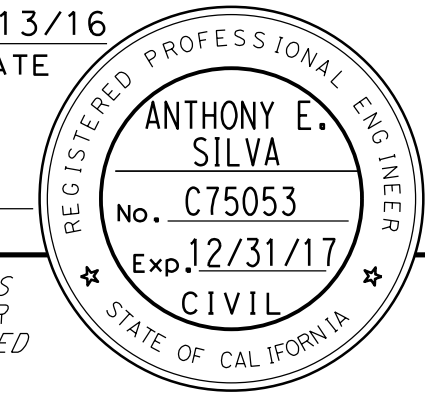
**BATA-013**

APPROVED AS TO IMPACT ON STATE FACILITIES AND CONFORMANCE WITH APPLICABLE STATE STANDARDS AND PRACTICES AND THAT TECHNICAL OVERSIGHT WAS PERFORMED.  
 DATE SIGNED  
 LICENSE EXP DATE  
 REGISTRATION No.  
 CALTRANS DESIGN OVERSIGHT APPROVAL  
 VINCE BONNER  
 CONSULTANT DESIGN MANAGER  
 CHADI CHAZBEK

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

NO SCALE



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	2	564
 REGISTERED CIVIL ENGINEER DATE 7/13/16					
PLANS APPROVAL DATE 7/26/2016					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		

**NOTES:**

- DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
- SUPERELEVATIONS ARE SHOWN ON THE SUPERELEVATION DIAGRAMS.
- PLACE 0.33' (Min) HMA (TYPE A) UNDER DIKES & CONCRETE BARRIERS, UNLESS OTHERWISE NOTED ON PLANS.
- FOR LOCATIONS & LIMITS OF HMA DIKES & CURBS, SEE LAYOUT, CONSTRUCTION DETAIL & SUMMARY OF QUANTITIES SHEETS.
- FOR HMA OVERLAY CONFORM DETAILS, SEE CONSTRUCTION DETAILS.
- FOR LOCATIONS, LIMITS, & DETAILS OF RETAINING WALLS No. 1 THROUGH 7, SEE RETAINING WALL PLANS.
- FOR LOCATIONS OF DITCH, GUTTER, & EDGE DRAINS, SEE DRAINAGE PLANS.
- FOR CONCRETE BARRIER TYPE 60C (Mod), SEE BRIDGE PLANS. FOR CONCRETE BARRIER TYPE 60SC (Mod), SEE CONSTRUCTION DETAILS.
- SEE BRIDGE PLAN "SCOFIELD AVENUE UC - BARRIER DETAIL No 2" FOR BICYCLE RAILING MOUNTED ON CONCRETE BARRIER (TYPE 732 Mod)
- TEXTURED PAVING TO BE BROOM FINISHED ON PLAIN CONCRETE SURFACE. BROOM FINISH TO BE 90 DEGREES TO THE MAINLINE.
- SEE CONSTRUCTION DETAIL FOR 6" SHOULDER RUMBLE STRIP
- FOR HANDLING OF SOILS CONTAINING ADL, SEE SPECIFICATIONS.
- VERTICAL ESA - NO PROJECT ACTIVITIES 3' BELOW OG. FOR VERTICAL ESA LOCATION AND LIMITS, SEE SHEET C-1.

**ABBREVIATIONS:**

- SW SIDEWALK  
ADL AERIALY DEPOSITED LEAD

**LEGEND:**



**PAVEMENT CLIMATE REGION:**

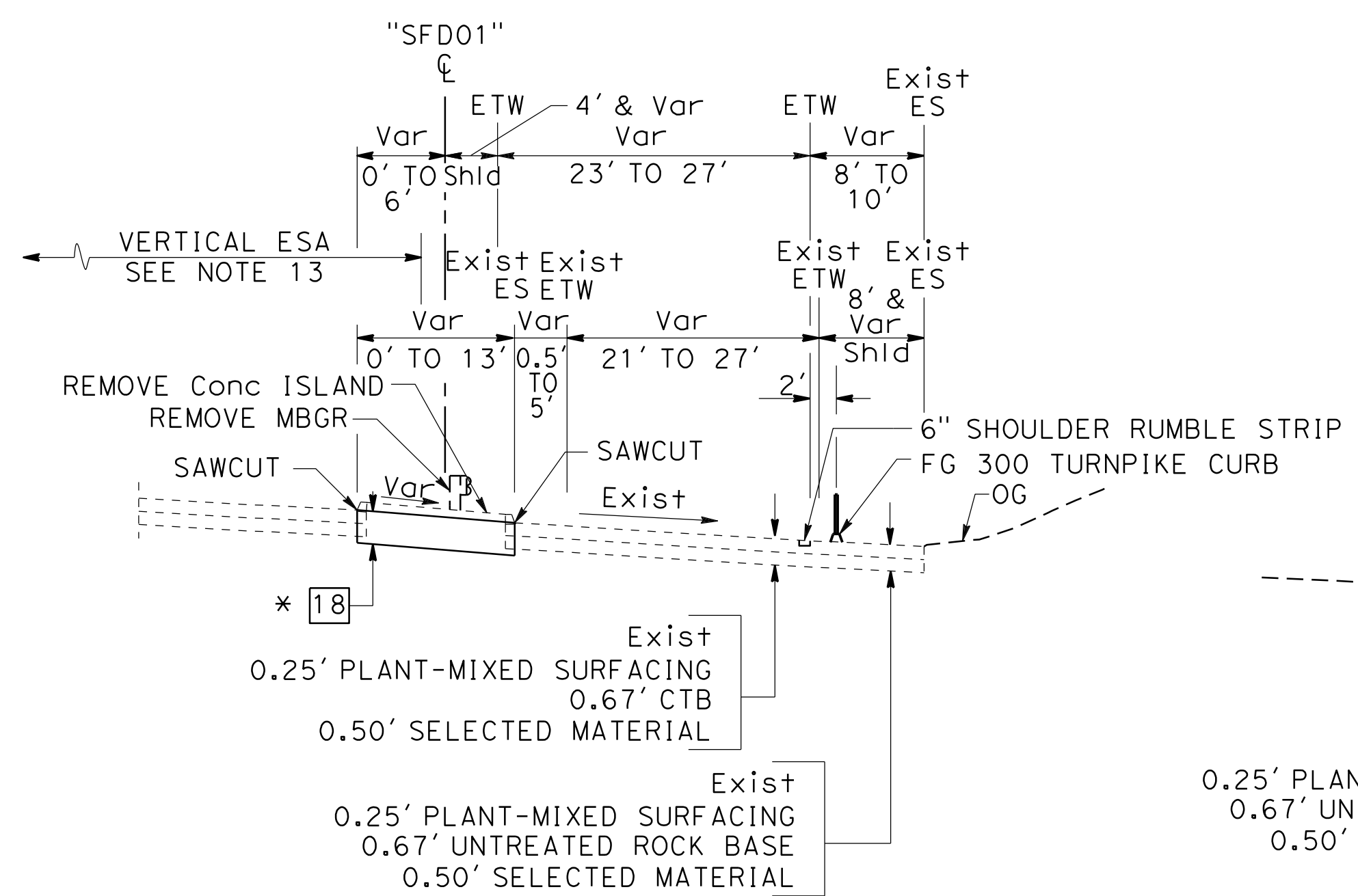
NORTH COAST

**PROPOSED PAVEMENT STRUCTURAL SECTIONS:**

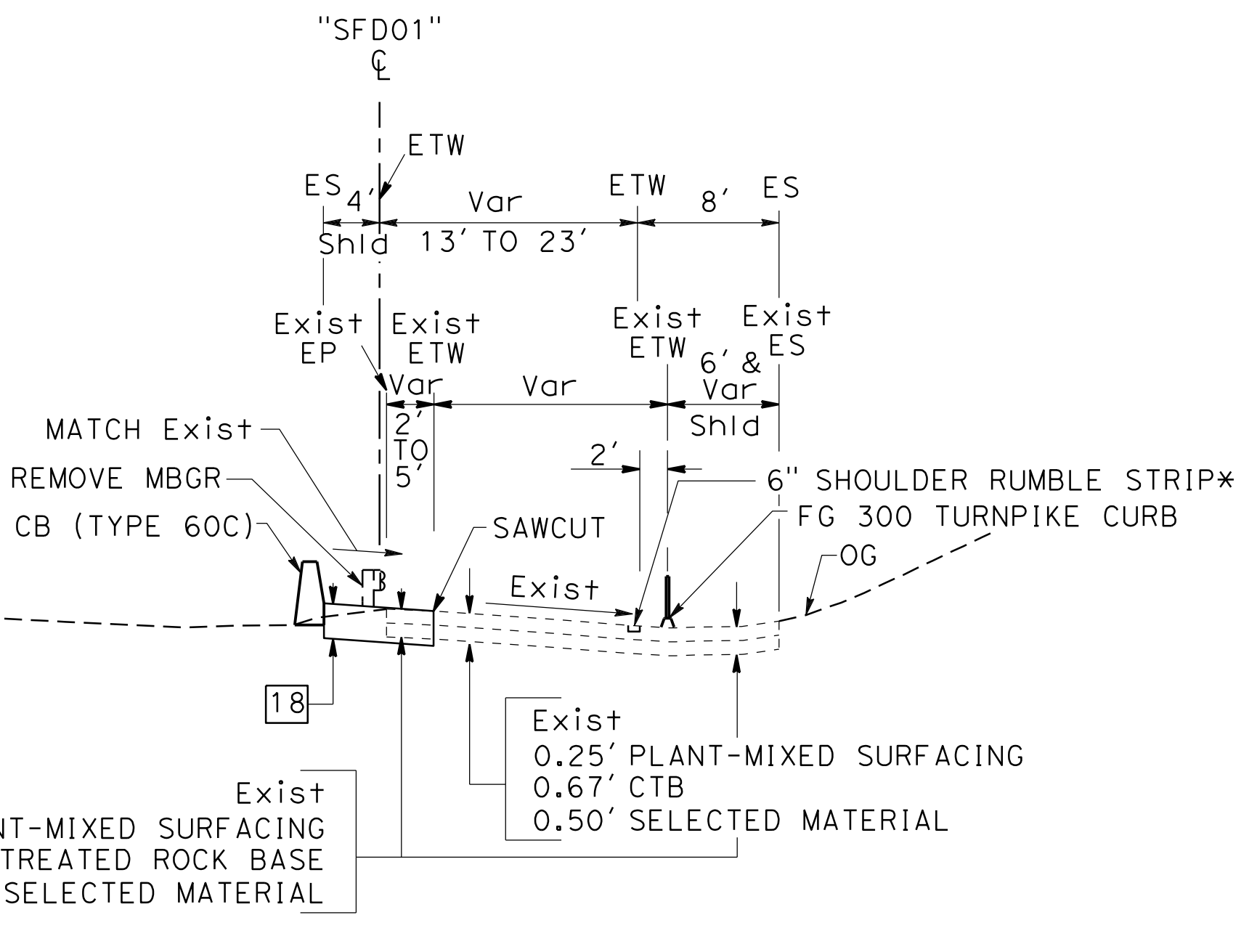
- |    |  |    |   |
|----|--|----|---|
| 1  | 0.25' HMA (TYPE A)<br>0.35' AB (CLASS 2)<br>0.45' AS (CLASS 2)                 | 11 | 0.35' PCC (TEXTURED PAVING)<br>0.50' AB (CLASS 2)<br>(SEE NOTE 10)  |
| 2  | 0.60' HMA (TYPE A)   | 12 | 0.15' RHMA-G<br>0.30' HMA (TYPE A)<br>0.25' ATPB<br>0.10' HMA (TYPE A)<br>0.35' LCB<br>0.35' AS (CLASS 2) |
| 3  | 0.15' RHMA-G<br>1.40' HMA (TYPE A)<br>0.35' AB (CLASS 2)                       | 13 | 0.15' RHMA-G<br>0.30' HMA (TYPE A)<br>0.25' ATPB<br>0.35' LCB<br>0.65' AS (CLASS 2)                       |
| 4  | 0.20' RHMA-G<br>1.40' HMA (TYPE A)   | 14 | 0.15' RHMA-G<br>0.20' HMA (TYPE A)<br>0.50' AB (CLASS 2)  |
| 5  | 0.15' RHMA-G<br>0.65' HMA (TYPE A)<br>0.35' LCB<br>1.30' AS (CLASS 2)          | 15 | 0.35' PCC<br>0.50' AB (CLASS 2)   |
| 6  | 0.15' RHMA-G<br>0.40' HMA (TYPE A)<br>0.75' AB (CLASS 2)<br>1.10' AS (CLASS 2) | 16 | 0.10' COLD PLANE<br>Var HMA (TYPE A) (CROSS SLOPE CORRECTION), OR (ADA COMPLIANCE)                        |
| 7  | 0.15' RHMA-G<br>0.40' HMA (TYPE A)<br>0.85' AB (CLASS 2)<br>1.15' AS (CLASS 2) | 17 | 0.20' RHMA-G<br>1.00' HMA (TYPE A)  |
| 8  | 0.15' RHMA-G<br>0.35' HMA (TYPE A)<br>0.75' AB (CLASS 2)<br>1.00' AS (CLASS 2) | 18 | 0.15' RHMA-G<br>0.30' HMA (TYPE A)<br>0.75' AB (CLASS 2)<br>0.95' AS (CLASS 2)                            |
| 9  | 0.10' COLD PLANE<br>0.10' RHMA-G   | 19 | 0.35' PCC<br>0.15' AB (CLASS 2)   |
| 10 | 0.15' COLD PLANE<br>0.15' RHMA-G   | 20 | 0.20' RHMA-G<br>0.95' HMA (TYPE A)  |
|    |  | 21 | 0.10' COLD PLANE<br>Var RHMA-G  |

**DESIGN DESIGNATION**

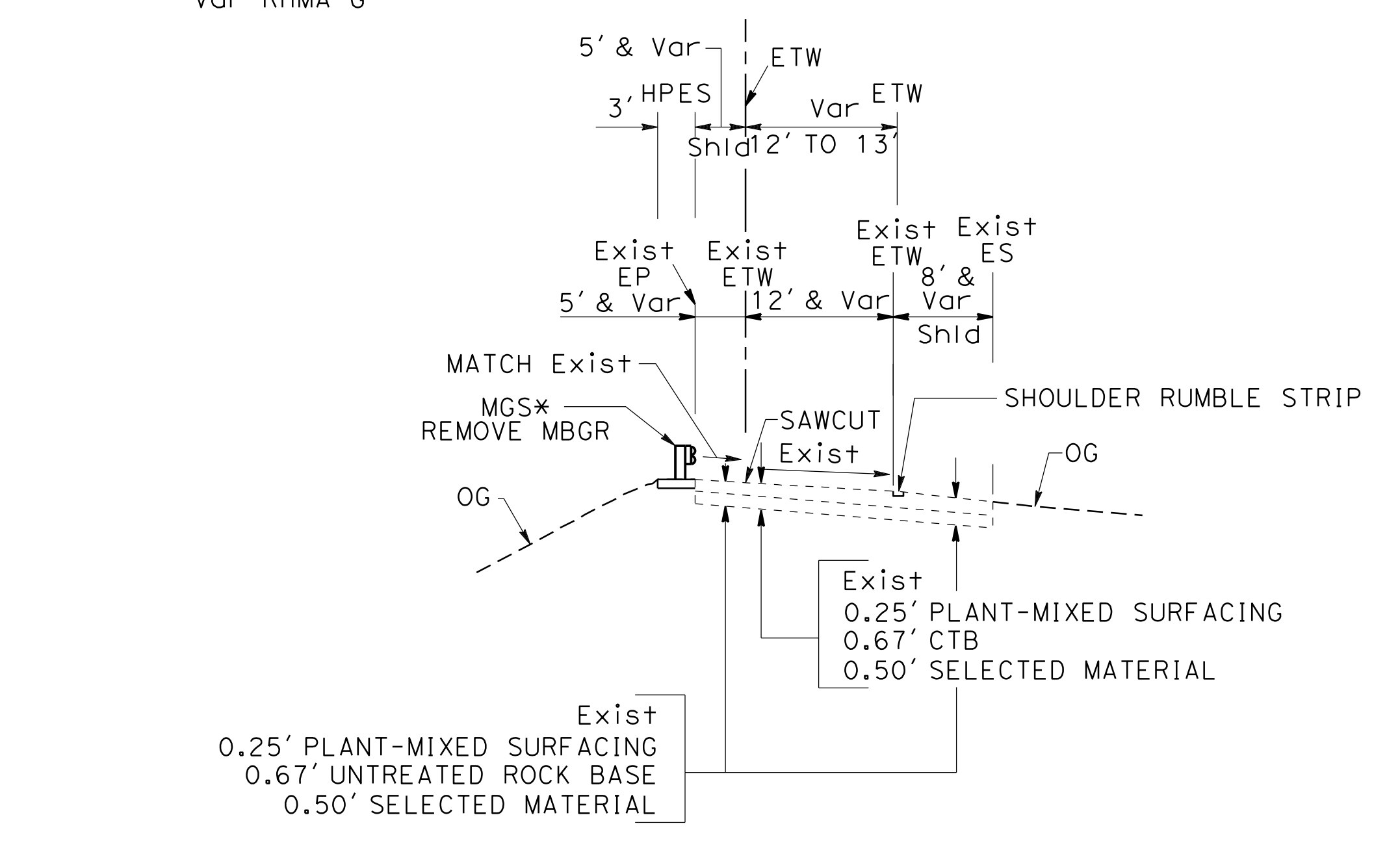
ADT (2020)	77,000	D	61%
ADT (2040)	91,000	T	7%
DHV	7,700	V	60 mph
ESAL	17,000,000	T1 <sub>20</sub>	12.5



SIR FRANCIS DRAKE Blvd ON-RAMP  
"SFD01" 200+06 TO "SFD01" 202+70  
\* PAVEMENT Beg AT "SFD01" 200+29



SIR FRANCIS DRAKE Blvd ON-RAMP  
"SFD01" 202+70 TO "SFD01" 208+17  
\* END 6" SHOULDER RUMBLE STRIP AND Beg SHOULDER RUMBLE STRIP AT "SFD01" 207+81



SIR FRANCIS DRAKE Blvd ON-RAMP  
"SFD01" 208+17 TO "SFD01" 212+18  
\* MGS ENDS AT "SFD01" 210+24

**TYPICAL CROSS SECTIONS**

NO SCALE

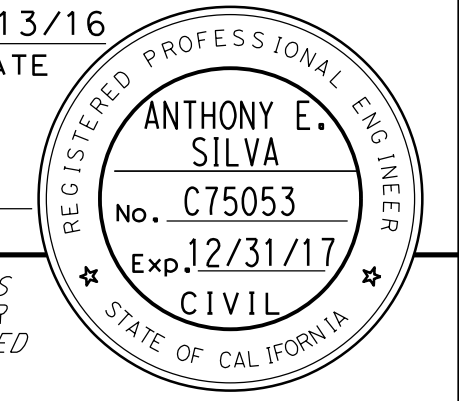
X-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT: RYAN LITTELL, JAMES PUN  
 SUPERVISOR: JAMES PUN  
 DESIGNED BY: RYAN LITTELL, JAMES PUN  
 CHECKED BY: JAMES PUN  
 REVISIONS: 00-00-00

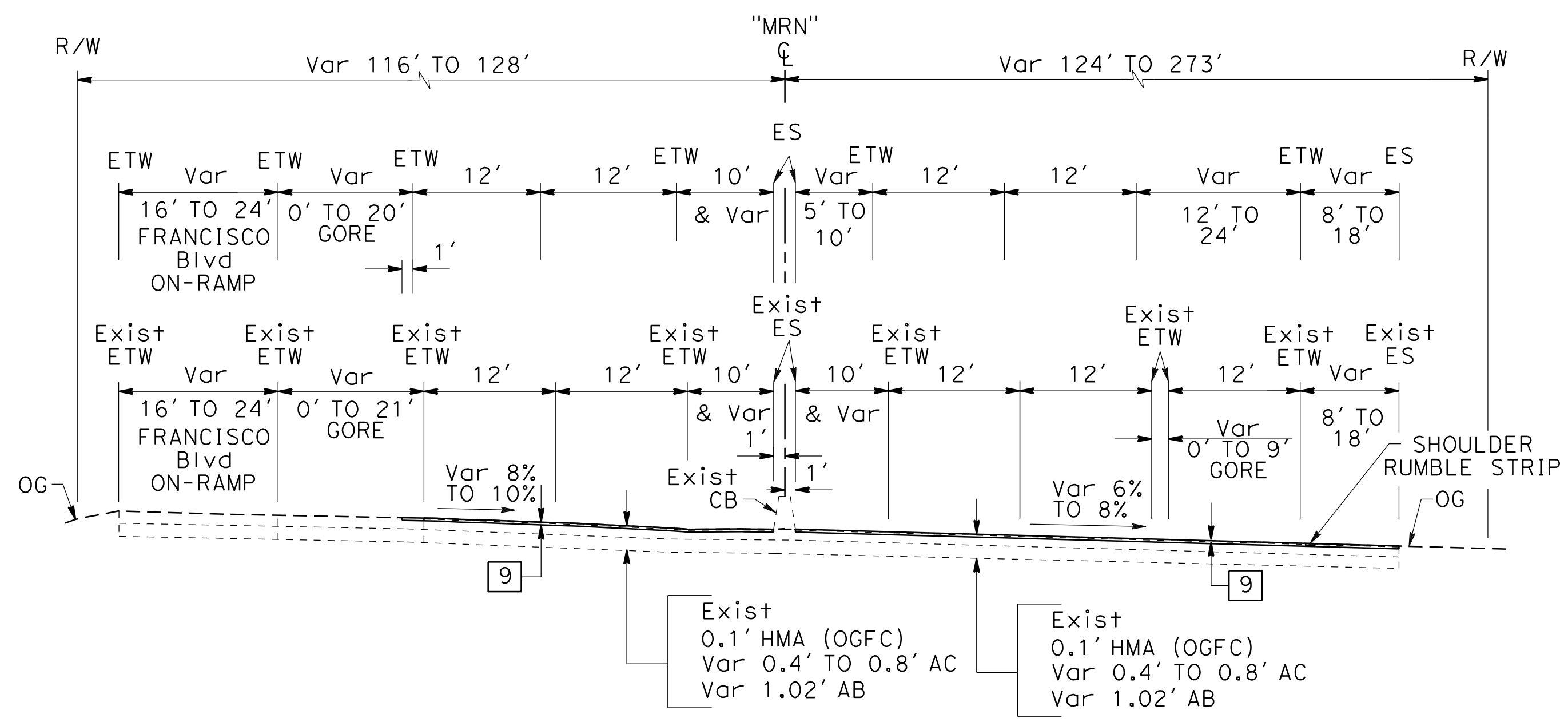
LAST REVISION: DATE PLOTTED => 7/14/2016  
 00-00-00 TIME PLOTTED => 2:57:14 PM



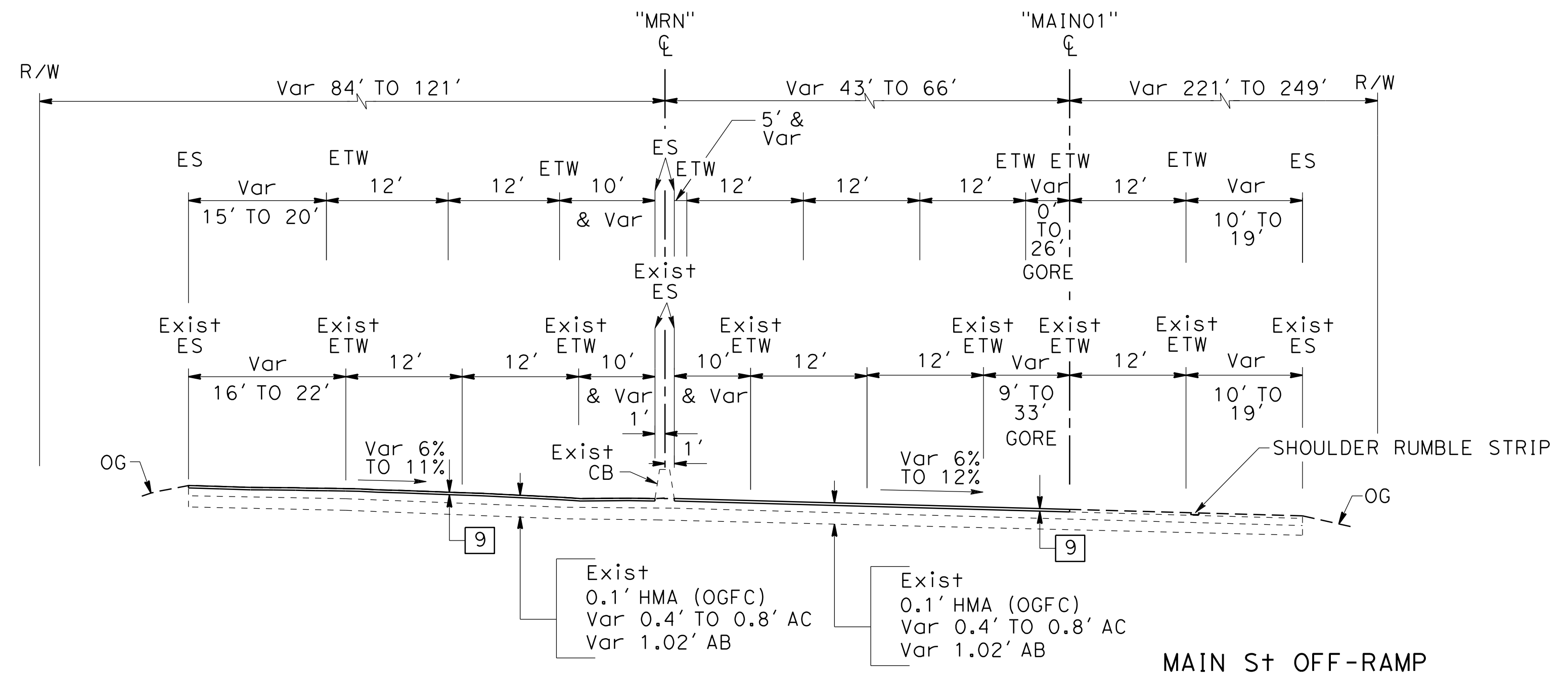
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	3	564
REGISTERED CIVIL ENGINEER			DATE	7/13/16	
7/26/2016			PLANS APPROVAL DATE		
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



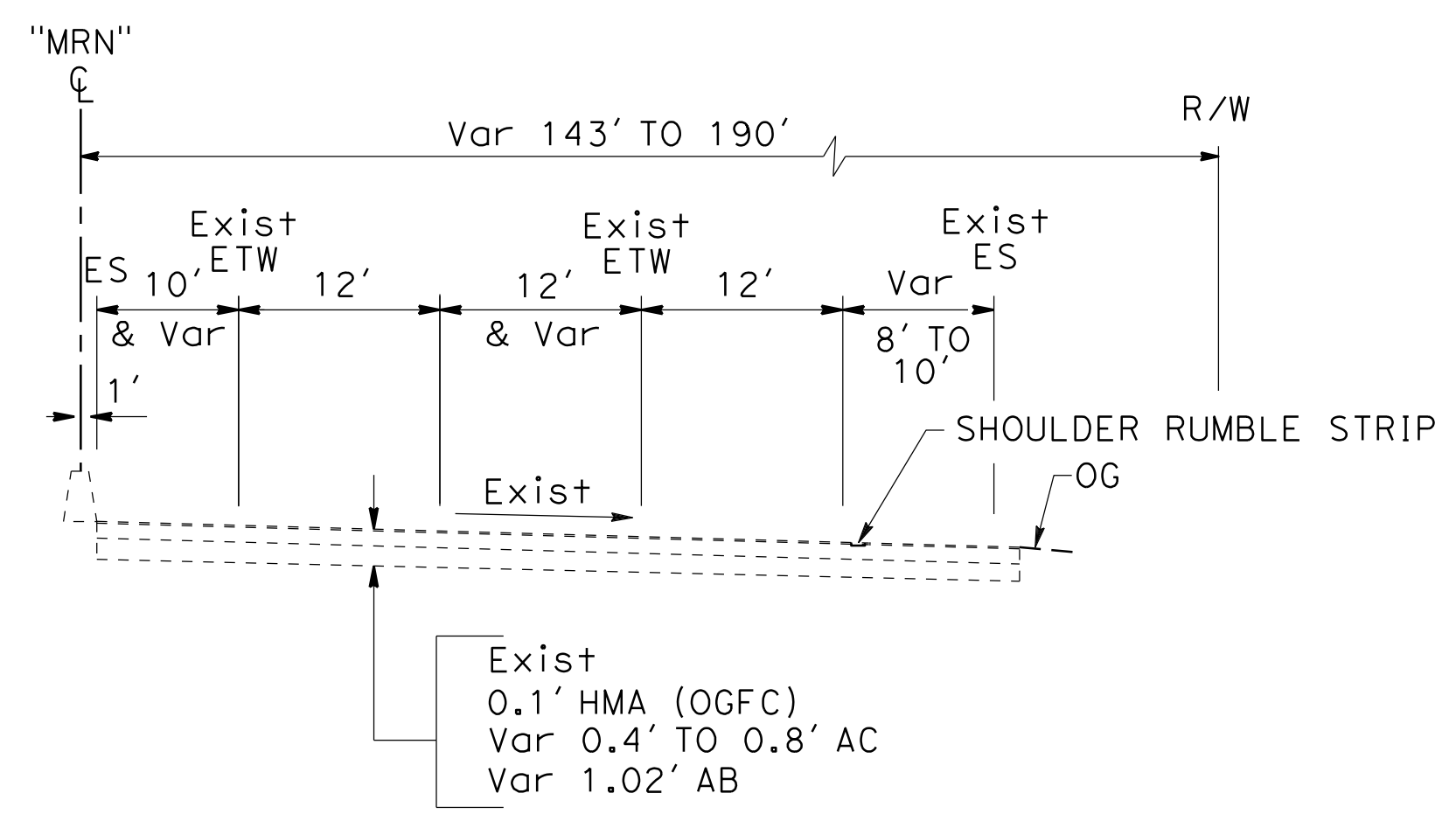
**NOTE:**  
 DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.



**ROUTE 580**  
 WESTBOUND "MRN" 228+53 TO "MRN" 230+12  
 EASTBOUND "MRN" 219+82 TO "MRN" 230+63



**ROUTE 580**  
 WESTBOUND "MRN" 230+12 TO "MRN" 233+25  
 EASTBOUND "MAIN01" 230+63 TO "MAIN01" 233+16  
 MAIN ST OFF-RAMP



**ROUTE 580**  
 EASTBOUND "MRN" 212+00 TO "MRN" 219+82

**TYPICAL CROSS SECTIONS**

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 Et Caltrans

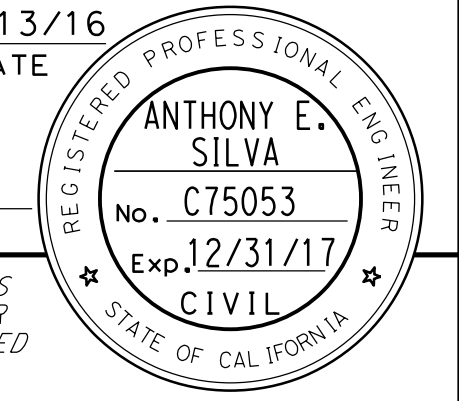
REVISOR BY: RYAN LITTELL  
 DATE REVISOR: JAMES PUN

CALCULATED/DESIGNED BY: JAMES PUN  
 CHECKED BY: JAMES PUN

CONSULTANT FUNCTIONAL SUPERVISOR: JAMES PUN

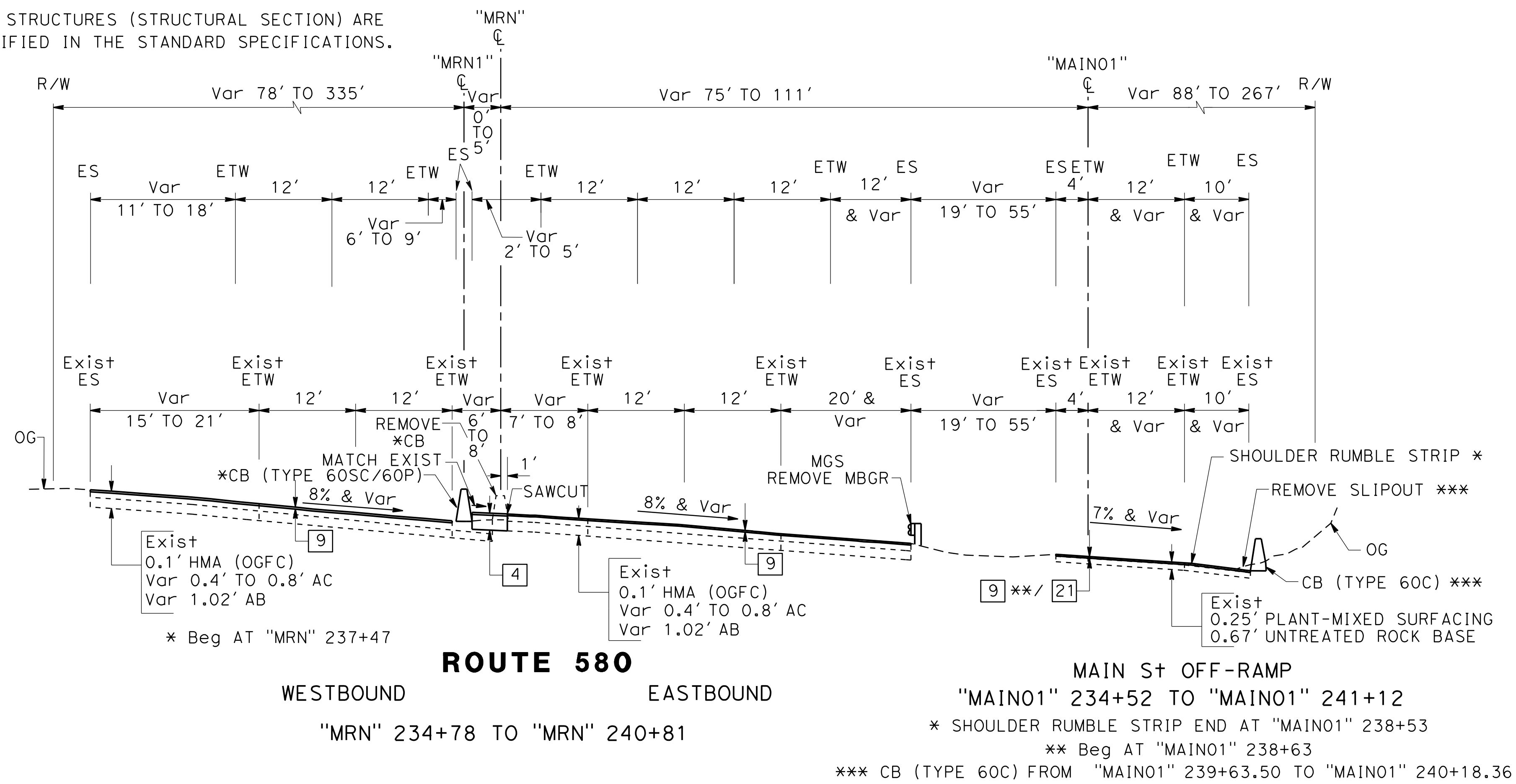
BORDER LAST REVISED 7/2/2010

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	4	564
			7/13/16	REGISTERED CIVIL ENGINEER DATE	
			7/26/2016	PLANS APPROVAL DATE	
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**

DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.



**ROUTE 580**

WESTBOUND EASTBOUND

"MRN" 234+78 TO "MRN" 240+81

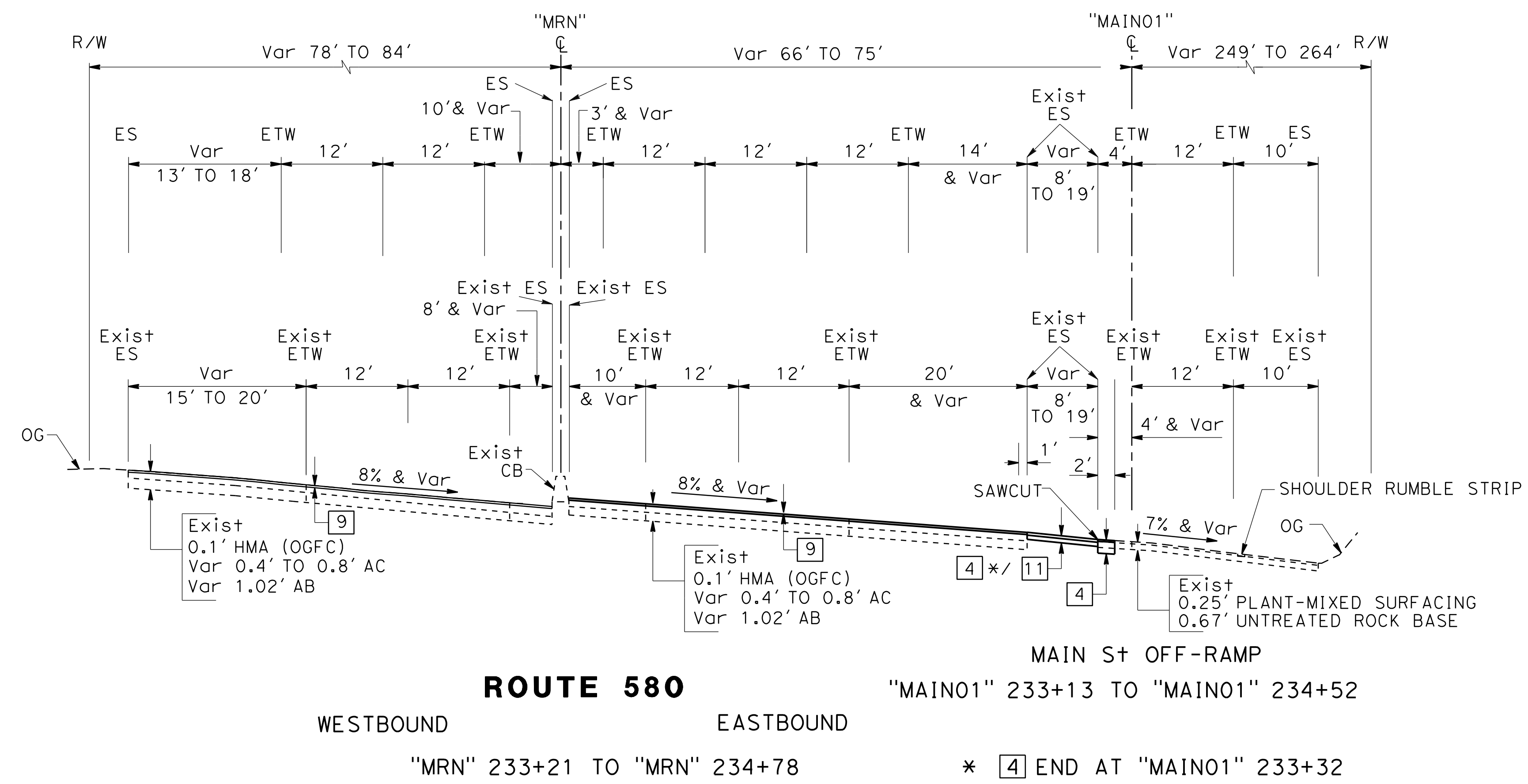
**MAIN St OFF-RAMP**

"MAIN01" 234+52 TO "MAIN01" 241+12

\* SHOULDER RUMBLE STRIP END AT "MAIN01" 238+53

\*\* Beg AT "MAIN01" 238+63

\*\*\* CB (TYPE 60C) FROM "MAIN01" 239+63.50 TO "MAIN01" 240+18.36



**ROUTE 580**

WESTBOUND EASTBOUND

"MRN" 233+21 TO "MRN" 234+78

**MAIN St OFF-RAMP**

"MAIN01" 233+13 TO "MAIN01" 234+52

\* [4] END AT "MAIN01" 233+32

**TYPICAL CROSS SECTIONS**

NO SCALE

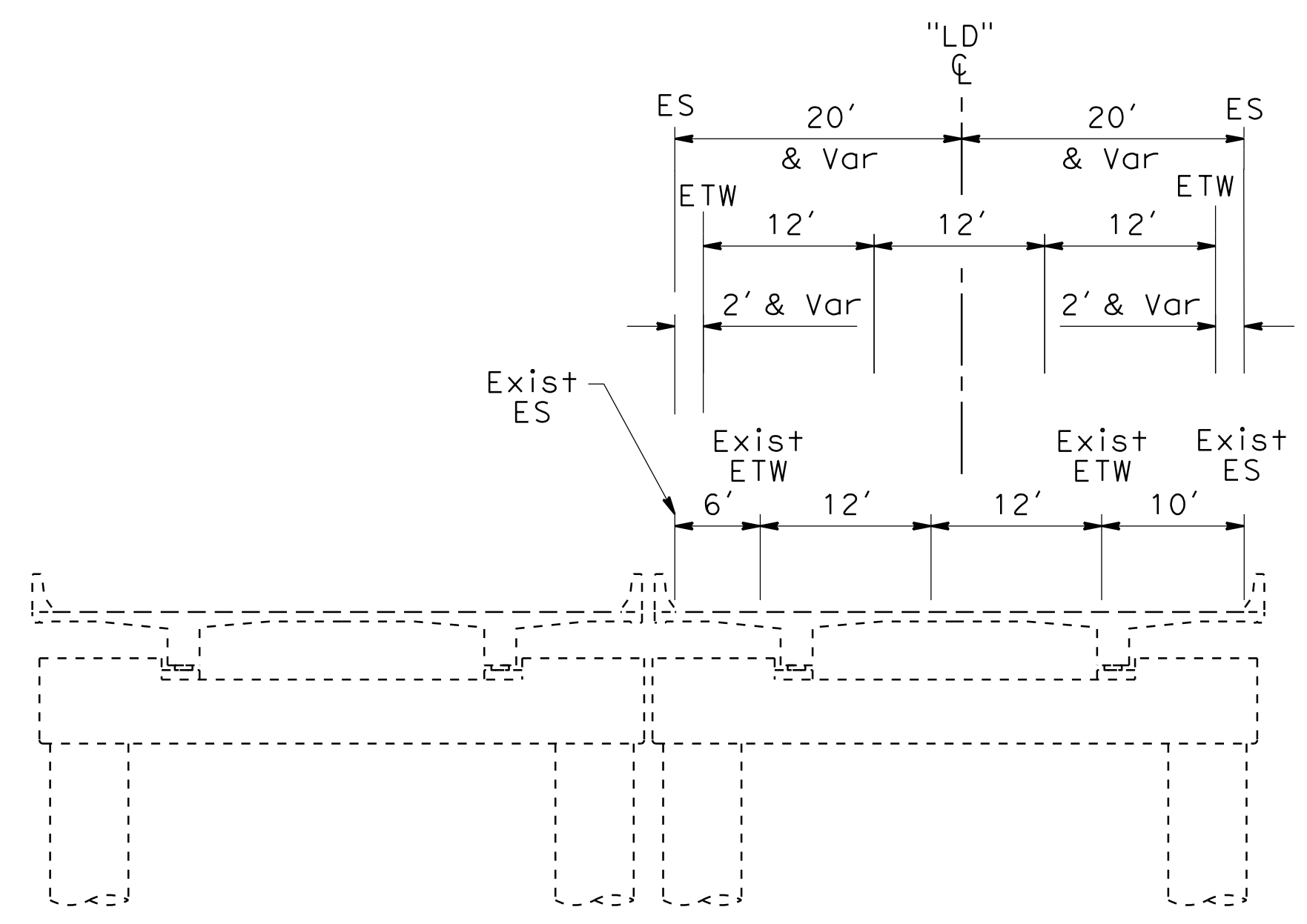
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT - FUNCTIONAL SUPERVISOR	REVISOR
James Pun	James Pun	Ryan Littell
James Pun	James Pun	James Pun
James Pun	James Pun	James Pun



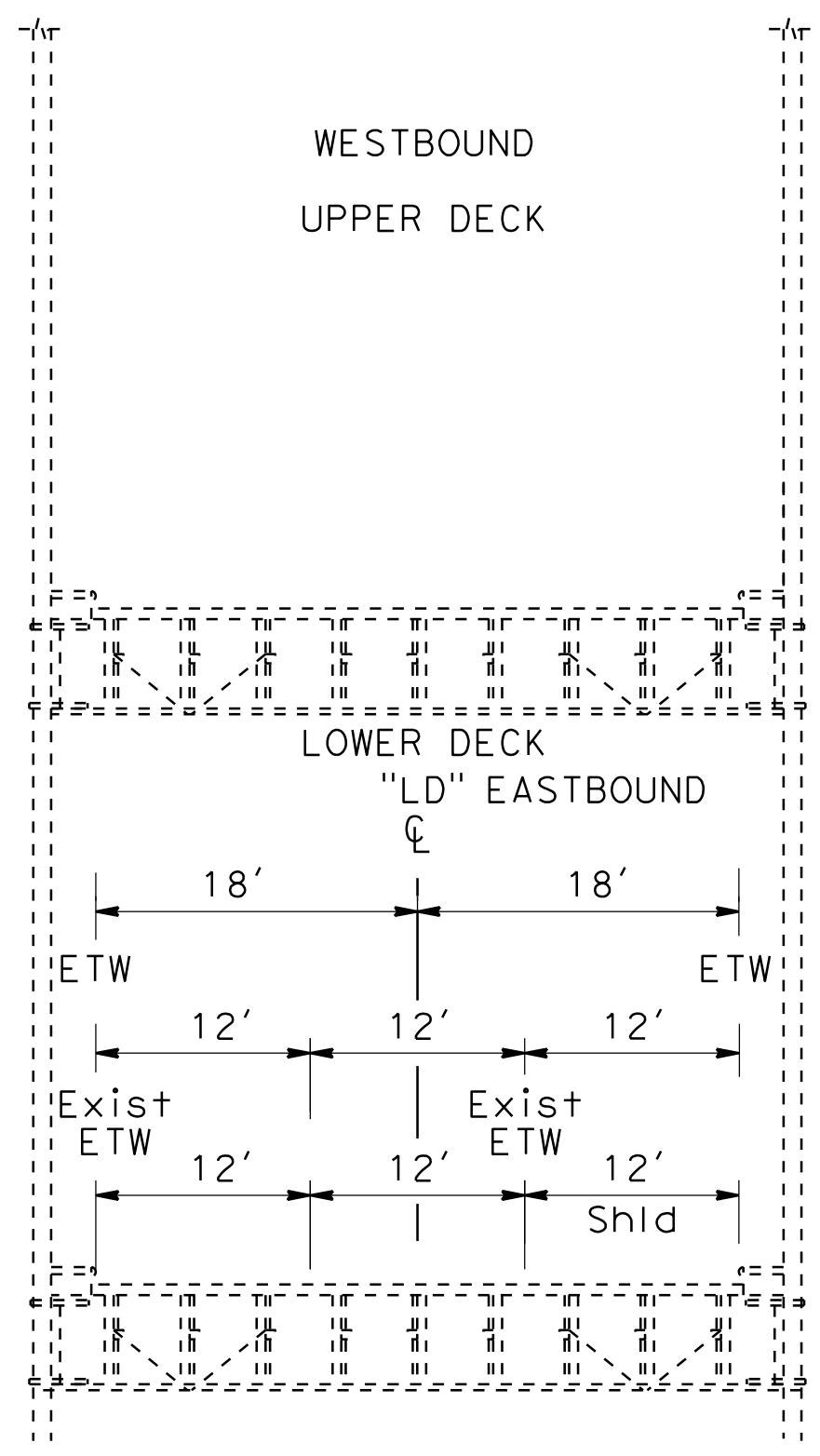
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT - FUNCTIONAL SUPERVISOR: JAMES PUN  
 CALCULATED/DESIGNED BY: RYAN LITTELL  
 CHECKED BY: JAMES PUN  
 REVISED BY: [ ] DATE: [ ]  
 REVISIONS: [ ]

**NOTE:**  
 DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.

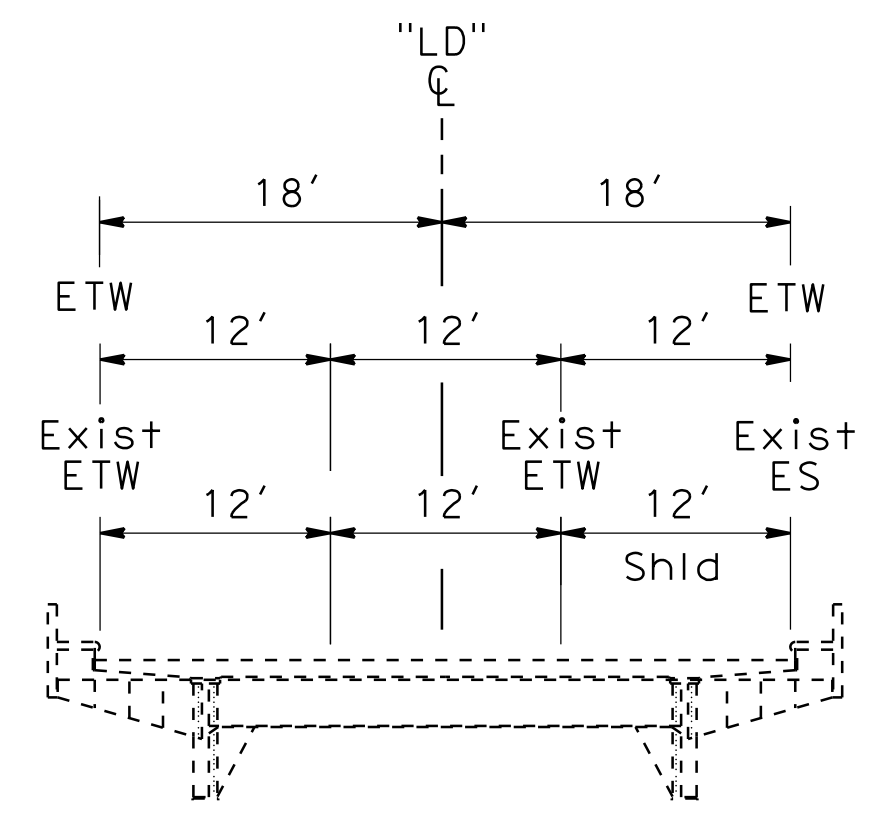
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	6	564
REGISTERED CIVIL ENGINEER			7/13/16	DATE	
7/26/2016			PLANS APPROVAL DATE		
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**ROUTE 580**  
 WESTBOUND EASTBOUND  
 "LD" 249+99 TO "LD" 286+33



**ROUTE 580**  
 "LD" 286+33 TO "LD" 446+34



**ROUTE 580**  
 EASTBOUND  
 "LD" 446+34 TO "LD" 463+34

**TYPICAL CROSS SECTIONS**

NO SCALE

**X-5**

**NOTE:**

DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	7	564

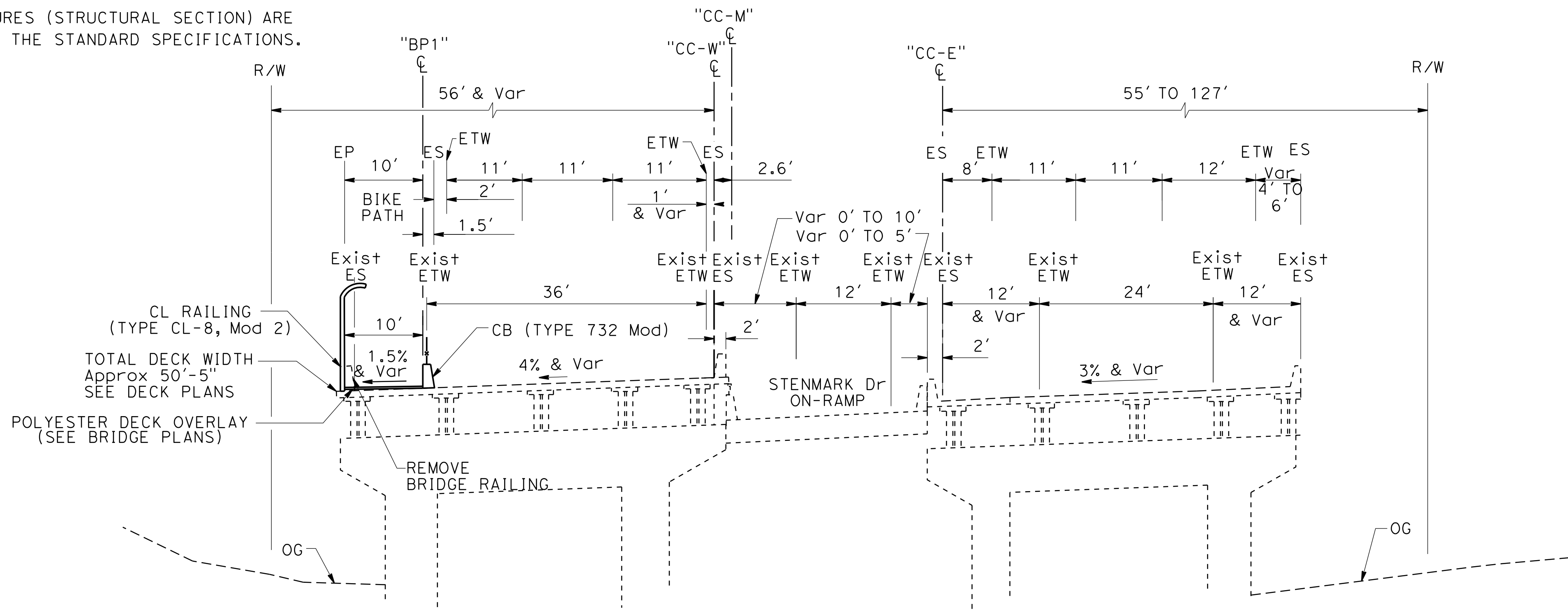
REGISTERED CIVIL ENGINEER DATE 7/13/16

7/26/2016 PLANS APPROVAL DATE

ANTHONY E. SILVA  
No. C75053  
Exp. 12/31/17  
CIVIL

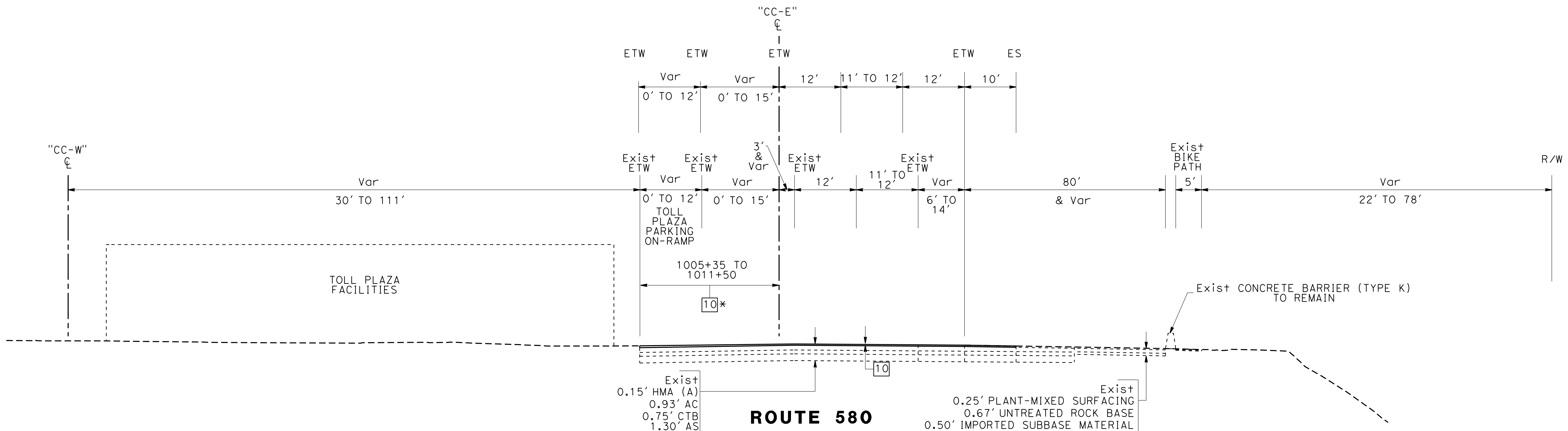
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



**ROUTE 580  
SCOFIELD Ave UC - SEE BRIDGE PLANS**

WESTBOUND EASTBOUND  
 "CC-W" 1015+83 TO "CC-M" 1022+90  
 "CC-E" 1014+47 TO "CC-E" 1021+44  
 "BP1" 1016+72 TO 1023+62



**ROUTE 580**

EASTBOUND

**TYPICAL CROSS SECTIONS**

NO SCALE

"CC-E" 999+65 TO "CC-E" 1014+47

\* COLD PLANE AND OVERLAY FROM "CC-E" 1005+39 TO "CC-E" 1011+86

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT - FUNCTIONAL SUPERVISOR	REVISOR	DATE
Caltrans	JAMES PUN	RYAN LITTELL	
		JAMES PUN	

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 DESIGNED BY: RYAN LITTELL  
 CHECKED BY: JAMES PUN  
 REVISIONS: (None shown)

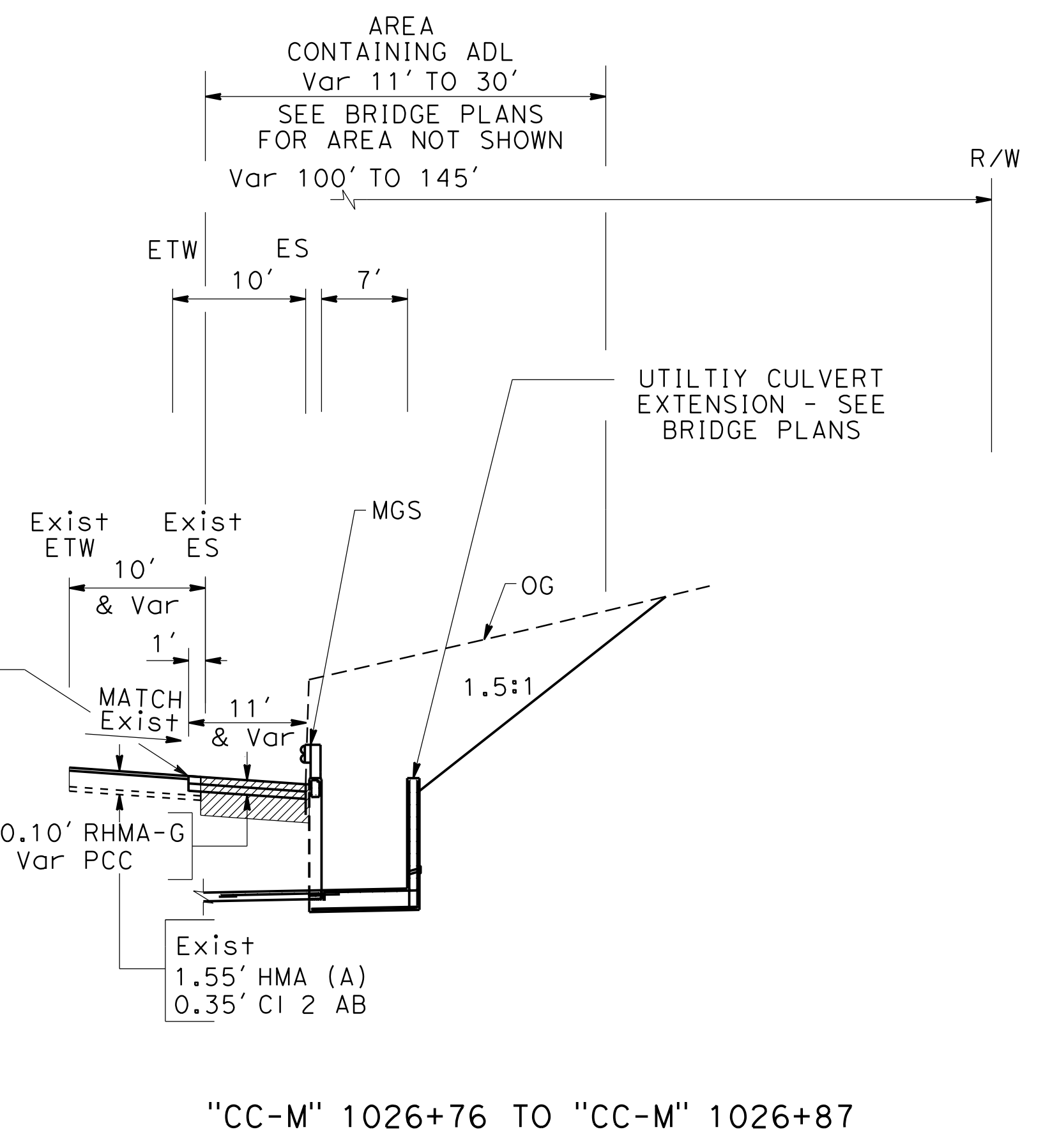
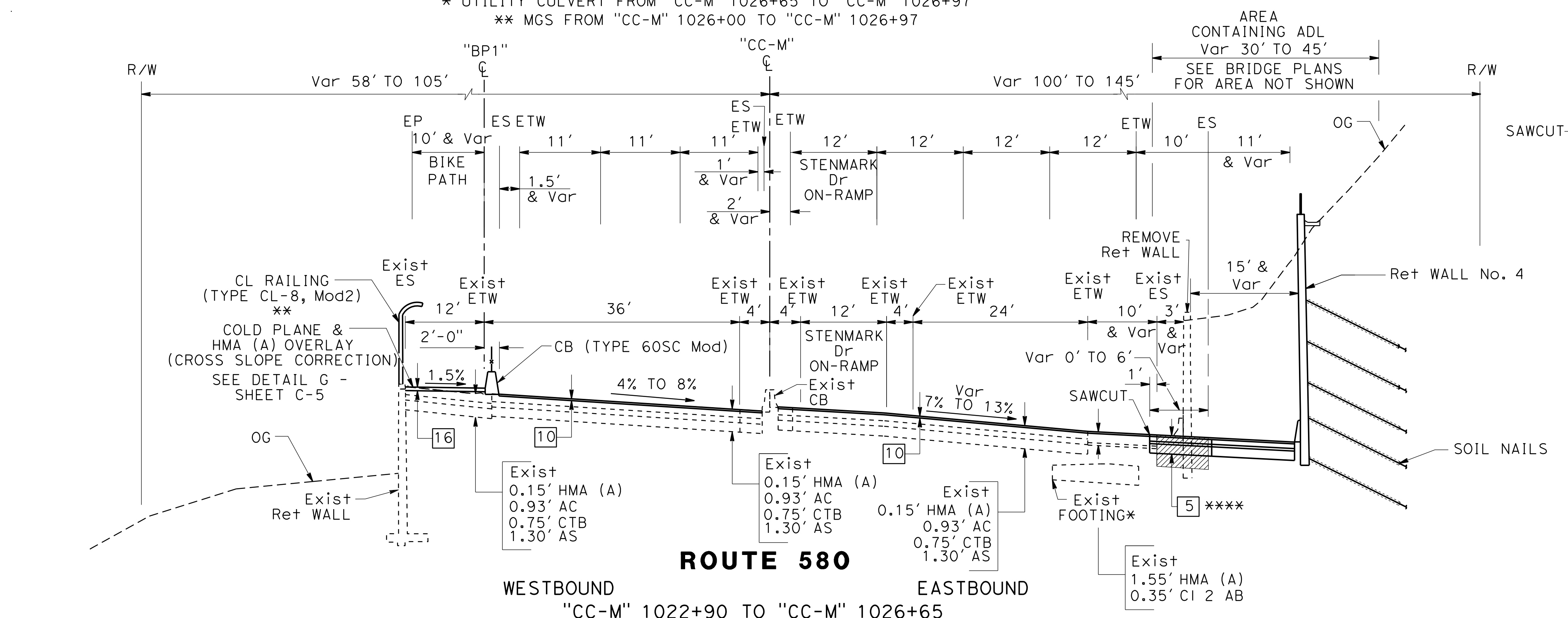
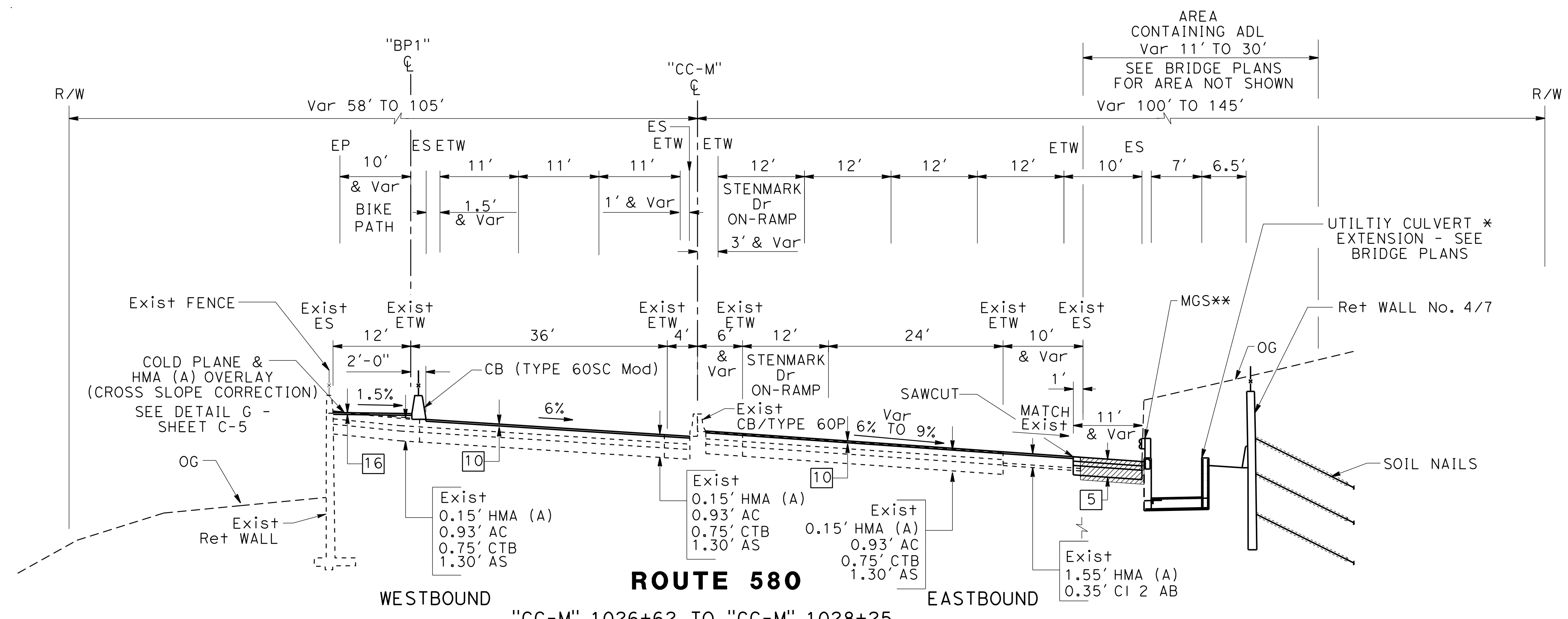
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	8	564

7/26/2016  
 PLANS APPROVAL DATE

REGISTERED CIVIL ENGINEER  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL

HNTB CORPORATION  
 1111 BROADWAY  
 9TH FLOOR  
 OAKLAND, CA 94607

BAY AREA TOLL AUTHORITY  
 375 BEALE STREET  
 SUITE 800  
 SAN FRANCISCO, CA 94105



LIMITS OF AREA CONTAINING AERIALY DEPOSITED LEAD (ADL)

LOCATION	DEPTH
"CC-M" 1023+00 TO "CC-M" 1023+20	2'



**NOTE:**

DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	9	564

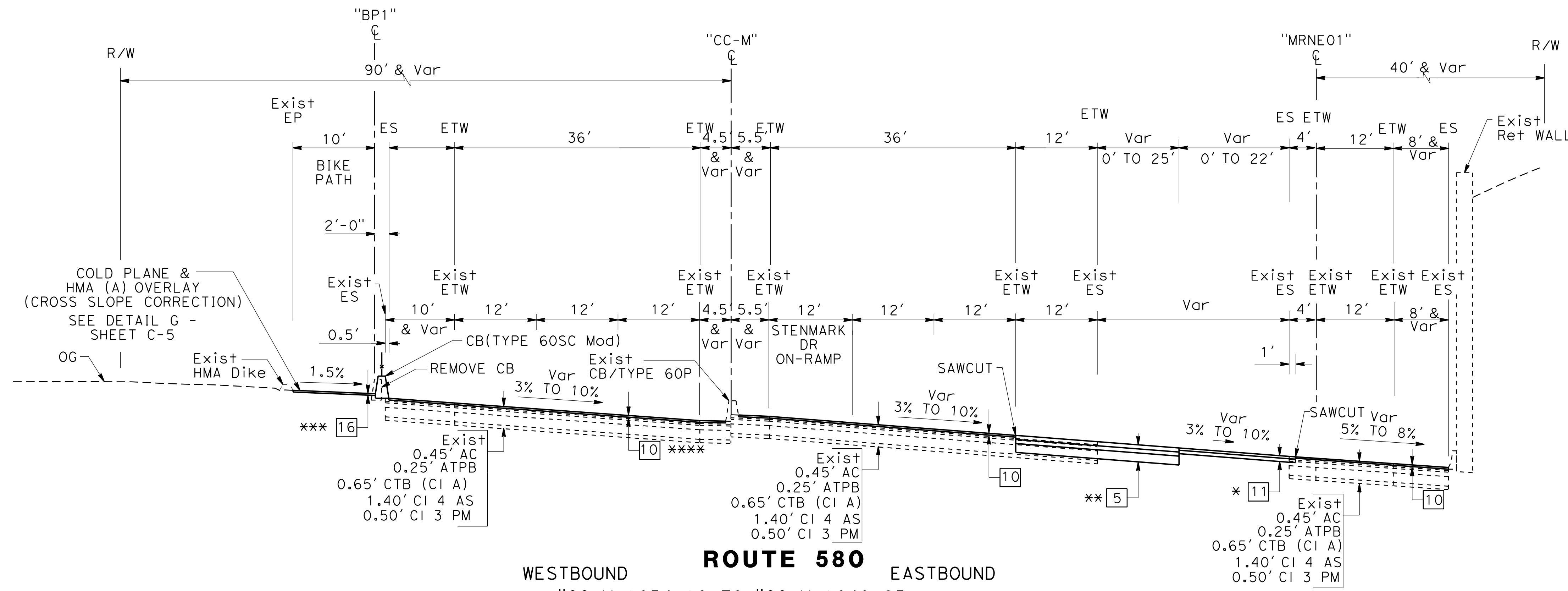
7/13/16  
REGISTERED CIVIL ENGINEER DATE

7/26/2016  
PLANS APPROVAL DATE

ANTHONY E. SILVA  
No. C75053  
Exp. 12/31/17  
CIVIL  
STATE OF CALIFORNIA

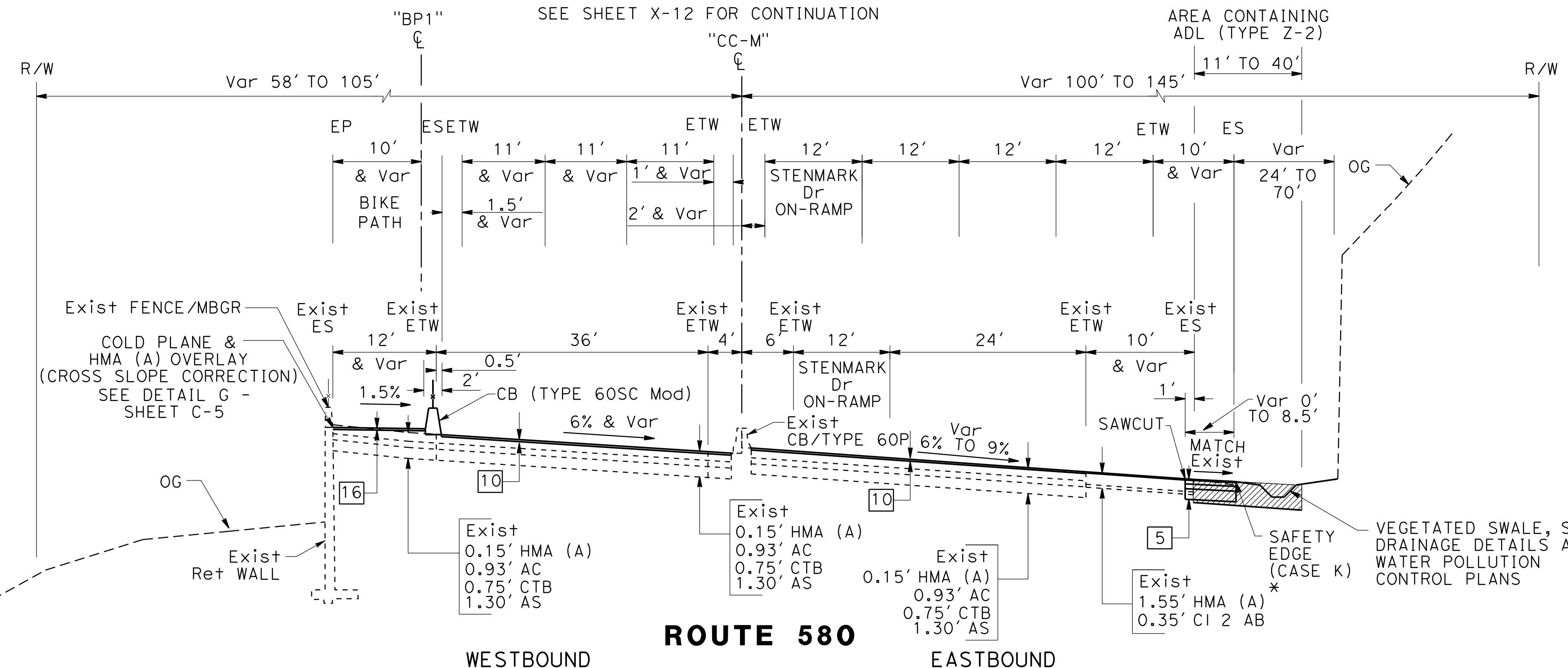
HNTB CORPORATION  
1111 BROADWAY  
9TH FLOOR  
OAKLAND, CA 94607

BAY AREA TOLL AUTHORITY  
375 BEALE STREET  
SUITE 800  
SAN FRANCISCO, CA 94105



**ROUTE 580**  
WESTBOUND EASTBOUND  
"CC-M" 1034+19 TO "CC-M" 1040+25  
"BP1" 1035+08 TO "BP1" 1036+70  
\*\* PAVEMENT Begs AT "CC-M" 1035+42  
\*\*\* Beg AT "CC-M" 1036+91  
\*\*\*\* END AT "BP1" 1040+03  
SEE SHEET X-12 FOR CONTINUATION

MARINE St OFF-RAMP  
"MRNE01" 1034+19 TO "MRNE01" 1038+02  
\* TEXTURED PAVEMENT Begs AT "MRNE01" 1047+01  
SEE SHEET X-13 FOR CONTINUATION



**ROUTE 580**  
WESTBOUND EASTBOUND  
"CC-M" 1028+25 TO "CC-M" 1034+19  
"BP1" 1029+34 TO "BP1" 1035+08  
\* SAFETY EDGE FROM "CC-M" 1028+46 TO 1033+82

LIMITS OF AREA CONTAINING AERIALY DEPOSITED LEAD (ADL)

LOCATION	DEPTH
"CC-M" 1023+00 TO "CC-M" 1034+20	2'

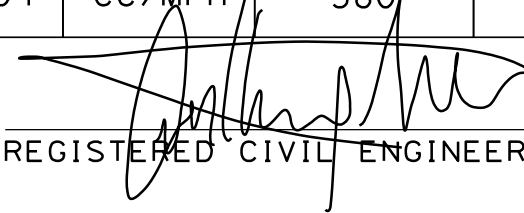
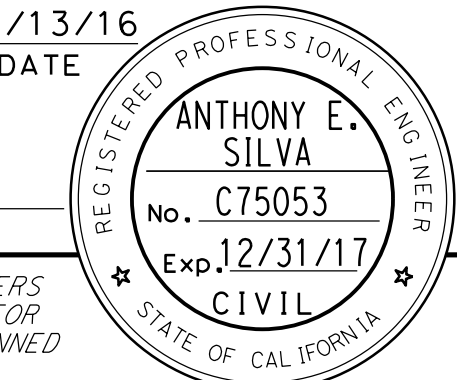
**TYPICAL CROSS SECTIONS**

NO SCALE

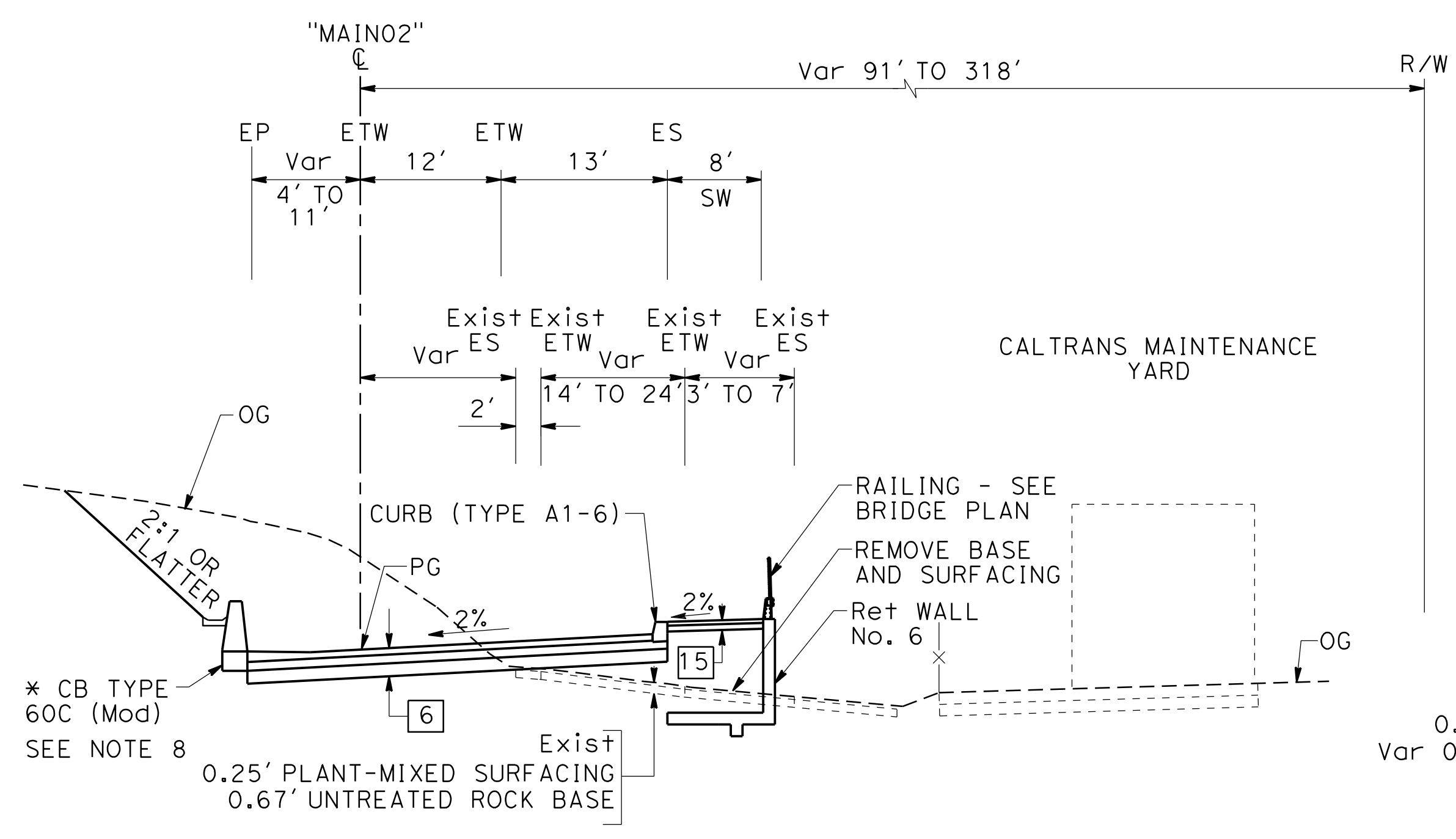
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
Caltrans

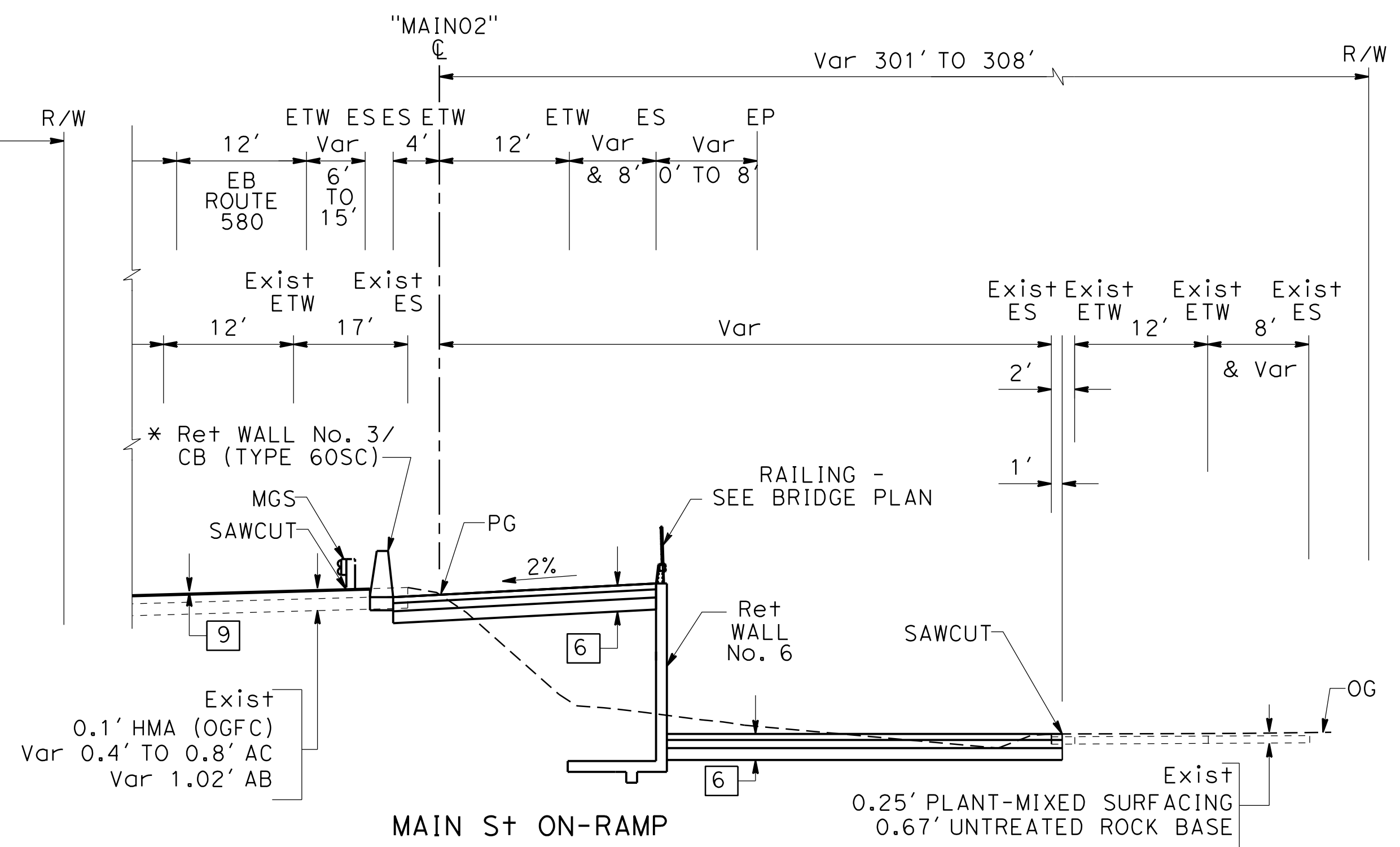
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00-00-00 TIME PLOTTED => 2:57:20 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	10	564
 REGISTERED CIVIL ENGINEER DATE 7/13/16					
7/26/2016			PLANS APPROVAL DATE		
HNTB CORPORATION 1111 BROADWAY OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		

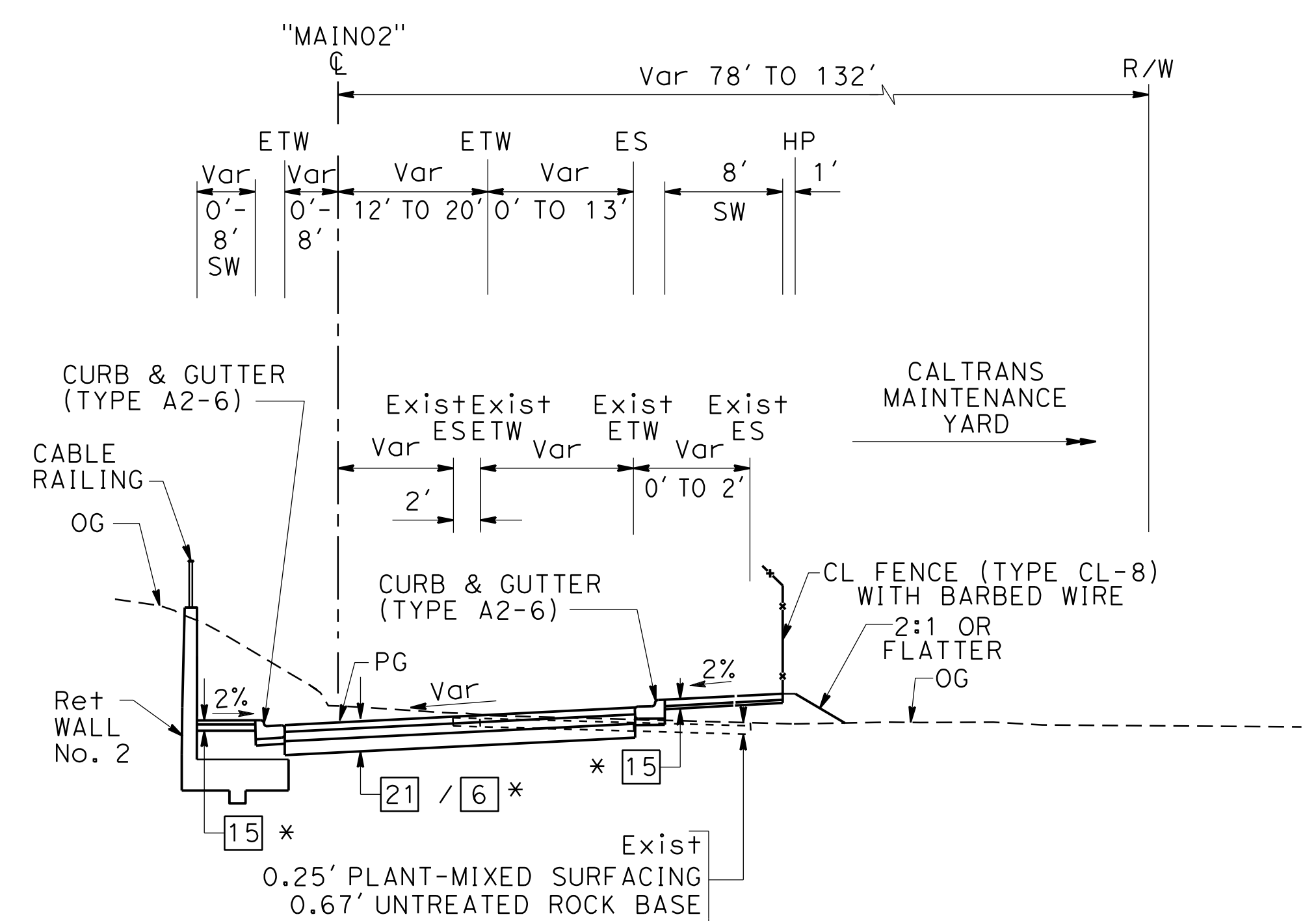
**NOTE:**  
 DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.



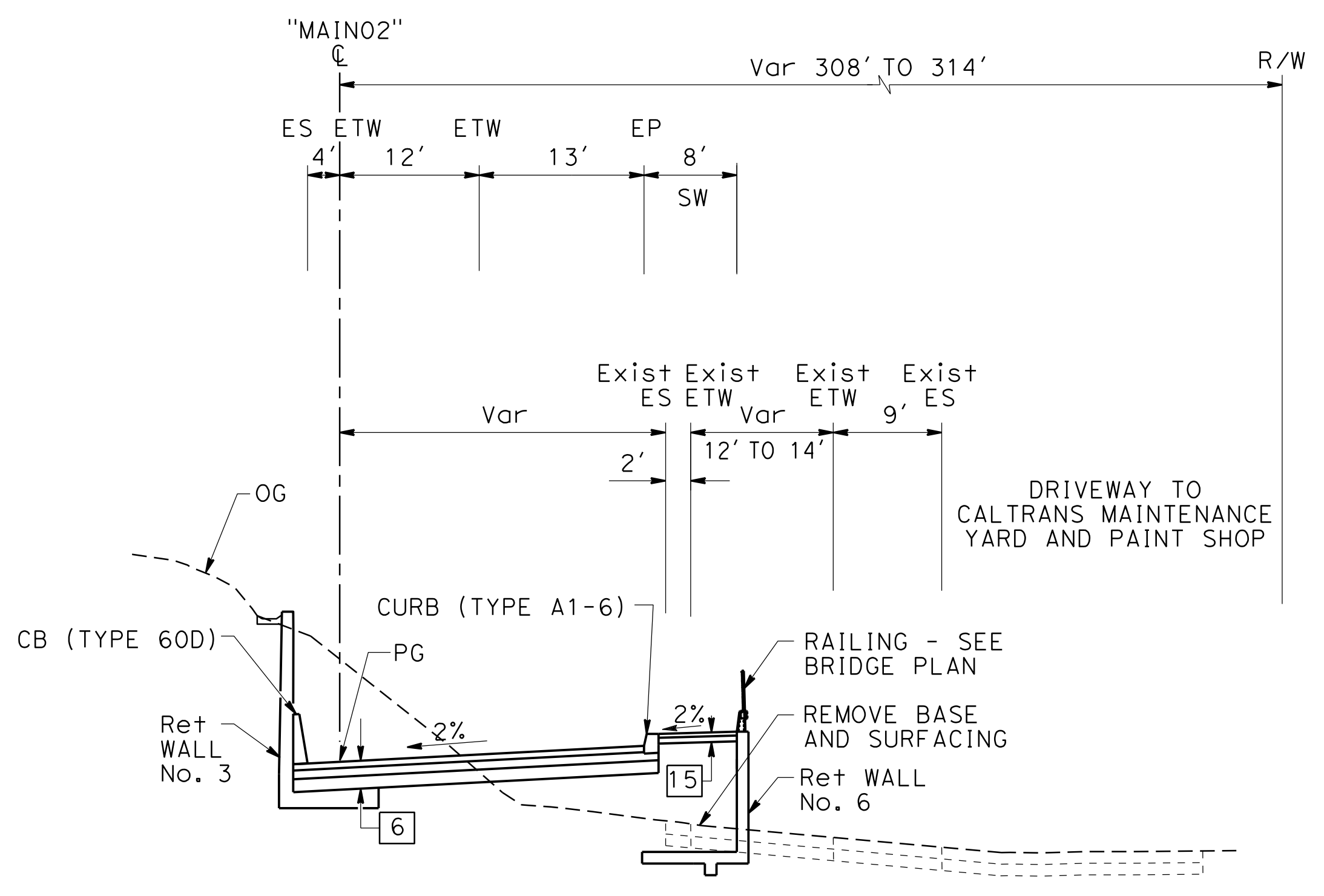
**MAIN St ON-RAMP**  
 "MAIN02" 242+02 TO "MAIN02" 242+64  
 \* CB TYPE 60C (Mod) Begs AT "MAIN02" 242+10



**MAIN St ON-RAMP**  
 "MAIN02" 243+41 TO "MAIN02" 244+39  
 \* Ret WALL No. 3 ENDS AT "MAIN02" 243+96.91  
 SEE SHEET X-4 FOR CONTINUATION



**MAIN St ON-RAMP**  
 "MAIN02" 241+43 TO "MAIN02" 242+02  
 \* SEE CONSTRUCTION DETAILS FOR LIMITS



**MAIN St ON-RAMP**  
 "MAIN02" 242+64 TO "MAIN02" 243+41

**TYPICAL CROSS SECTIONS**

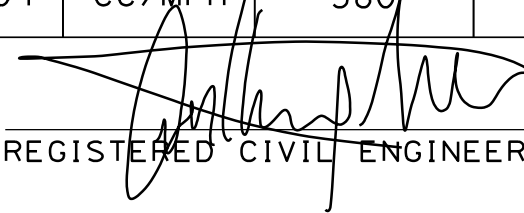
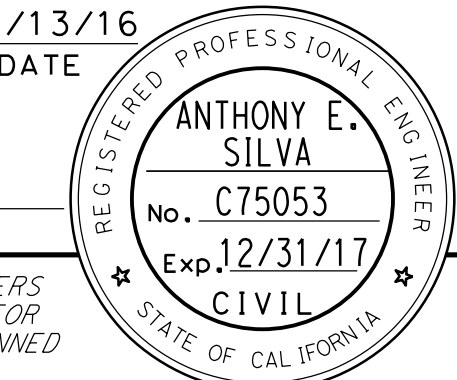
NO SCALE

X-9

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT: JAMES PUN  
 DESIGNED BY: RYAN LITTELL  
 CHECKED BY: JAMES PUN  
 REVISIONS: (None listed)

LAST REVISION: DATE PLOTTED => 7/14/2016  
 00-00-00 TIME PLOTTED => 2:57:21 PM



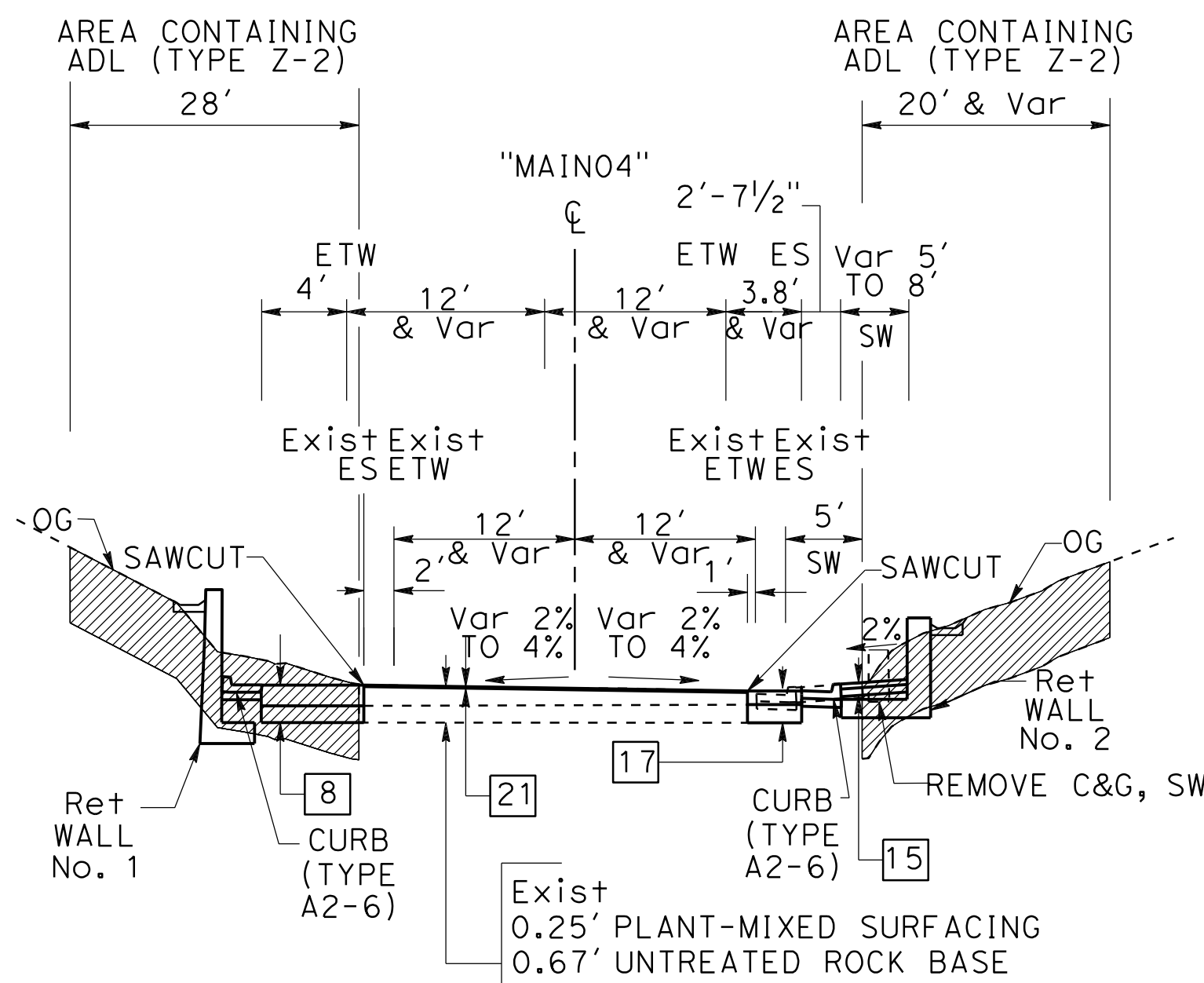
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	11	564
 REGISTERED CIVIL ENGINEER DATE 7/13/16					
7/26/2016 PLANS APPROVAL DATE					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		

**NOTE:**

DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.

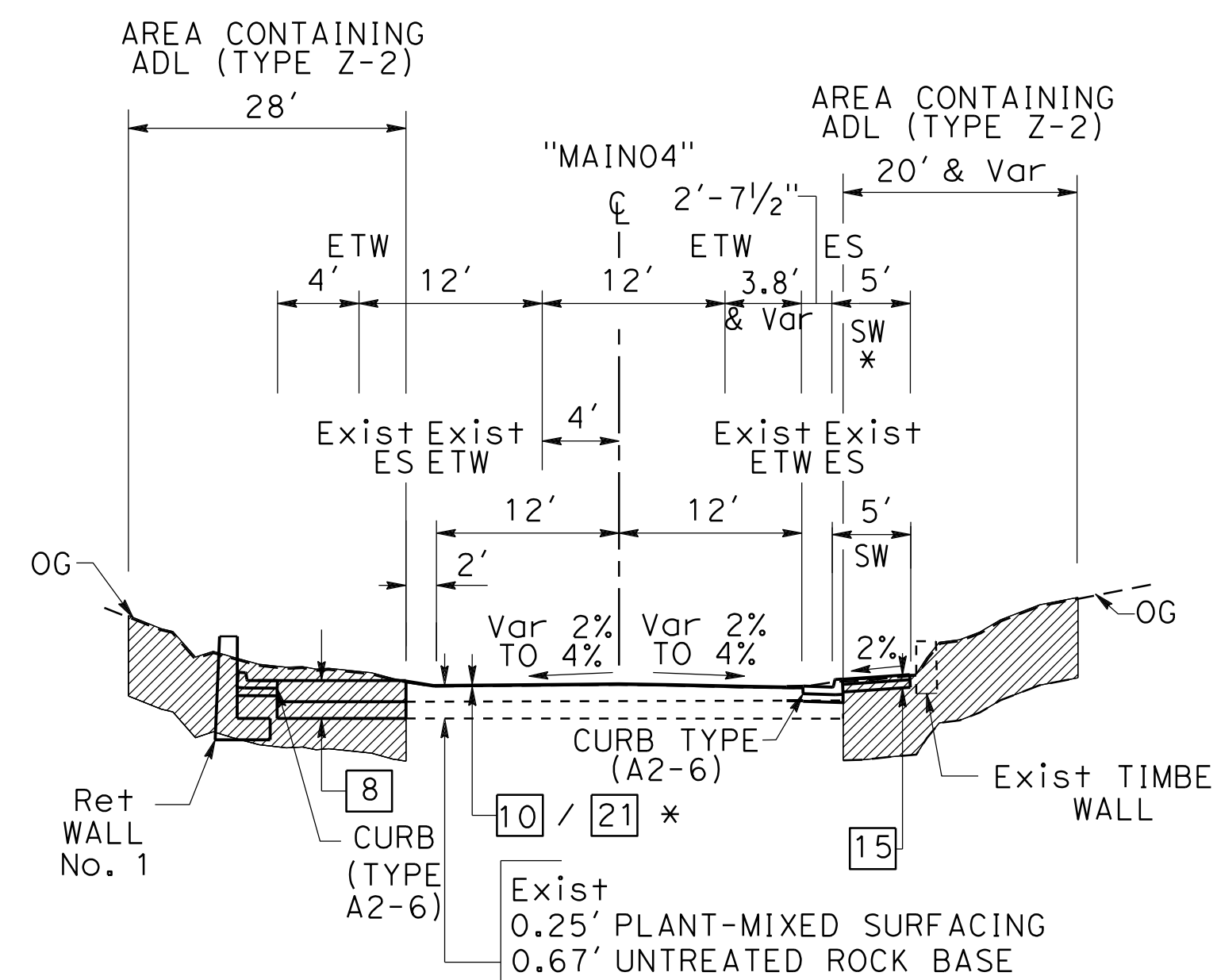
LIMITS OF AREA CONTAINING AERIALY DEPOSITED LEAD (ADL)

LOCATION	DEPTH
"MAIN04" 4+25 TO "MAIN04" 6+25	2.0'



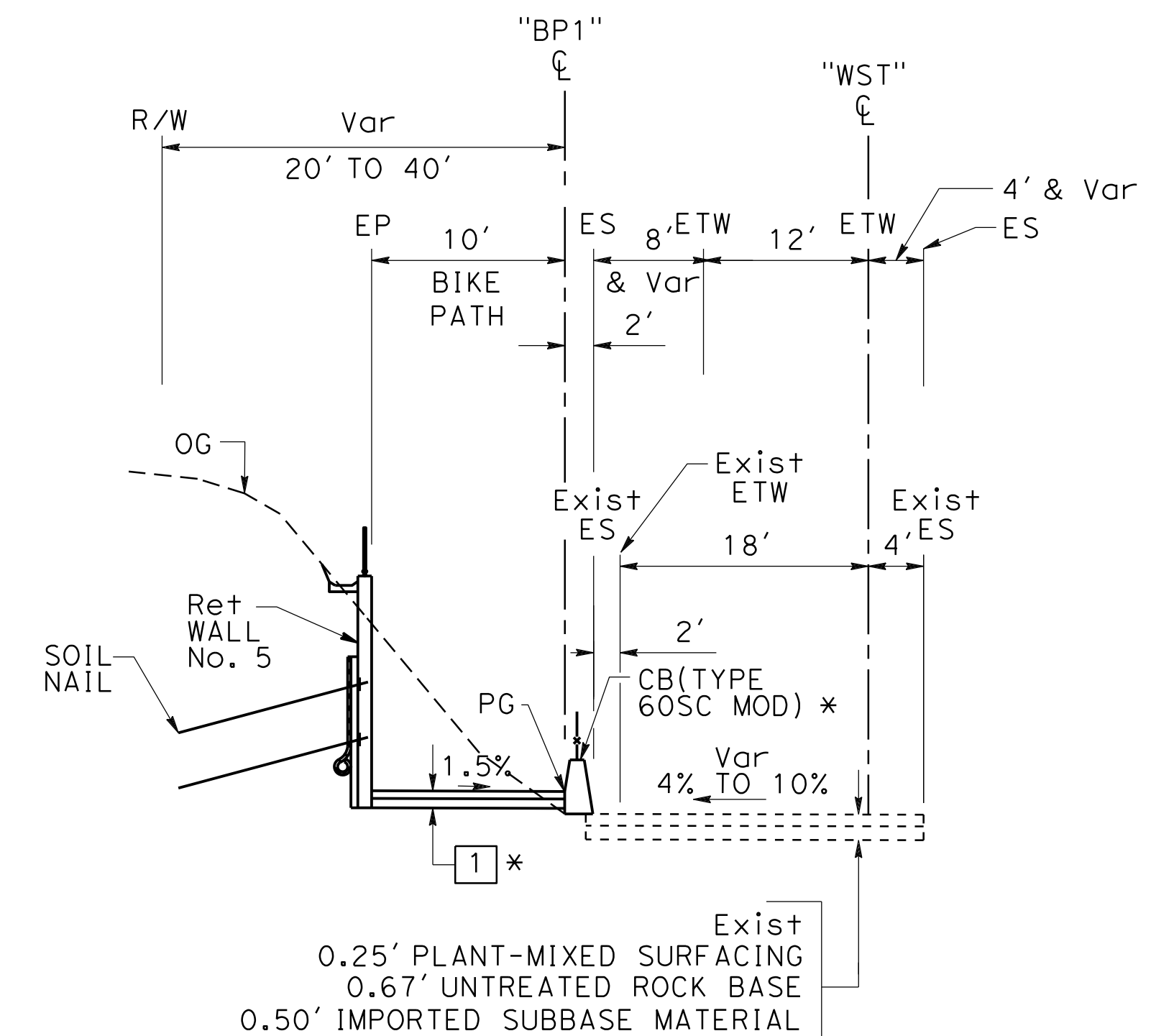
MAIN STREET

"MAIN04" 4+20 TO "MAIN04" 4+67



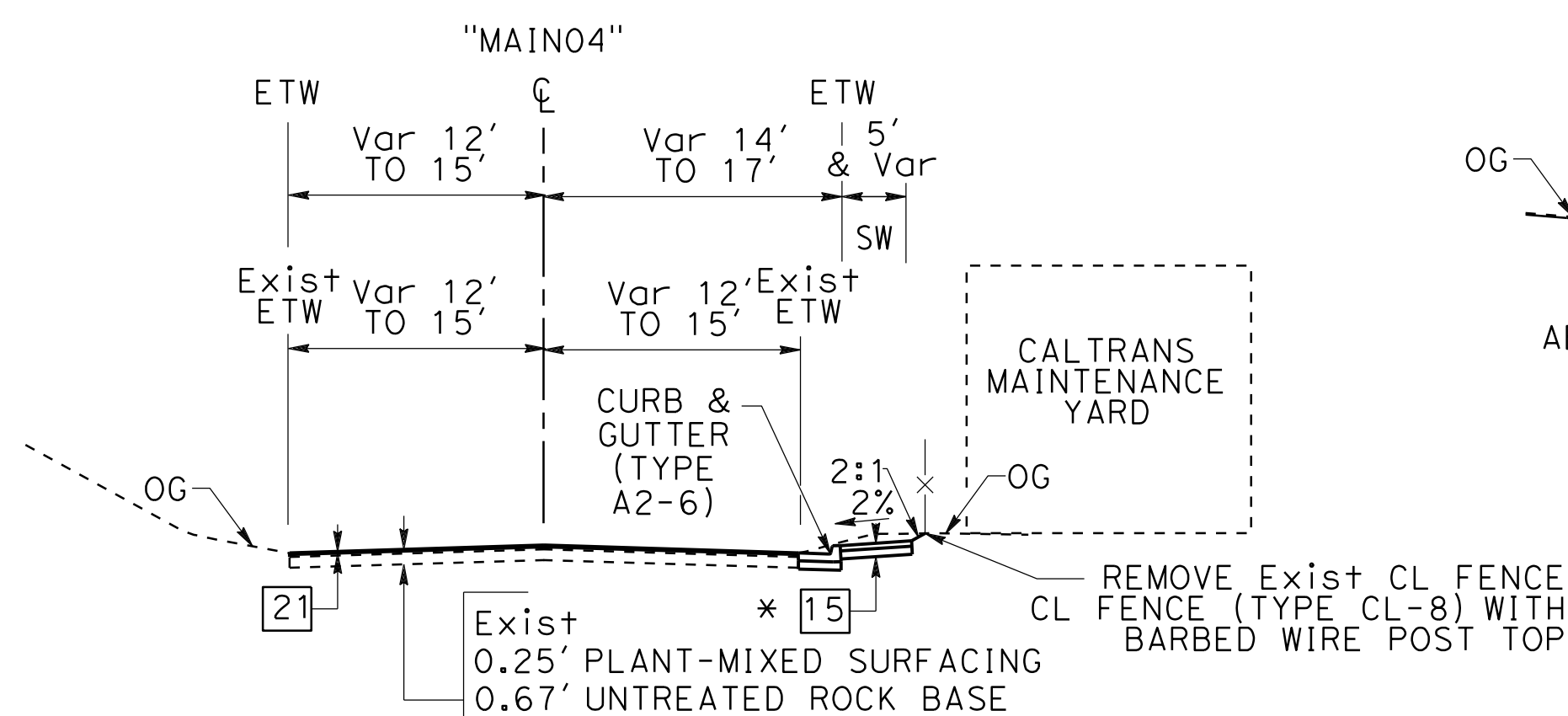
MAIN STREET

"MAIN04" 5+78 TO "MAIN04" 6+61  
\* SEE CONSTRUCTION DETAILS FOR LIMITS



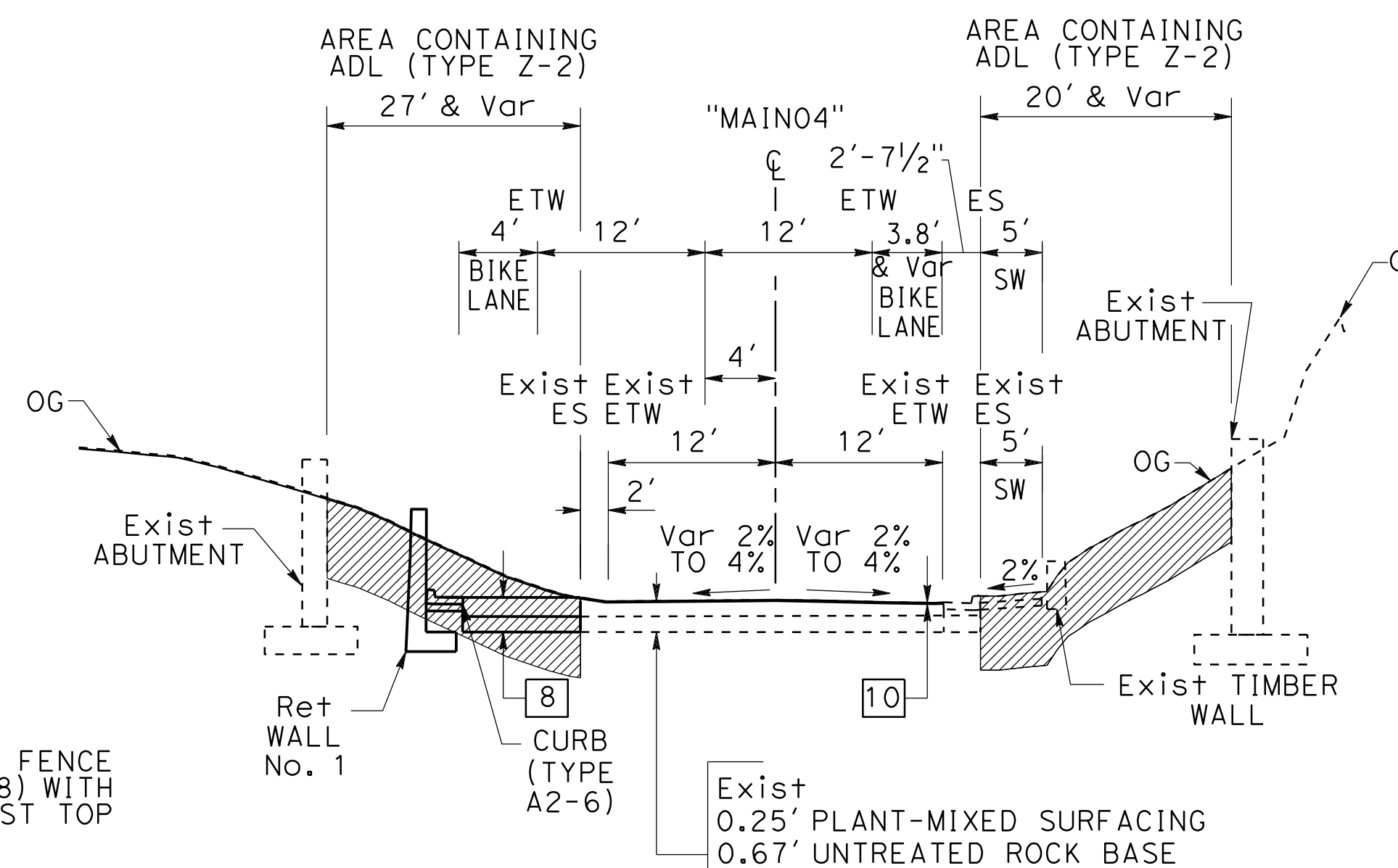
STENMARK Dr OFF-RAMP

"WST" 1004+69 TO "WST" 1010+76  
"BP1" 1005+58 TO "BP1" 1011+32  
\* CB Beg AT "BP1" 1005+93



MAIN STREET

"MAIN04" 3+26 TO "MAIN04" 4+20



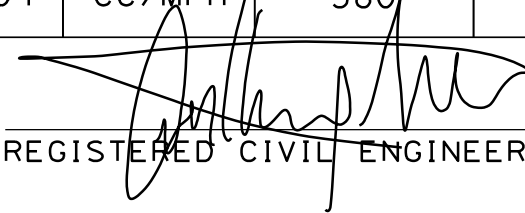
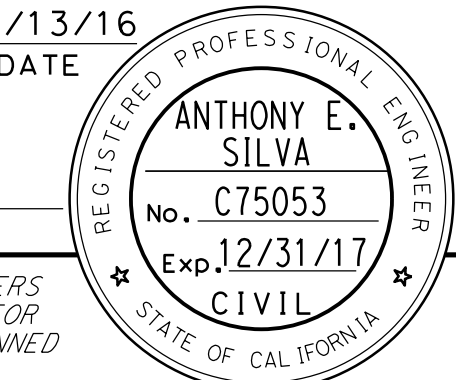
MAIN STREET

"MAIN04" 4+67 TO "MAIN04" 5+78

**TYPICAL CROSS SECTIONS**

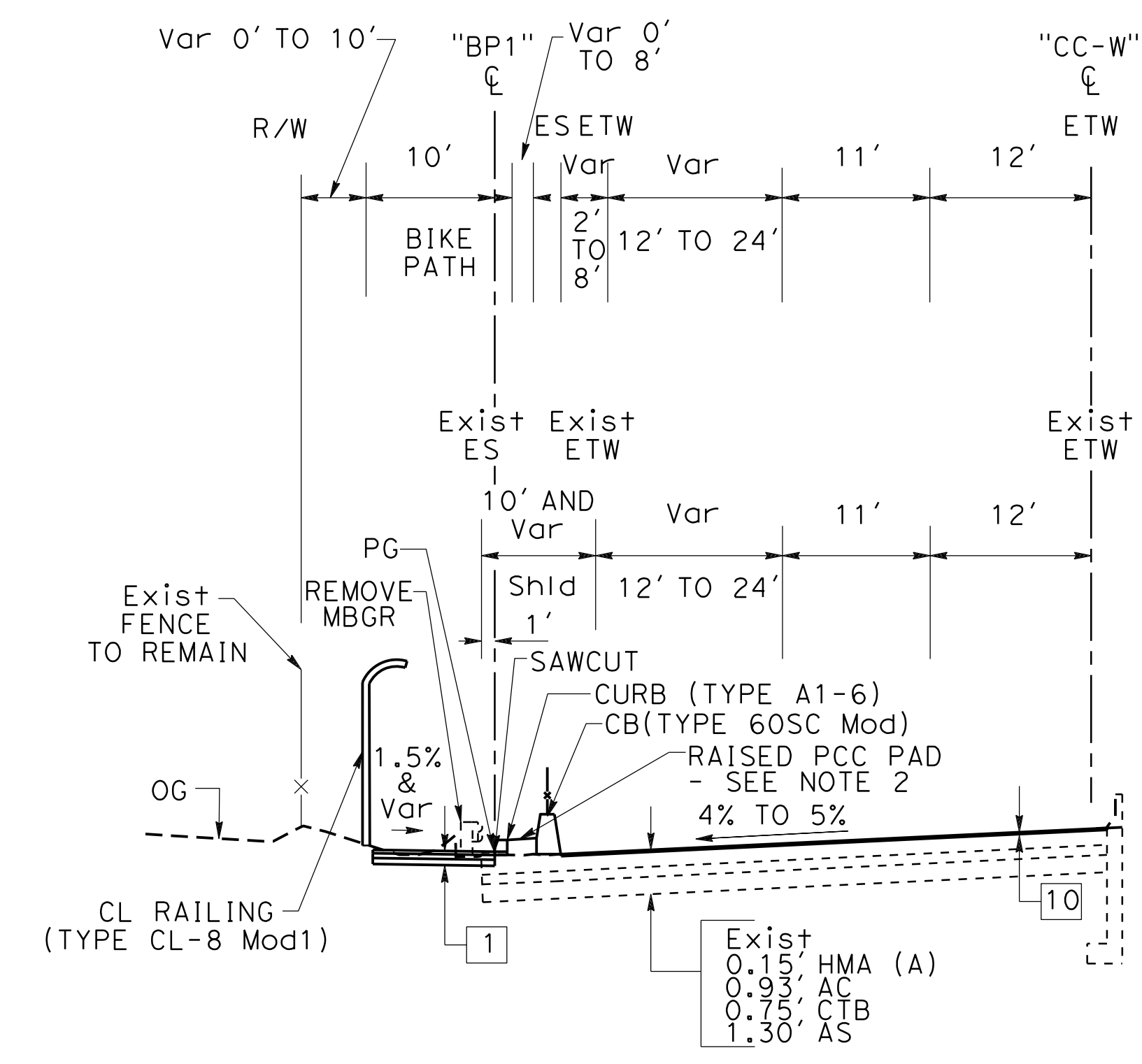
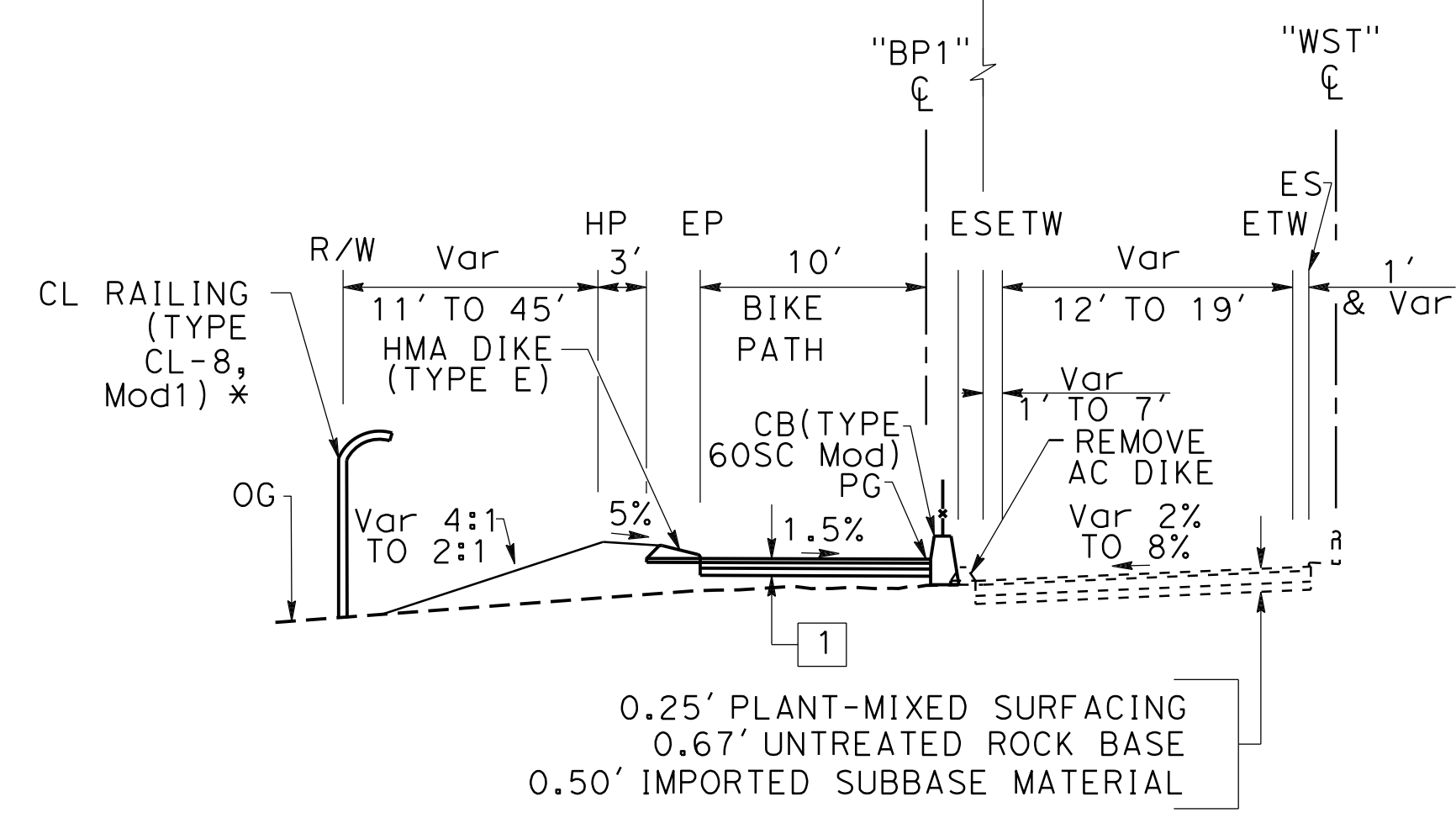
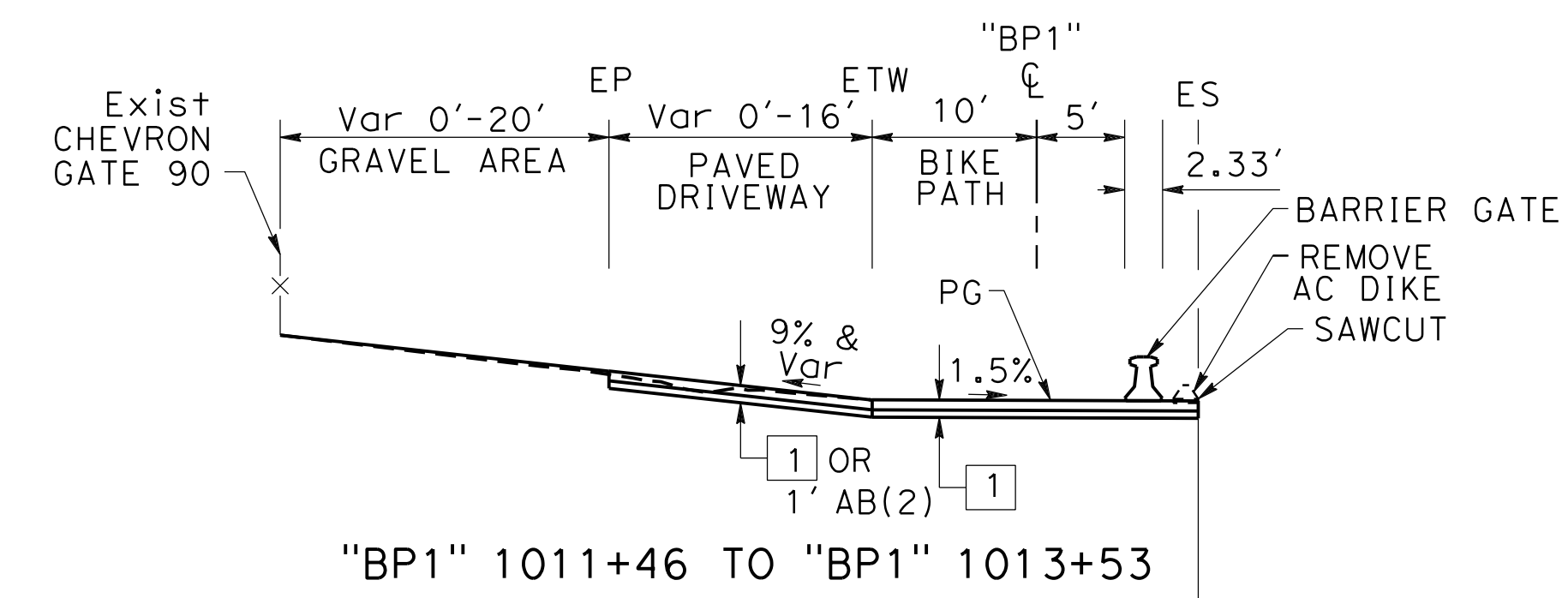
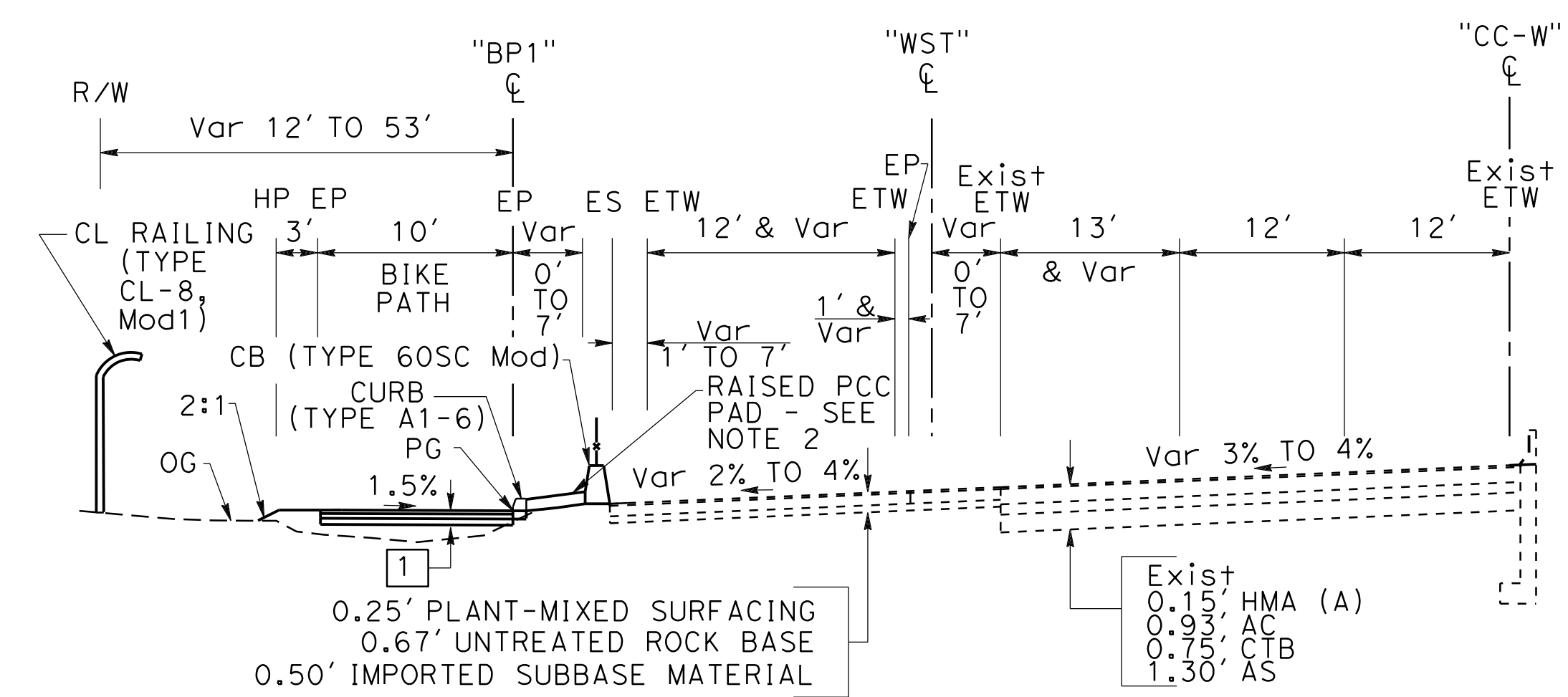
NO SCALE

**X-10**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	12	564
 REGISTERED CIVIL ENGINEER DATE 7/13/16					
7/26/2016 PLANS APPROVAL DATE					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		

**NOTE:**

- DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
- SEE DETAIL A, SHEET E-38 FOR ELECTRICAL EQUIPMENT TO BE RELOCATED IN THIS AREA.



**TYPICAL CROSS SECTIONS**  
NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 Et Caltrans

REVISOR: RYAN LITTELL, JAMES PUN  
 CHECKED BY: JAMES PUN

CONSULTANT: JAMES PUN

LAST REVISION: DATE PLOTTED => 7/14/2016  
 00-00-00 TIME PLOTTED => 2:57:23 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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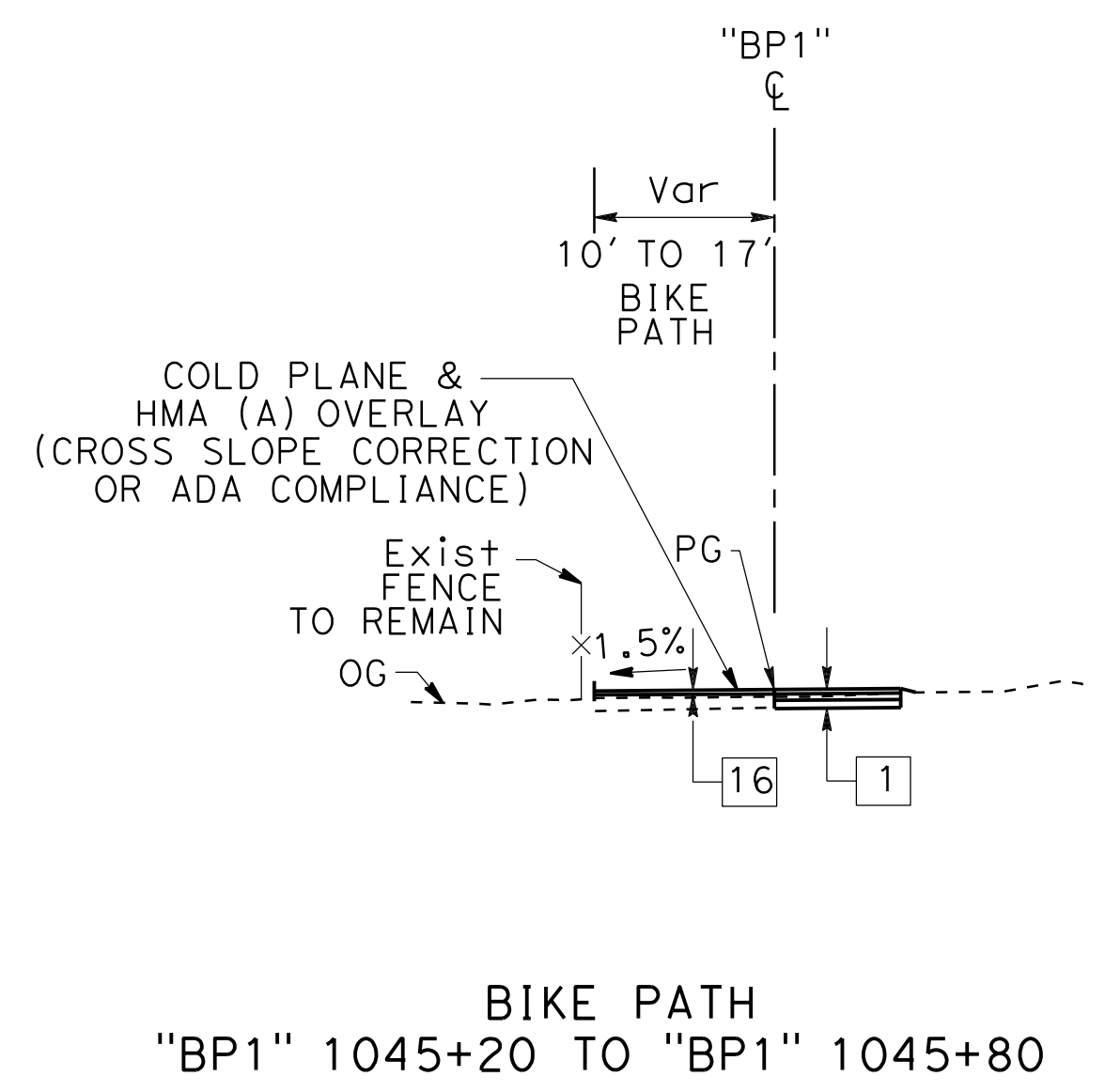
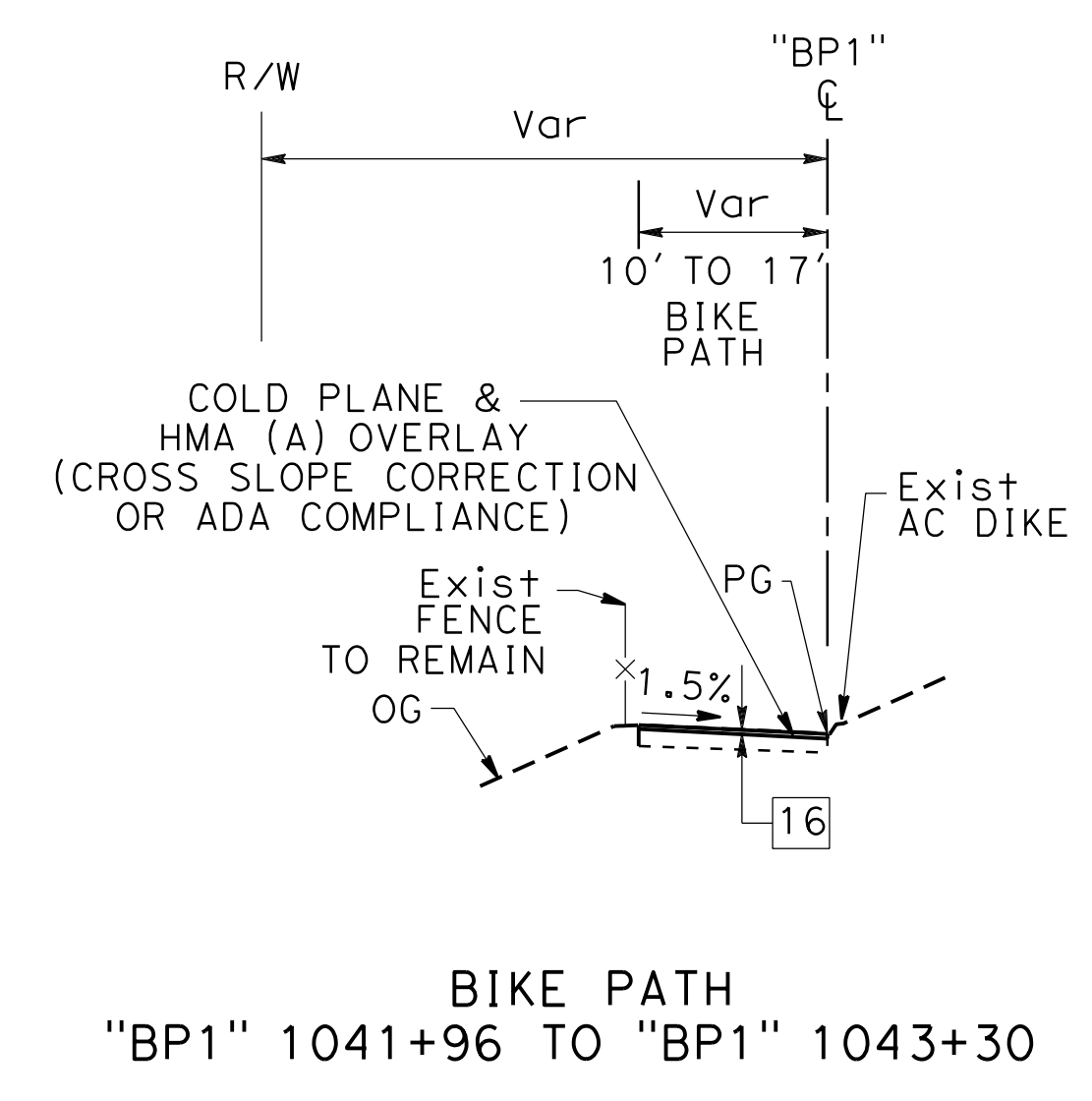
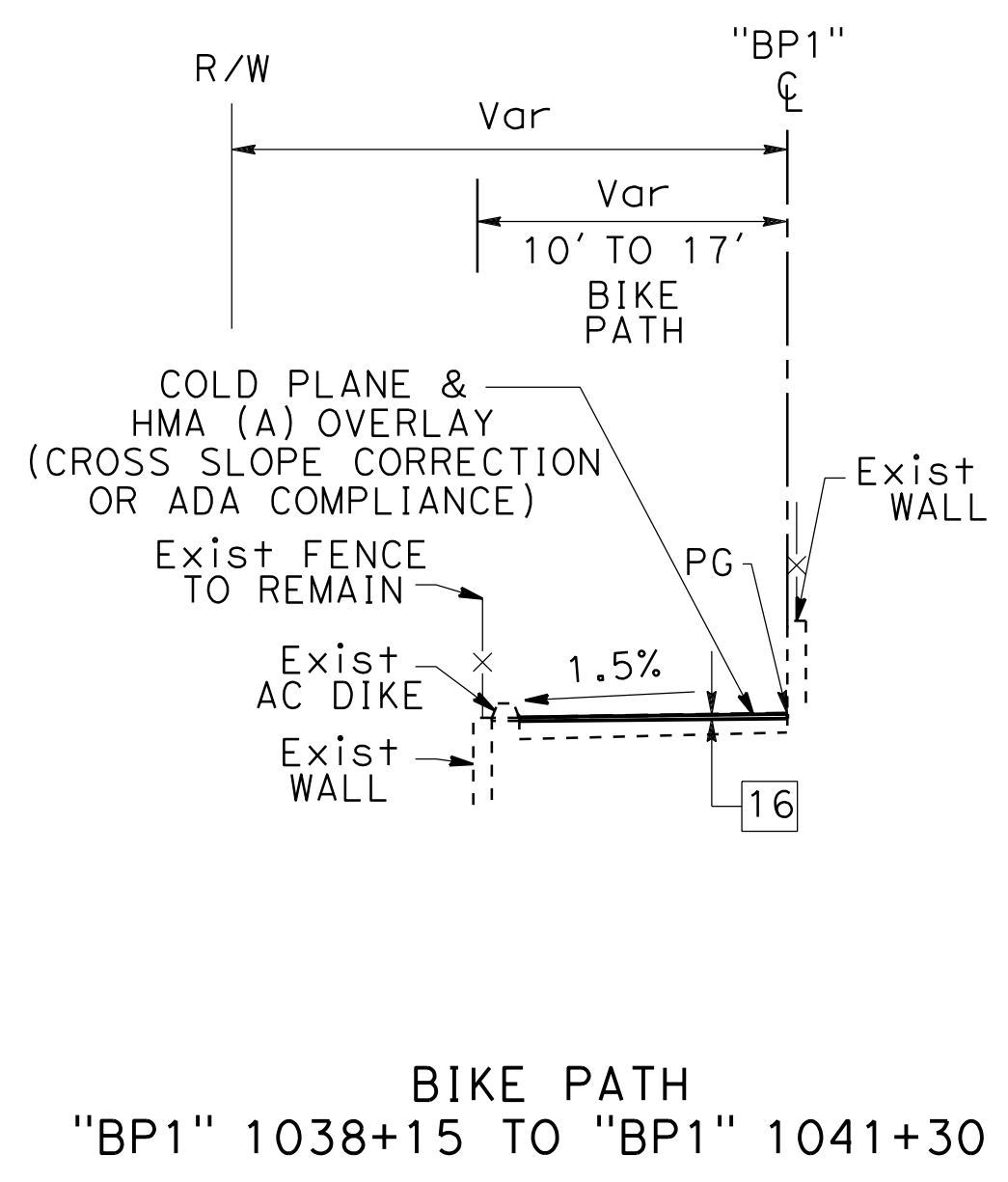
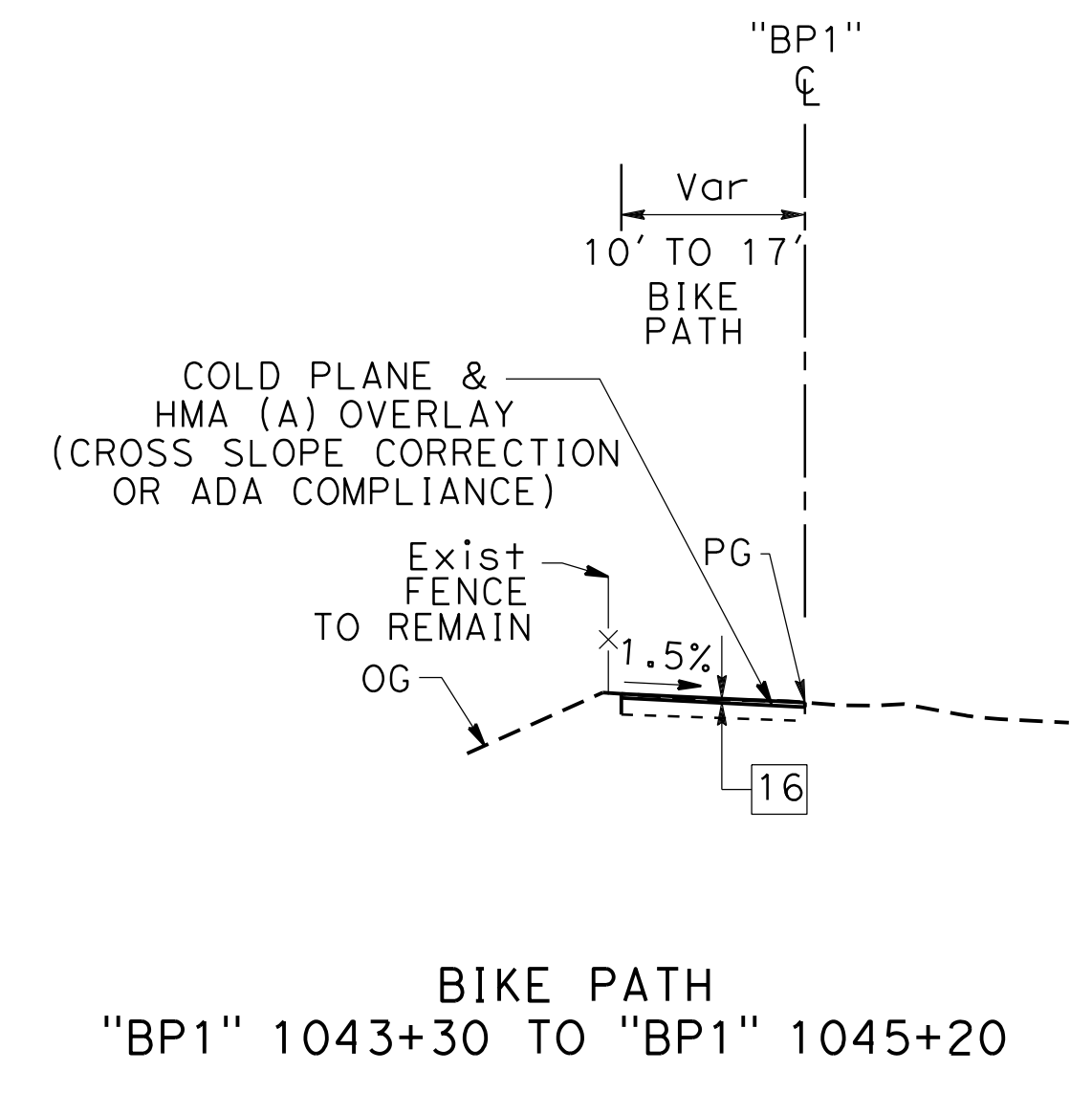
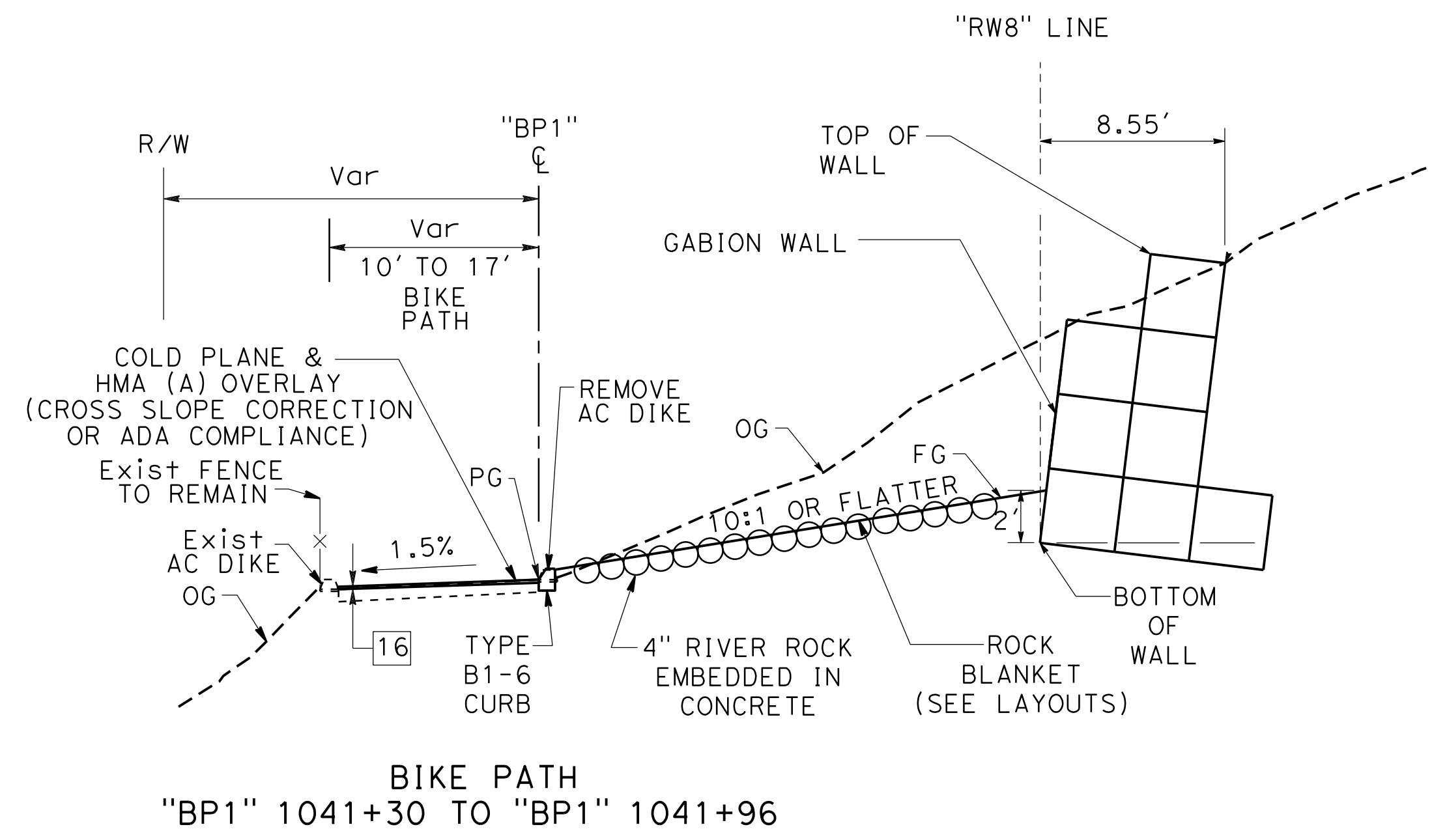
  

REGISTERED CIVIL ENGINEER	DATE
<i>[Signature]</i>	7/13/16
PLANS APPROVAL DATE	
7/26/2016	

ANTHONY E. SILVA No. C75053 Exp. 12/31/17 CIVIL STATE OF CALIFORNIA	
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>	
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105

**NOTE:**  
 DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.



**TYPICAL CROSS SECTIONS**

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 Caltrans

REVISOR BY: RYAN LITTELL  
 DATE REVISOR: JAMES PUN

CALCULATED/DESIGNED BY: JAMES PUN  
 CHECKED BY:

CONSULTANT FUNCTIONAL SUPERVISOR: JAMES PUN

USERNAME => rdelleon  
 DGN FILE => 0414000552ca012.dgn



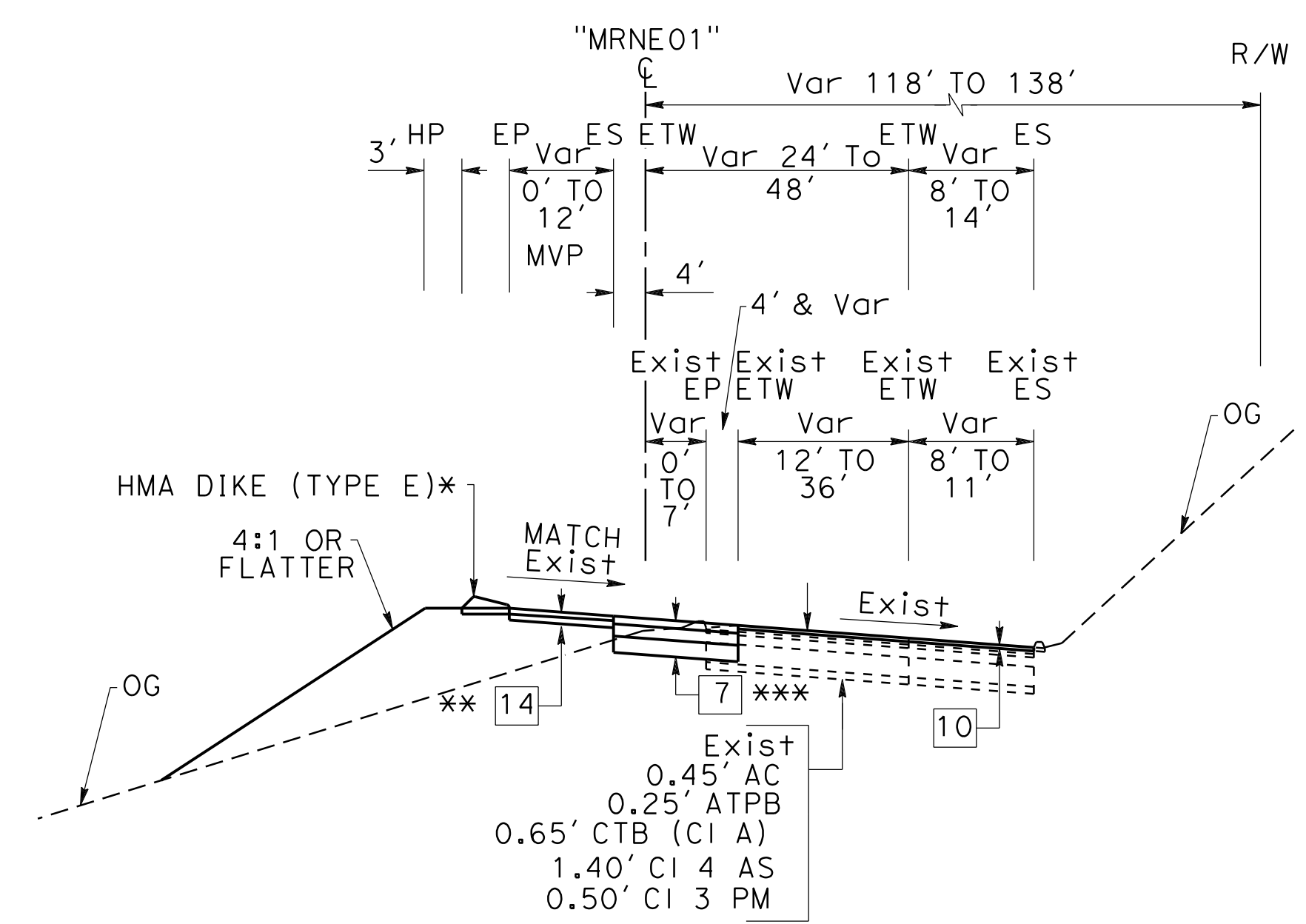
UNIT 0000

PROJECT NUMBER & PHASE 04140005521

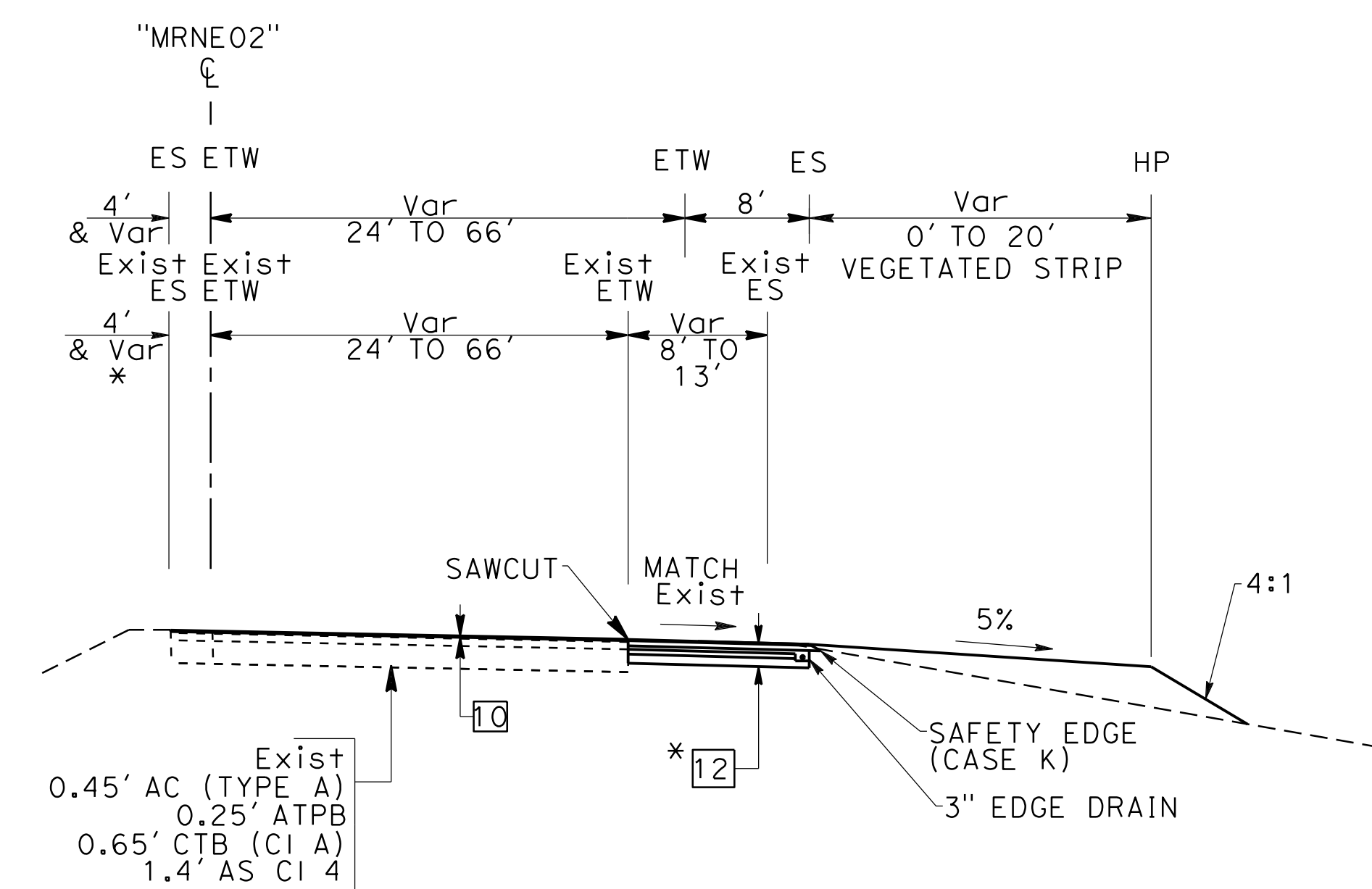
LAST REVISION: DATE PLOTTED => 7/14/2016  
 00-00-00 TIME PLOTTED => 2:57:24 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	14	564
REGISTERED CIVIL ENGINEER			DATE	7/13/16	
PLANS APPROVAL DATE			7/26/2016		
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		

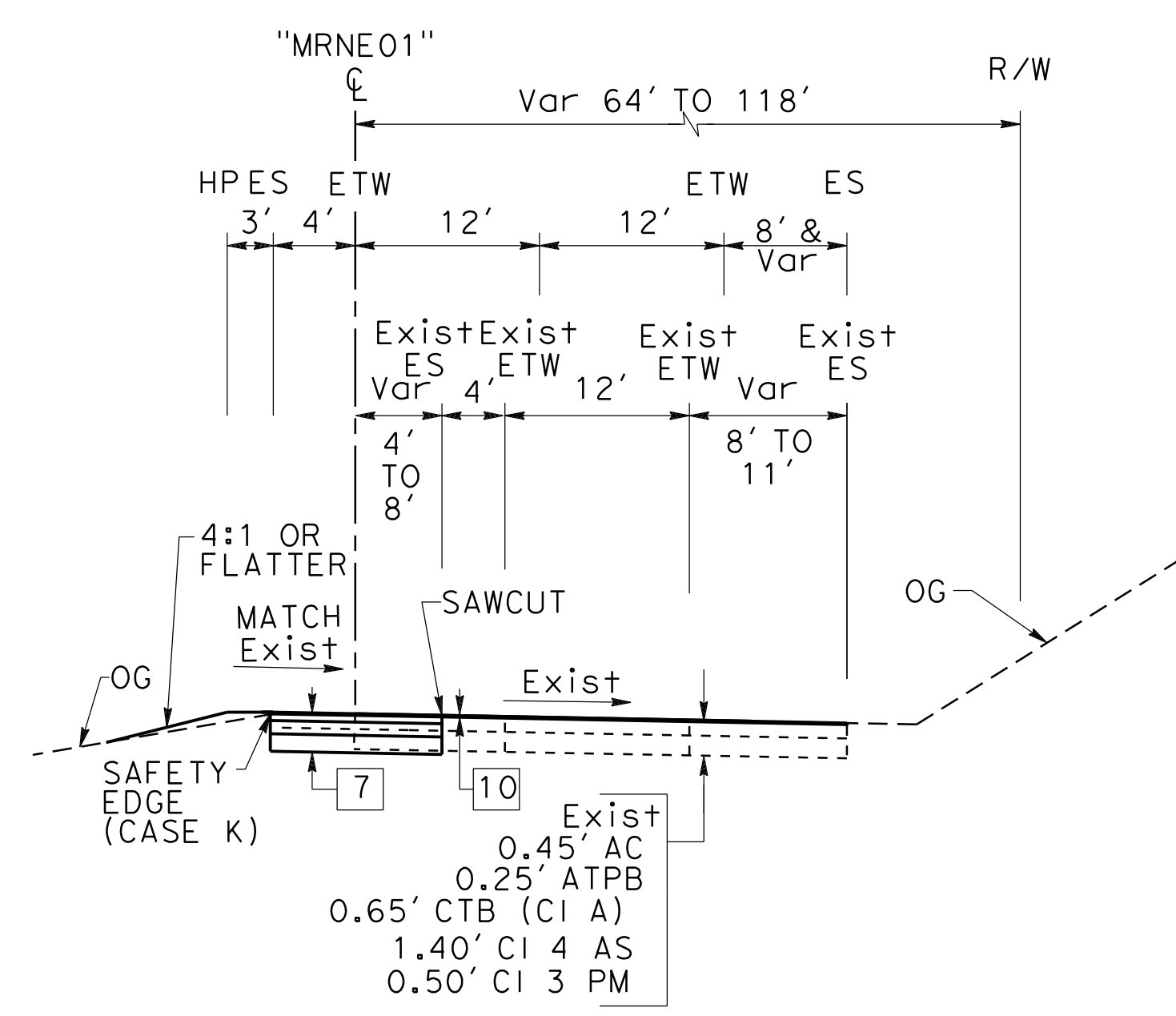
**NOTE:**  
DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.



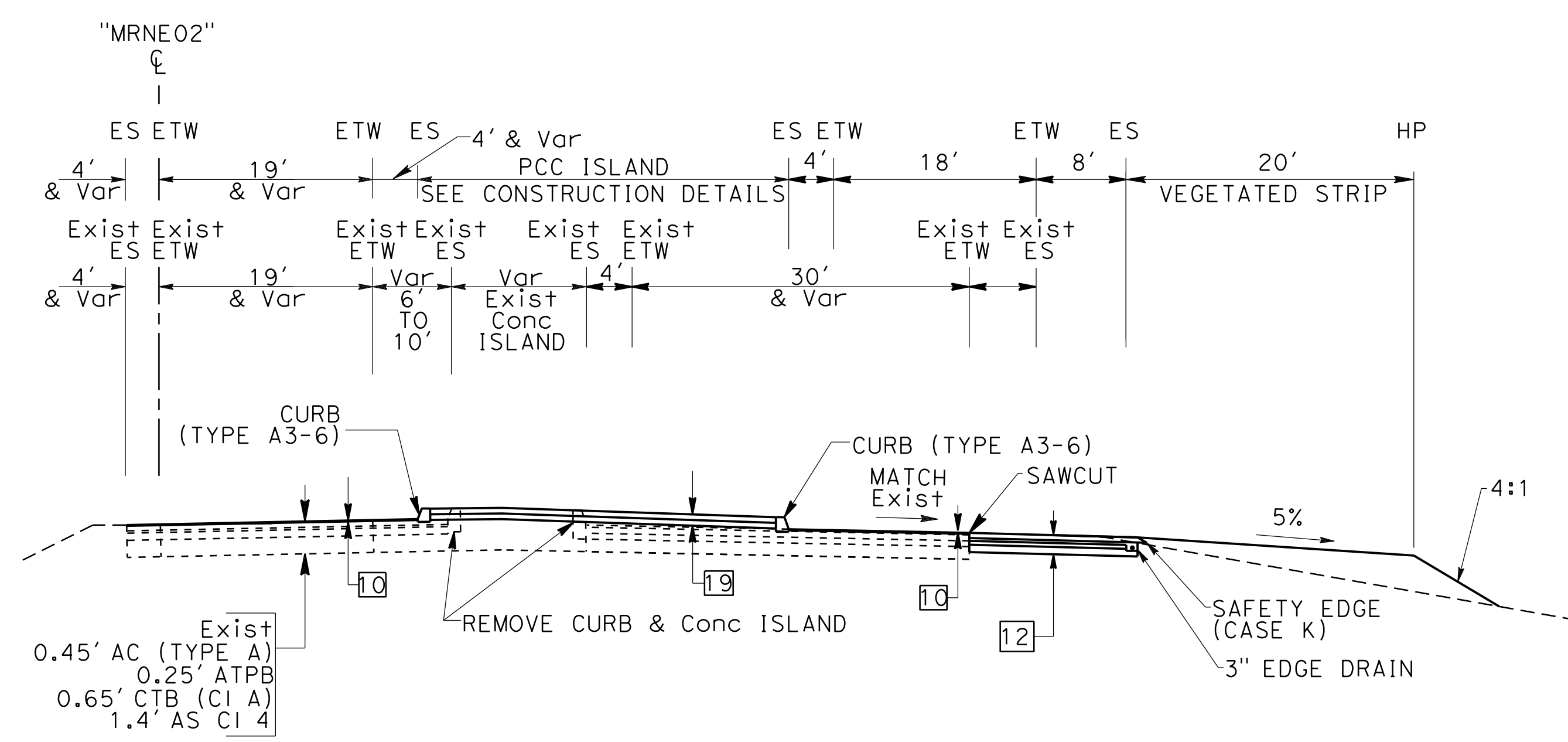
**"MRNE01" MARINE St OFF-RAMP**  
"MRNE01" 1040+26 TO "MRNE01" 1042+42  
\* HMA DIKE Beg AT "MRNE01" 1040+72  
\*\* END AT "MRNE01" 1041+11  
\*\*\* END AT "MRNE01" 1041+59



**"MRNE02" MARINE St ON-RAMP**  
"MRNE02" 1043+58 TO "MRNE02" 1045+92  
\* END AT "MRNE02" 1044+91



**"MRNE01" MARINE St OFF-RAMP**  
"MRNE01" 1038+02 TO "MRNE01" 1040+26



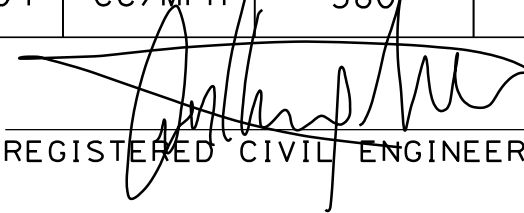
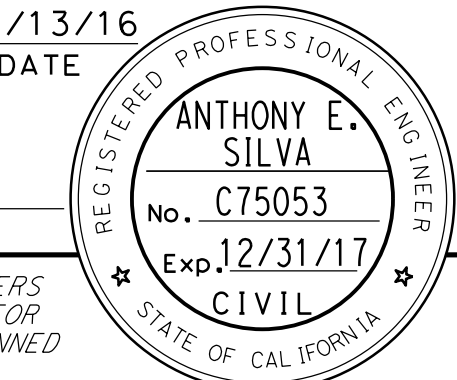
**"MRNE02" MARINE St ON-RAMP**  
"MRNE02" 1042+85 TO "MRNE02" 1043+58

**TYPICAL CROSS SECTIONS**

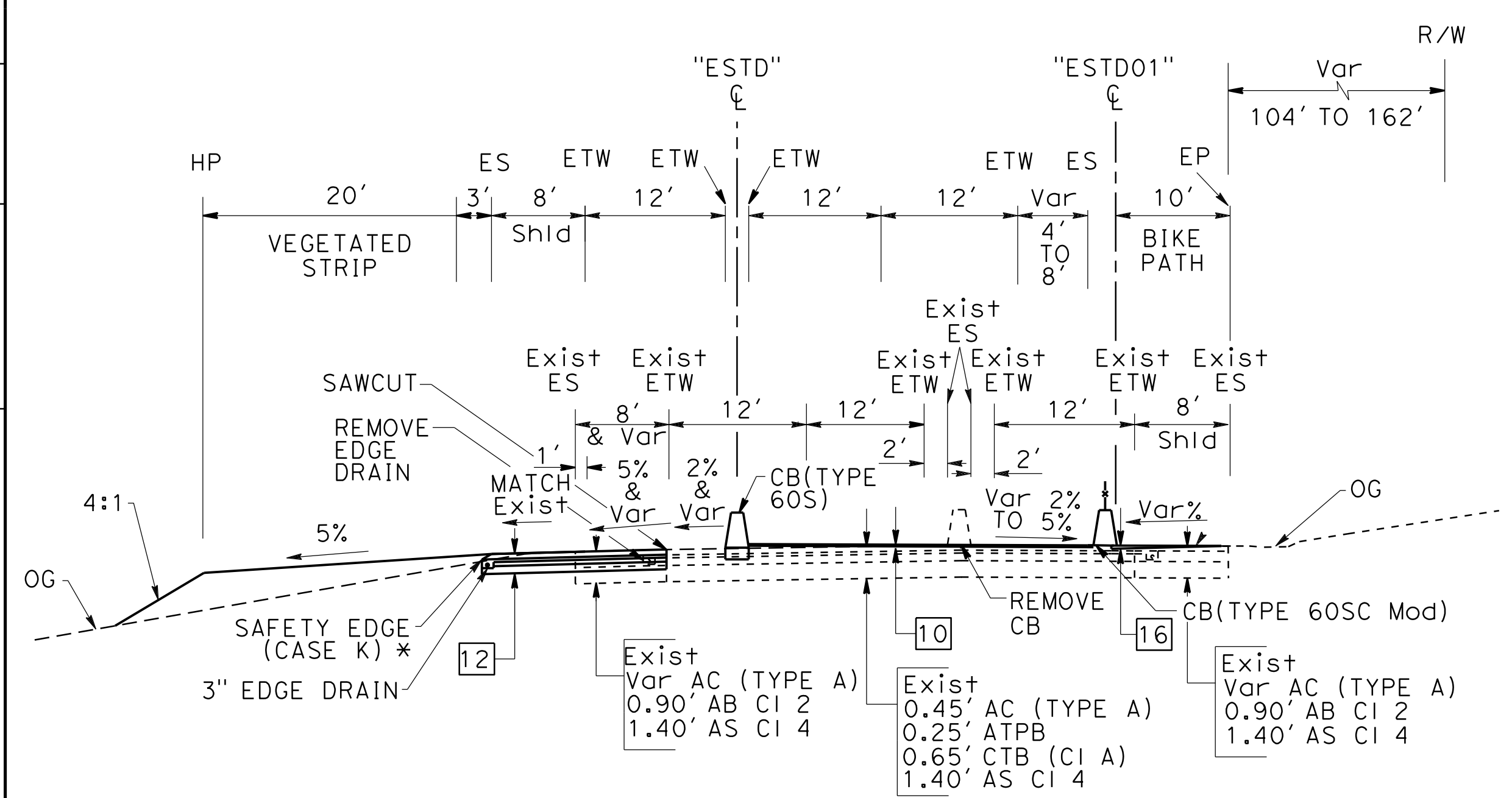
NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	REVISOR	DATE
	JAMES PUN	RYAN LITTELL	
	CHECKED BY	DATE REVISOR	
	JAMES PUN	JAMES PUN	

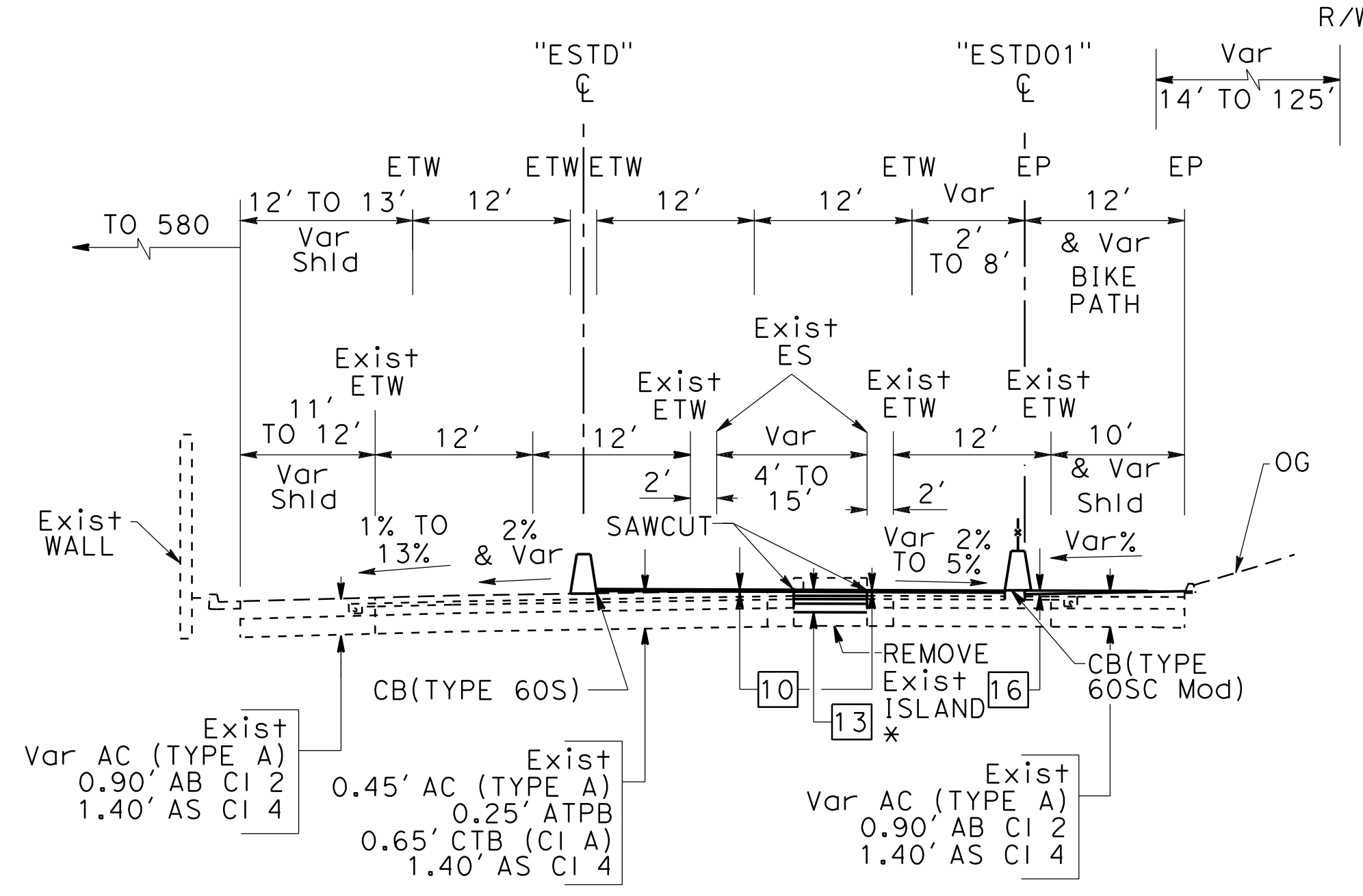
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00-00-00 TIME PLOTTED => 2:57:25 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	15	564
 REGISTERED CIVIL ENGINEER DATE 7/13/16					
7/26/2016 PLANS APPROVAL DATE					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		

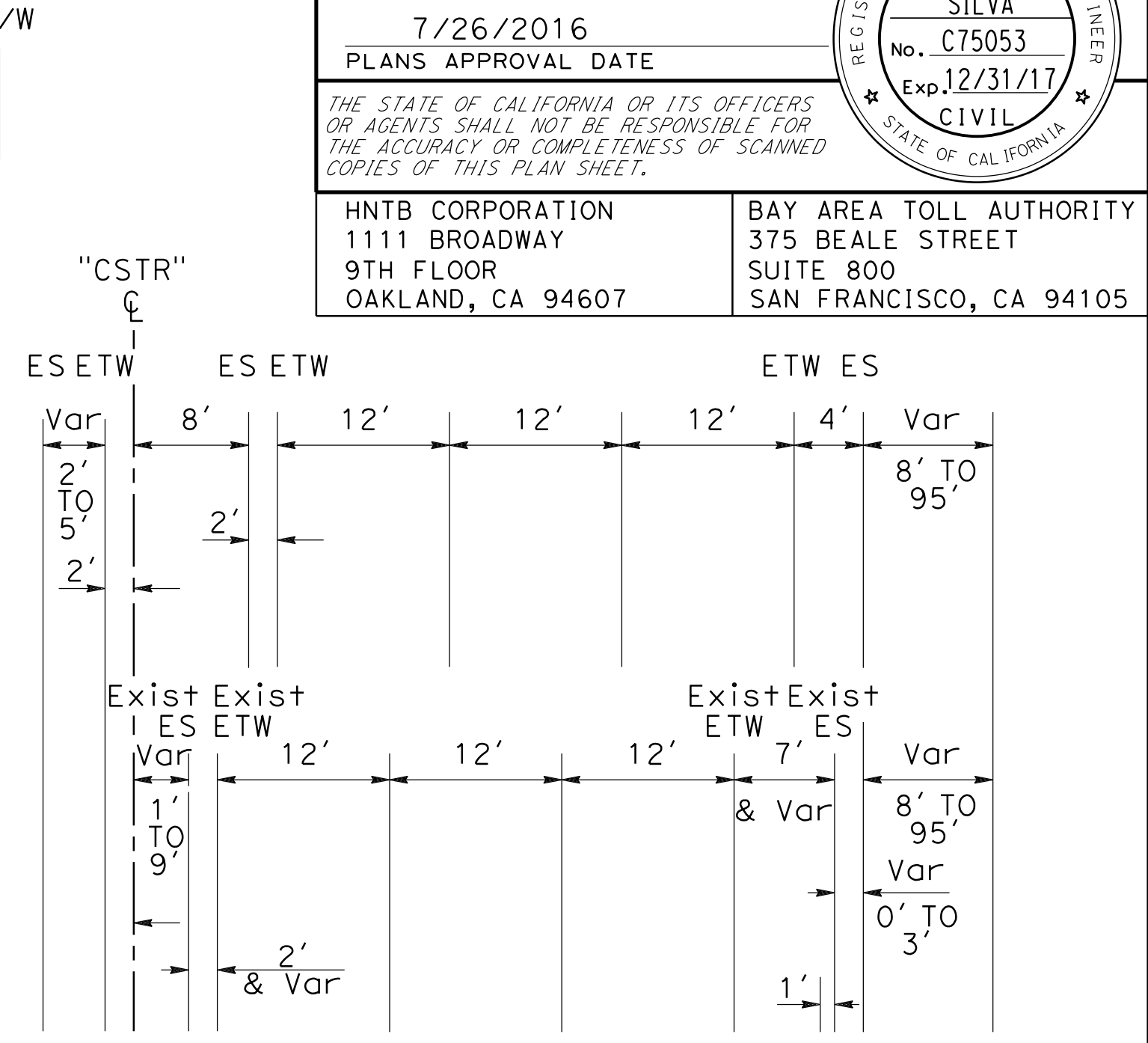
**NOTE:**  
 DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.



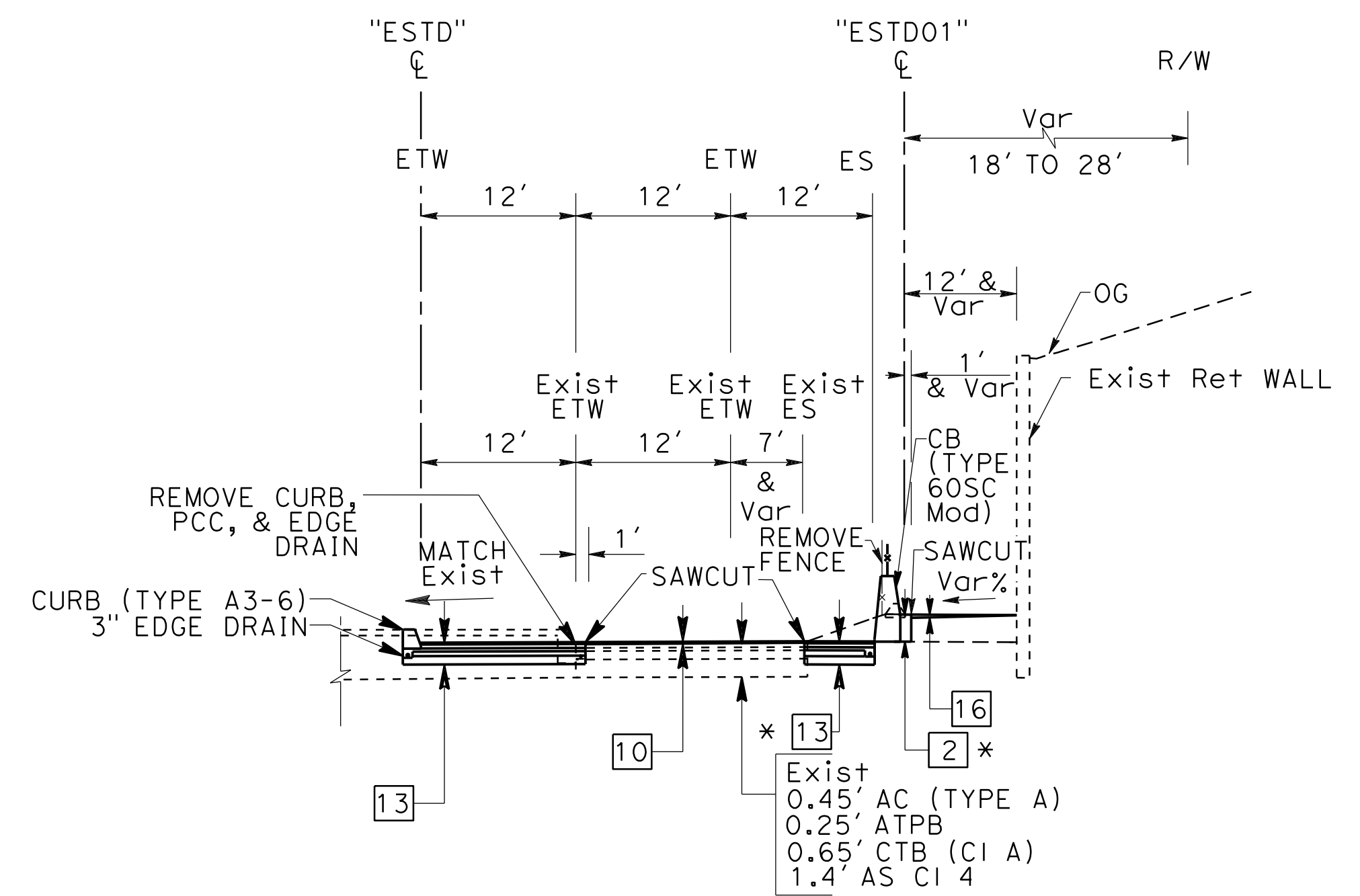
**E STANDARD Ave**  
 "ESTD" 1045+70 TO "ESTD" 1048+10  
 "ESTD01" 1045+87 TO "ESTD01" 1048+25  
 \*SAFETY EDGE FROM "MRNE02" 1045+92 TO "ESTD" 1049+86



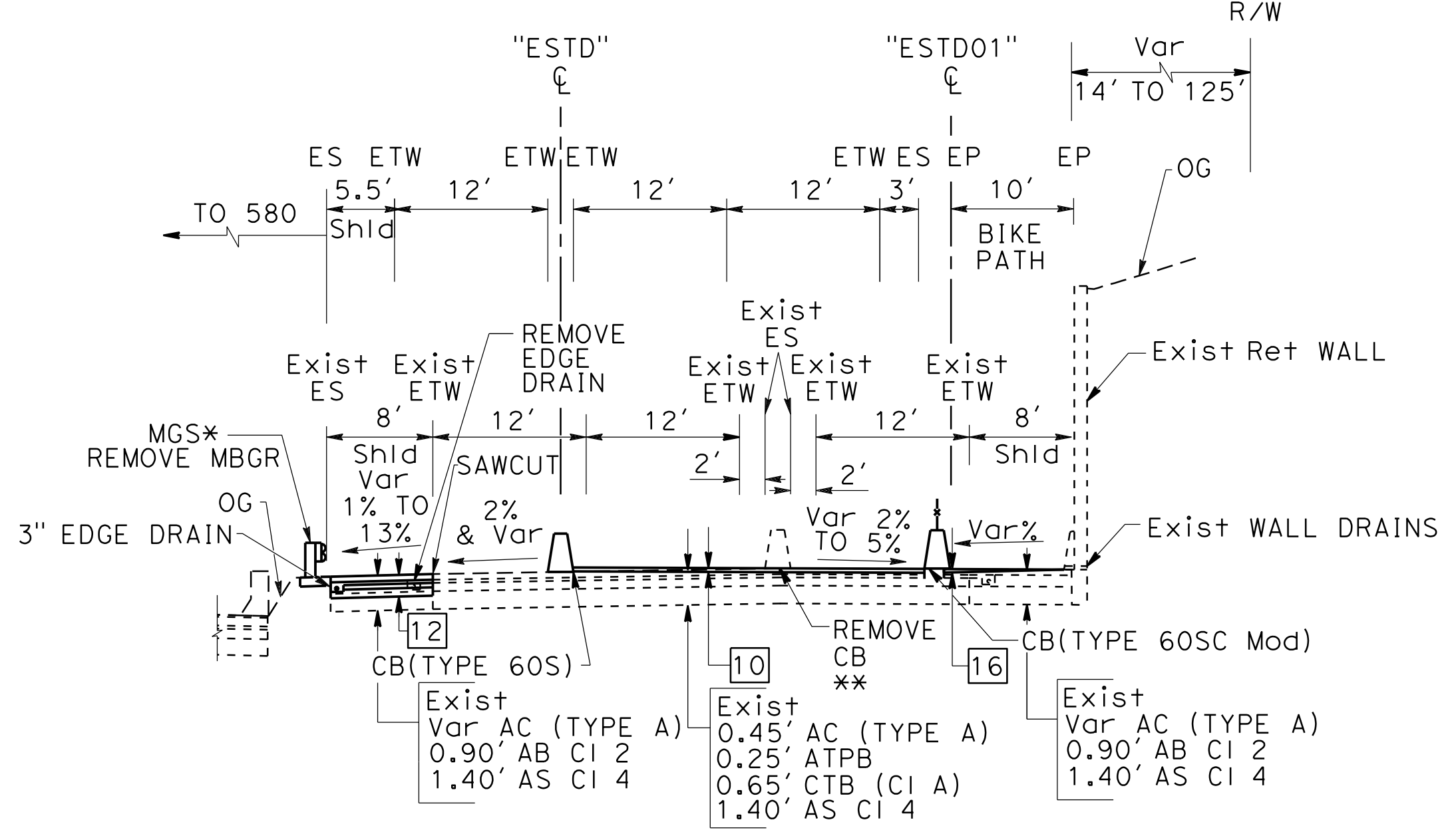
**E STANDARD Ave**  
 "ESTD" 1052+51 TO "ESTD" 1056+03  
 "ESTD01" 1054+04 TO "ESTD01" 1055+86  
 \* Beg AT "ESTD01" 1052+13



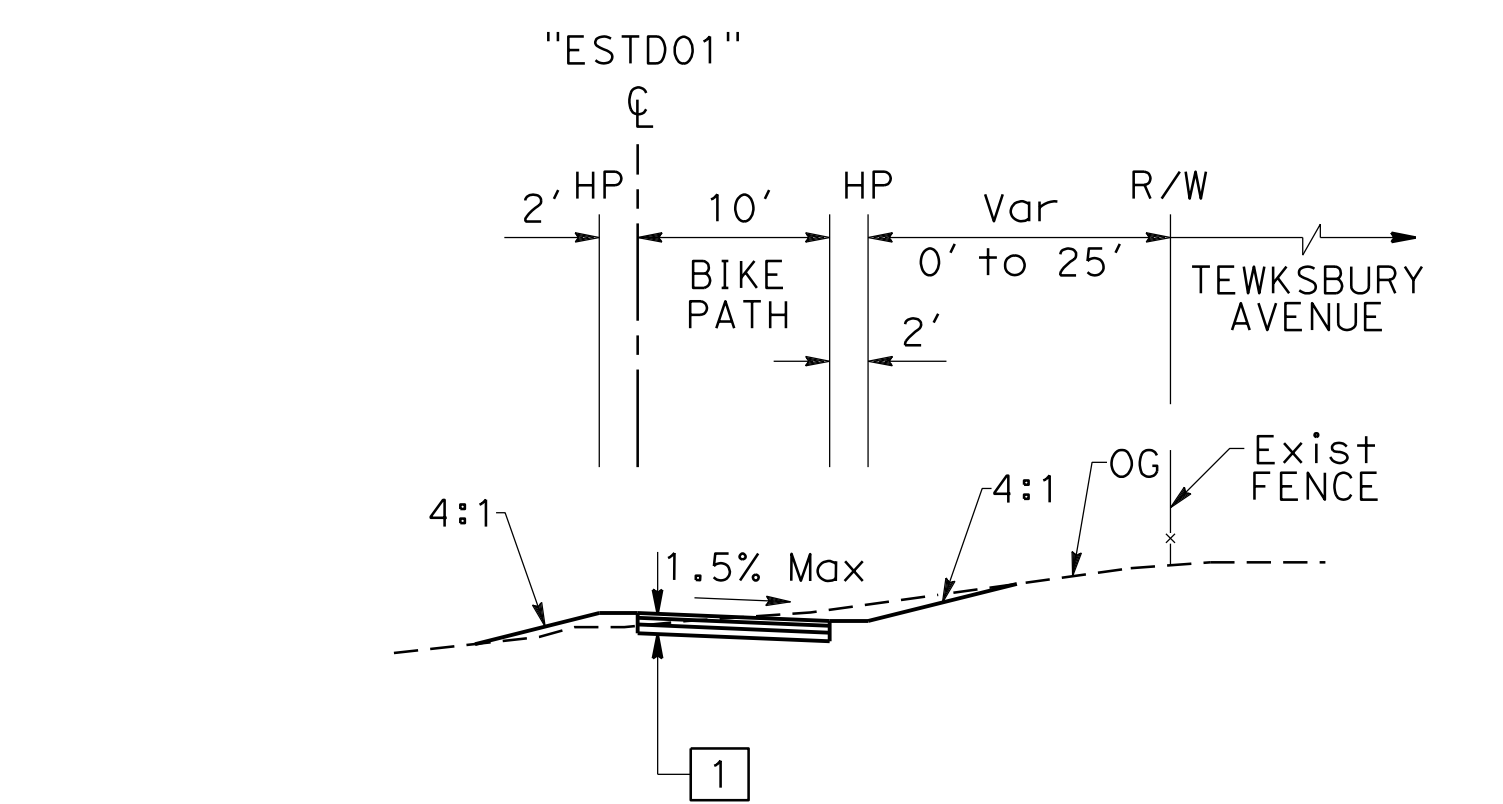
**CASTRO St**  
 "CSTR" 1061+73 TO "CSTR" 1063+39



**E STANDARD Ave**  
 "ESTD" 1041+58 TO "ESTD" 1045+70  
 "ESTD01" 1041+50 TO "ESTD01" 1045+87  
 \* PAVEMENT FROM "ESTD01" 1042+02 TO 1044+44




**E STANDARD Ave**  
 "ESTD" 1048+10 TO "ESTD" 1052+51  
 "ESTD01" 1048+25 TO "ESTD01" 1054+04  
 \*MGS NARROW EMBANKMENT FROM "ESTD" 1049+86 TO 1052+42  
 \*\*CB TRANSITIONS TO Exist ISLAND AT "ESTD" 1052+13



**E STANDARD Ave**  
 "ESTD01" 1055+08 TO "ESTD01" 1056+50

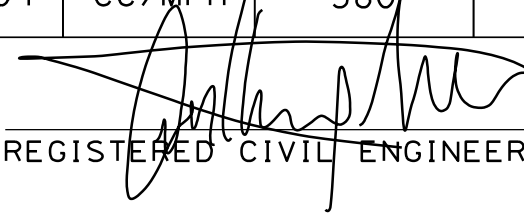
**TYPICAL CROSS SECTIONS**

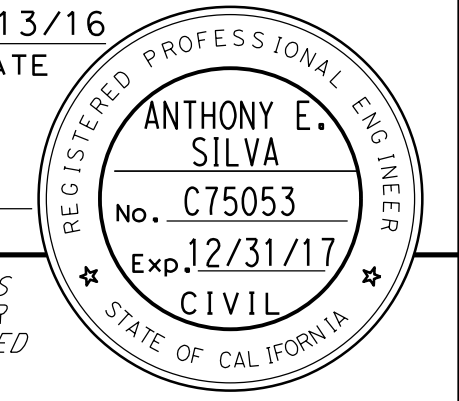
NO SCALE


STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	REVISOR
	JAMES PUN	JAMES PUN	RYAN LITTELL
			DATE REVISOR

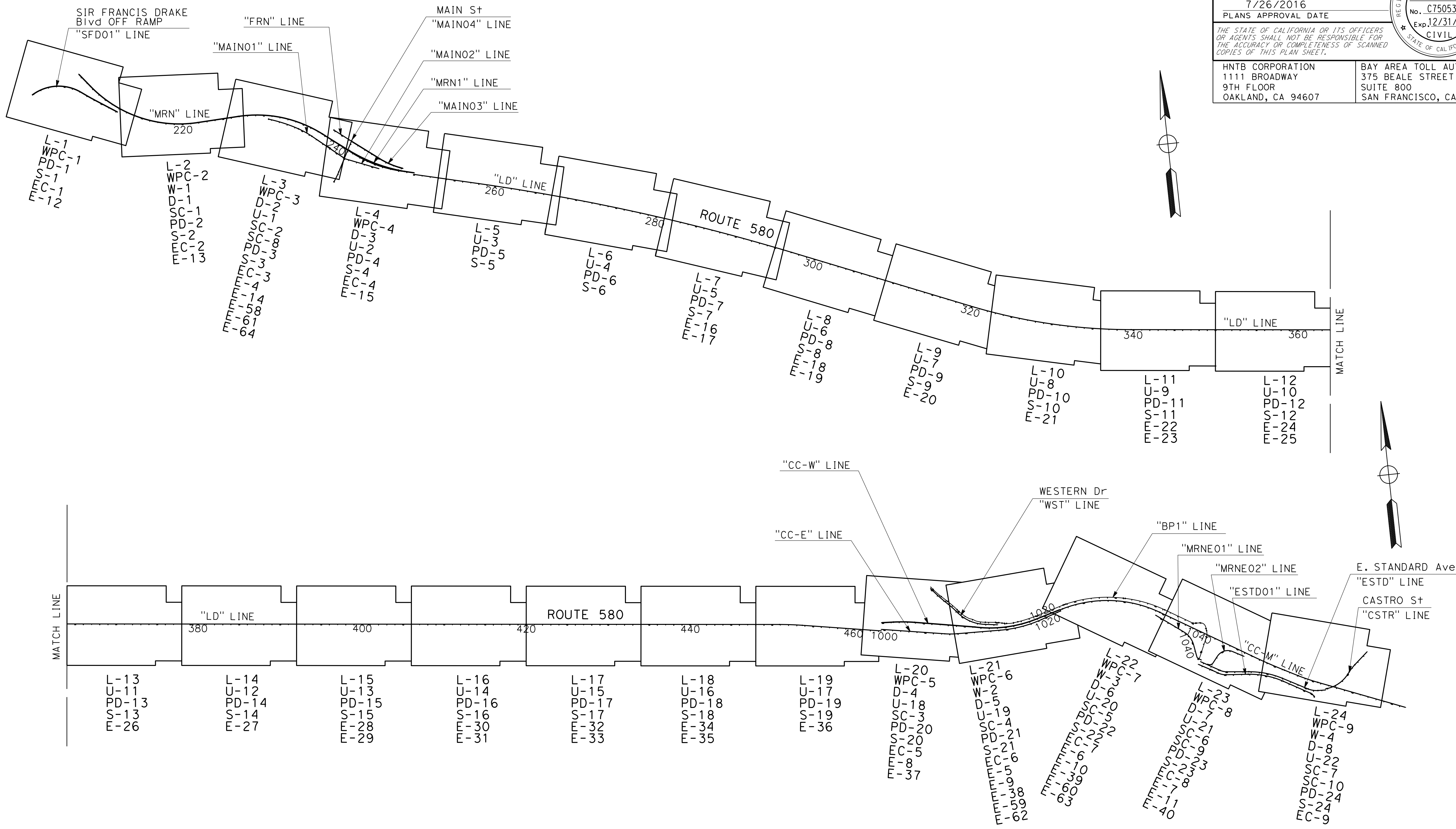
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 00-00-00 TIME PLOTTED => 2:57:26 PM



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	16	564
 REGISTERED CIVIL ENGINEER DATE 7/13/16			7/26/2016 PLANS APPROVAL DATE		
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR
	JAMES PUN	CHECKED BY	DATE
		QIANWEN DENG	QIANWEN DENG
		ANTHONY SILVA	ANTHONY SILVA



**KEY MAP AND LINE INDEX**

NO SCALE

**K-1**

LAST REVISION DATE PLOTTED => 7/14/2016 00-00-00 TIME PLOTTED => 2:57:21 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	18	564

REGISTERED CIVIL ENGINEER	DATE
<i>Anthony E. Silva</i>	7/13/16
PLANS APPROVAL DATE	
7/26/2016	

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---

**NOTES:**

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- FOR RETAINING WALL No. 1 THROUGH No. 7 DETAILS, SEE RETAINING WALL PLANS.
- FOR HORIZONTAL DATUM INFORMATION, SEE SHEET PC-1.
- PROTECT EXISTING IRRIGATION SYSTEMS; REPAIR IF DAMAGED, SEE SHEET IR-1.
- FOR SAFETY EDGE LIMITS, SEE TYPICAL SECTIONS.
- FOR 6" SHOULDER RUMBLE STRIP, SEE SHEET C-37.
- FOR TYPE 60P CONCRETE BARRIER, SEE SHEET C-28.
- FOR HANDLING OF SOIL CONTAINING ADL, SEE SPECIFICATIONS.

**LEGEND AND ABBREVIATIONS:**

	COLD PLANE & OVERLAY		HMA OVERLAY (CROSS-SLOPE CORRECTION) OR (ADA COMPLIANCE)		— ESA — LIMITS OF ESA		ADL AERIALY DEPOSITED LEAD
	REMOVE SIDEWALK/ RAISED ISLAND		TEXTURED PAVING		TFESA TEMPORARY FENCE (TYPE ESA)		Veg Ctr'l VEGETATION CONTROL
	REMOVE BASE AND SURFACING		POLYESTER OVERLAY (SEE BRIDGE PLANS)		① CURVE DATA NUMBER		
	SOILS CONTAINING ADL		1' CLASS 2 AB		1 PAVEMENT STRUCTURAL SECTION NUMBER (SEE SHEET X-1)		
	REMOVE Conc ISLAND		IRRIGATION CONDUIT		FG 300 TURNPIKE GRADE CURB SYSTEM		
	ROCK BLANKET		PEDESTRIAN BARRICADE (TYPE 1)				

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

CONSULTANT: JAMES PUN

DESIGNED BY: ANTHONY SILVA

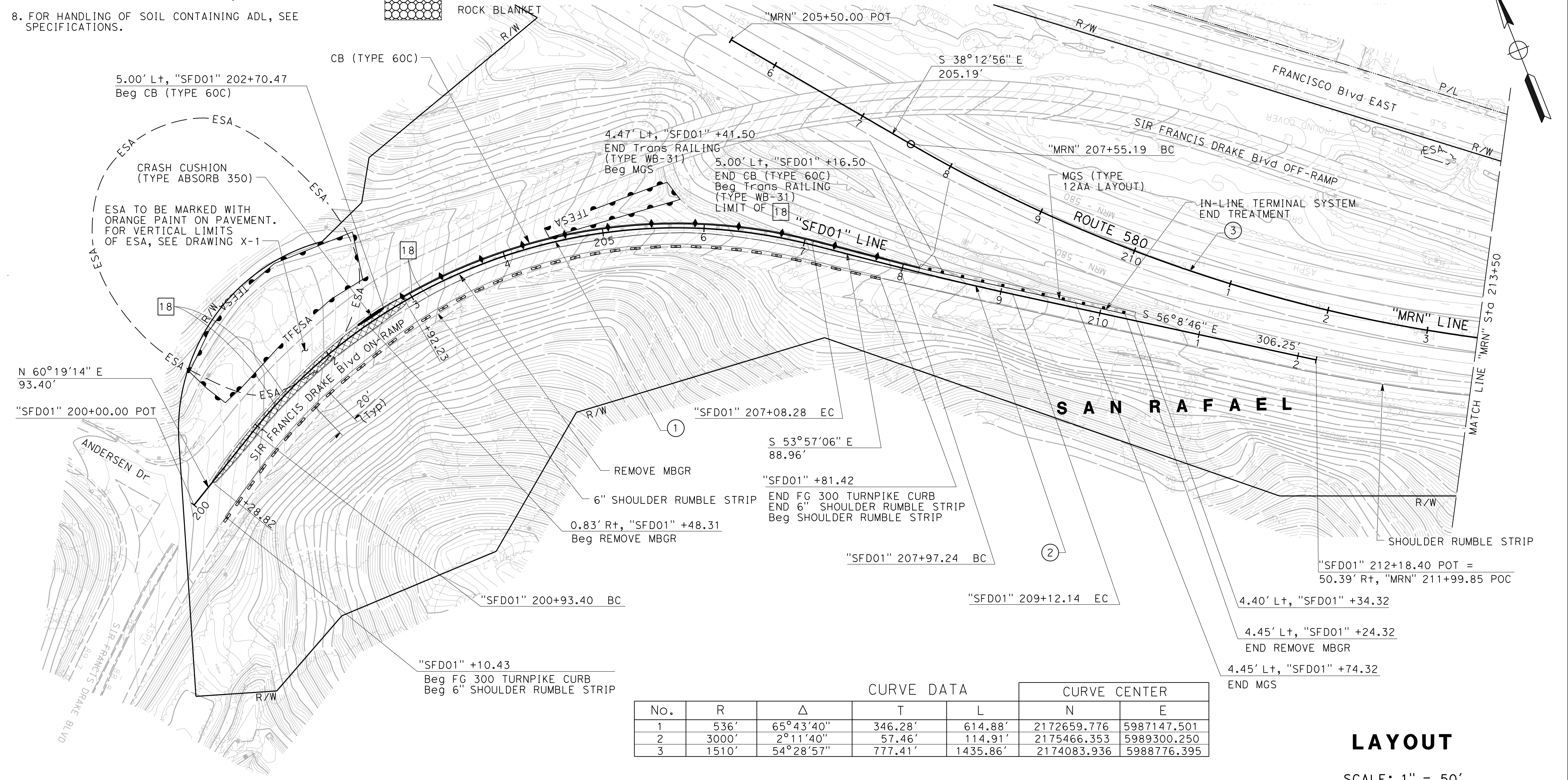
REVISOR: OIANNEN DENG

DATE: 7/26/2016

FUNCTIONAL SUPERVISOR: JAMES PUN

DATE: 7/26/2016

REVISIONS:



No.	CURVE DATA				CURVE CENTER	
	R	Δ	T	L	N	E
1	536'	65°43'40"	346.28'	614.88'	2172659.776	5987147.501
2	3000'	2°11'40"	57.46'	114.91'	2175466.353	5989300.250
3	1510'	54°28'57"	777.41'	1435.86'	2174083.936	5988776.395

**LAYOUT**

SCALE: 1" = 50'

L-1



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 DESIGNED BY: OIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 REVISIONS: (None listed)

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

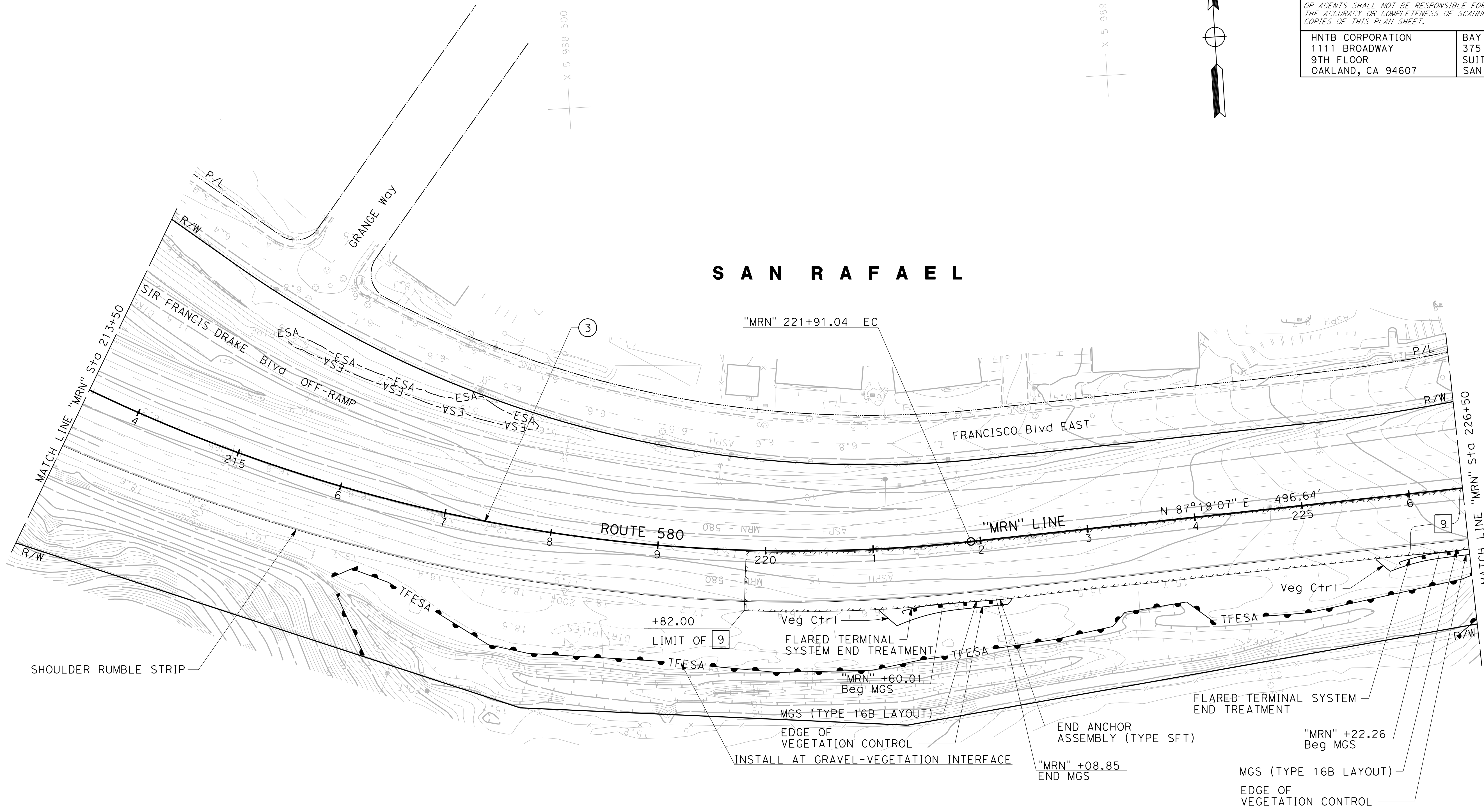
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	19	564

REGISTERED CIVIL ENGINEER: *[Signature]*  
 DATE: 7/13/16  
 PLANS APPROVAL DATE: 7/26/2016

ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

HNTB CORPORATION  
 1111 BROADWAY  
 9TH FLOOR  
 OAKLAND, CA 94607

BAY AREA TOLL AUTHORITY  
 375 BEALE STREET  
 SUITE 800  
 SAN FRANCISCO, CA 94105



**CURVE DATA**

No.	R	Δ	CURVE CENTER	
			T	L
3	1510'	54°28'57"	777.41'	777.41'

Additional curve center coordinates: N 2174083.936, E 21988776.395

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**  
 SCALE: 1" = 50'



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	20	564

REGISTERED CIVIL ENGINEER  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

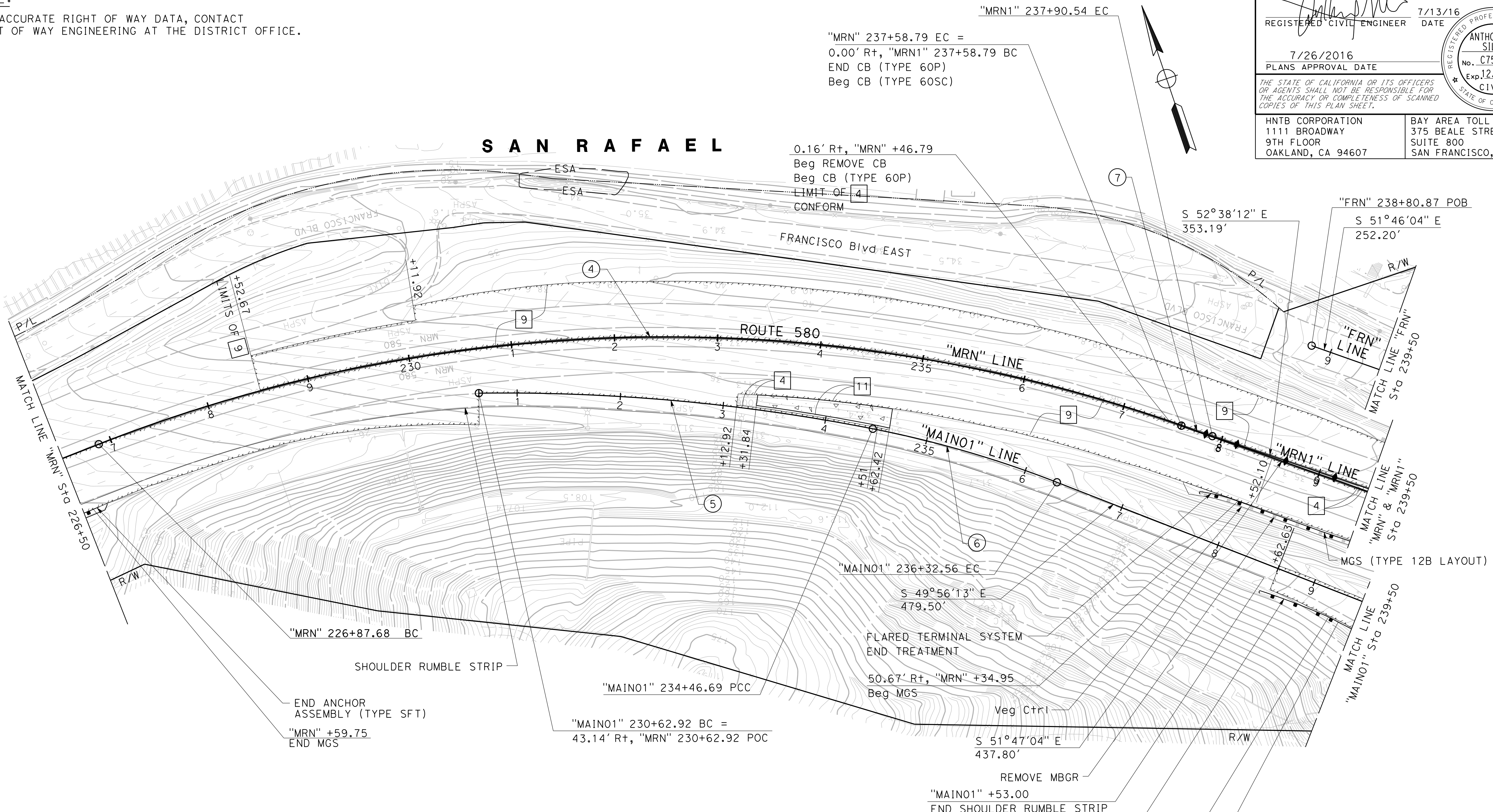
7/26/2016  
 PLANS APPROVAL DATE

7/13/16  
 DATE

HNTB CORPORATION  
 1111 BROADWAY  
 9TH FLOOR  
 OAKLAND, CA 94607

BAY AREA TOLL AUTHORITY  
 375 BEALE STREET  
 SUITE 800  
 SAN FRANCISCO, CA 94105

NOTE:  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



CURVE DATA					CURVE CENTER	
No.	R	Δ	T	L	N	E
4	1500'	40°54'49"	559.54'	1071.11'	2171100.650	5989414.165
5	1852'	11°52'26"	192.58'	383.77'	2170766.121	5989136.494
6	1042'	10°12'50"	93.18'	185.87'	2171467.951	5989539.235
7	12745'	0°8'34"	15.88'	31.75'	2182389.519	5998101.731

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 Et Caltrans

REVISOR: OIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 CONSULTANT SUPERVISOR: JAMES PUN



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	21	564

REGISTERED CIVIL ENGINEER DATE 7/13/16

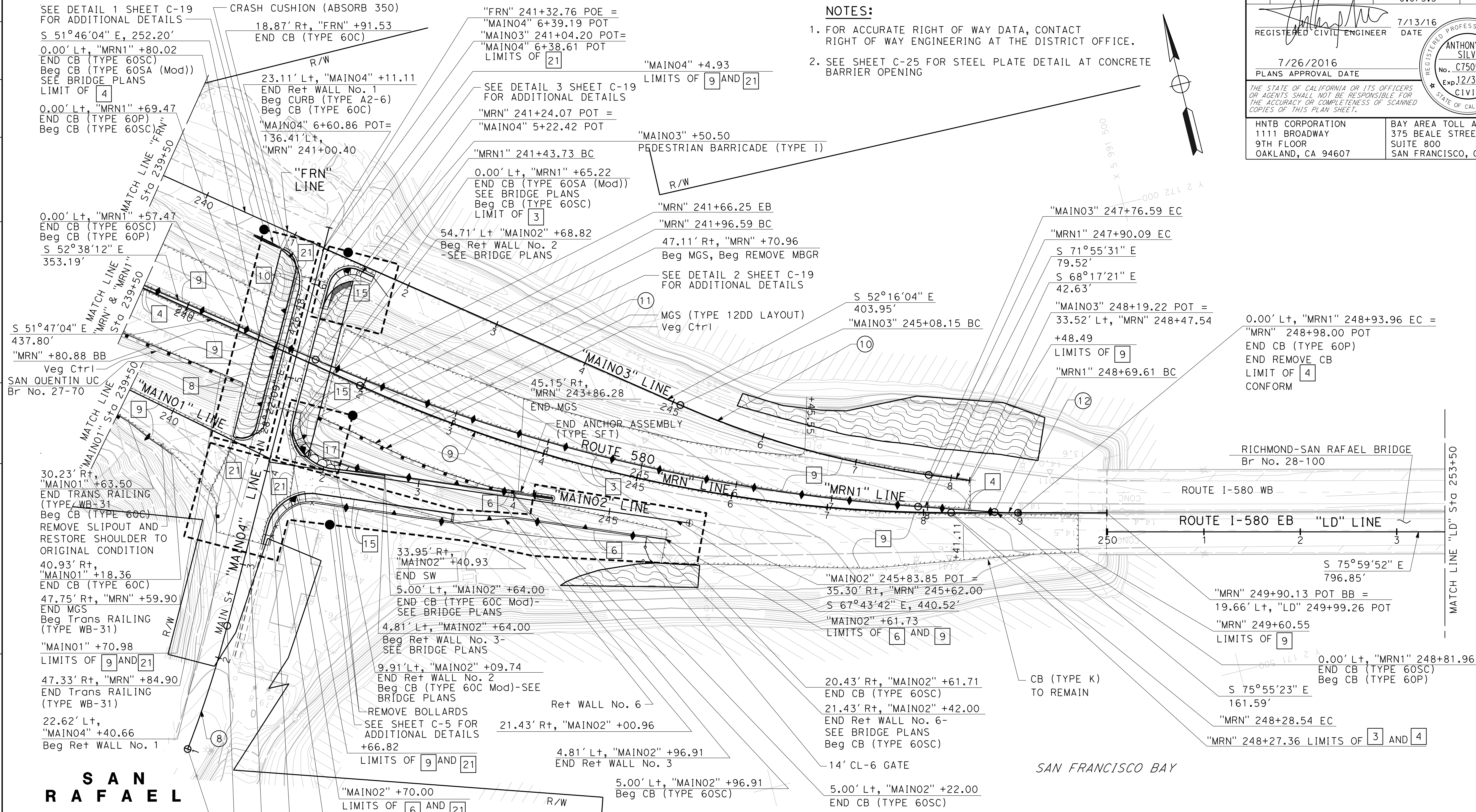
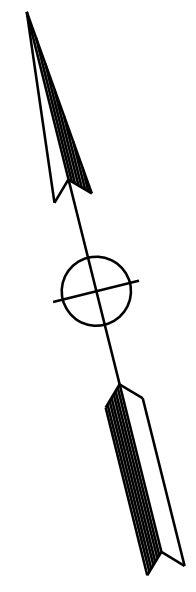
7/26/2016 PLANS APPROVAL DATE

ANTHONY E. SILVA No. C75053 Exp 12/31/17 CIVIL

HNTB CORPORATION 1111 BROADWAY OAKLAND, CA 94607

BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105

- NOTES:**
- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
  - SEE SHEET C-25 FOR STEEL PLATE DETAIL AT CONCRETE BARRIER OPENING



**SAN RAFAEL**

"MAIN04" 1+00.0 BC =  
417.24' Rt, "MRN" 241+88.42  
"MAIN04" 2+34.39 EC

No.	CURVE DATA			CURVE CENTER		
	R	Δ	T	L	N	E
8	1135'	6°47'06"	67.27	134.39'	2172338.987	5989493.699
9	1500'	24°08'20"	320.73'	631.95'	2173186.884	5991614.005
10	960'	16°01'17"	135.00'	268.44'	2172667.494	5991591.268
11	1920'	19°17'19"	326.27'	646.36'	2173571.566	5991813.211
12	300'	4°39'04"	12.18'	24.35'	2172006.839	5991386.186

**LAYOUT**

SCALE: 1" = 50'

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

REVISOR: OIANWEN DENG  
DESIGNER: ANTHONY SILVA  
CHECKED BY: JAMES PUN

REVISIONS:

NO.	DESCRIPTION	DATE
1	ISSUED FOR BIDDING	7/26/2016

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: ANTHONY SILVA  
 DESIGNED BY: QIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 REVISIONS: (None listed)

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

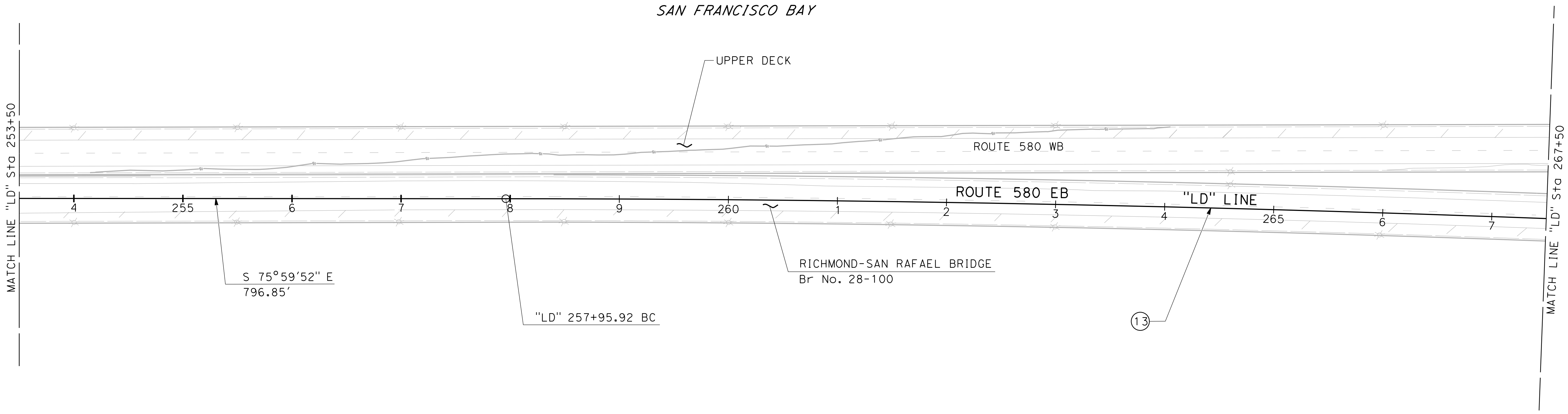
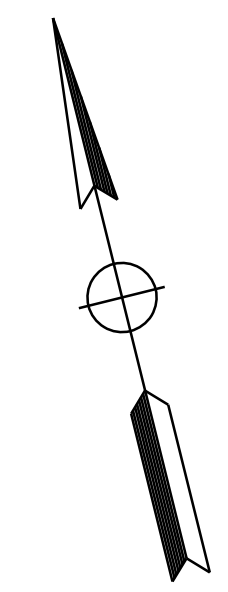
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	22	564

REGISTERED CIVIL ENGINEER: *[Signature]*  
 DATE: 7/13/16  
 PLANS APPROVAL DATE: 7/26/2016

REGISTERED PROFESSIONAL ENGINEER  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



CURVE DATA				CURVE CENTER		
No.	R	Δ	T	L	N	E
13	25800'	05° 34' 54"	1257.71'	2513.42'	2146447.424	5985931.510

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-5**

LAST REVISION: 00-00-00  
 DATE PLOTTED => 7/14/2016  
 TIME PLOTTED => 2:57:34 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: FUNCTIONAL SUPERVISOR: JAMES PUN  
 CALCULATED/DESIGNED BY: OIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 REVISED BY: DATE REVISED:

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

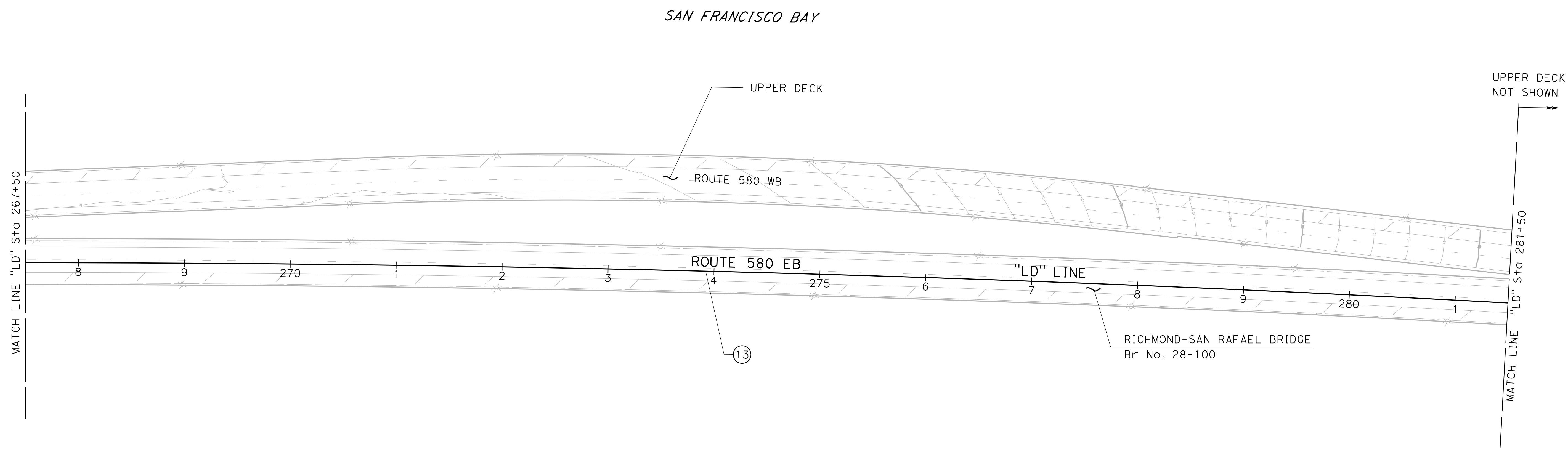
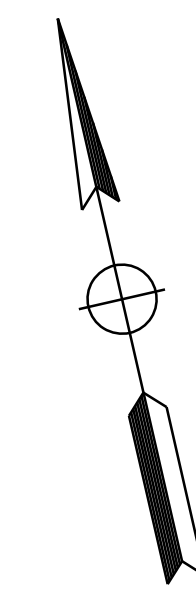
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	23	564

REGISTERED CIVIL ENGINEER: *[Signature]*  
 DATE: 7/13/16  
 PLANS APPROVAL DATE: 7/26/2016

REGISTERED PROFESSIONAL ENGINEER  
**ANTHONY E. SILVA**  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

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HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



CURVE DATA					CURVE CENTER	
No.	R	Δ	T	L	N	E
13	25800'	5°34'54"	1257.71'	2513.42'	2146447.424	5985931.510

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

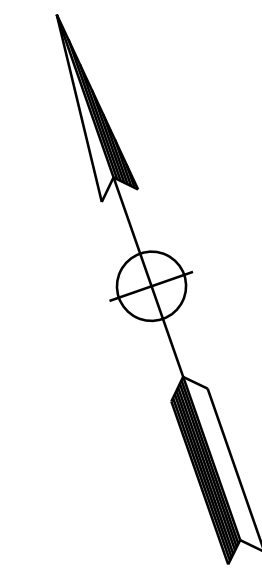
SCALE: 1" = 50'

**L-6**

LAST REVISION:    DATE PLOTTED => 7/14/2016    00-00-00    TIME PLOTTED => 2:57:35 PM



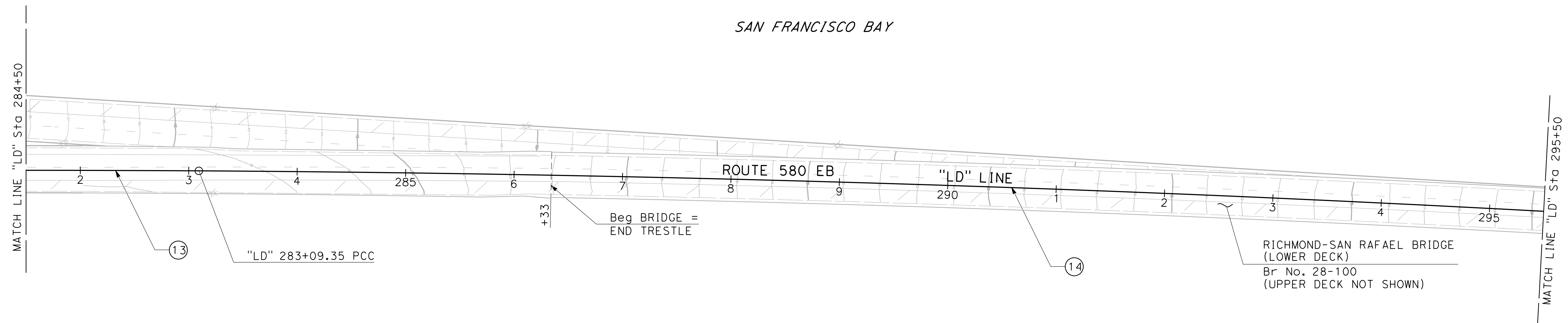
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	24	564
REGISTERED CIVIL ENGINEER			DATE	7/13/16	
7/26/2016			PLANS APPROVAL DATE		
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**

FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED- DESIGNED BY	REVISOR BY
<b>Caltrans</b>	JAMES PUN	QIANWEN DENG	ANTHONY SILVA
		CHECKED BY	DATE REVISED
		ANTHONY SILVA	



No.	R	Δ	CURVE DATA		CURVE CENTER	
			T	L	N	E
13	25800'	5°34'54"	1257.71'	2513.42'	2146447.424	5985931.510
14	26000'	3°04'58"	699.63'	1398.92'	2146258.993	5985864.473

FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-7**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 CALCULATED/DESIGNED BY: OIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 REVISED BY: DATE REVISION

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

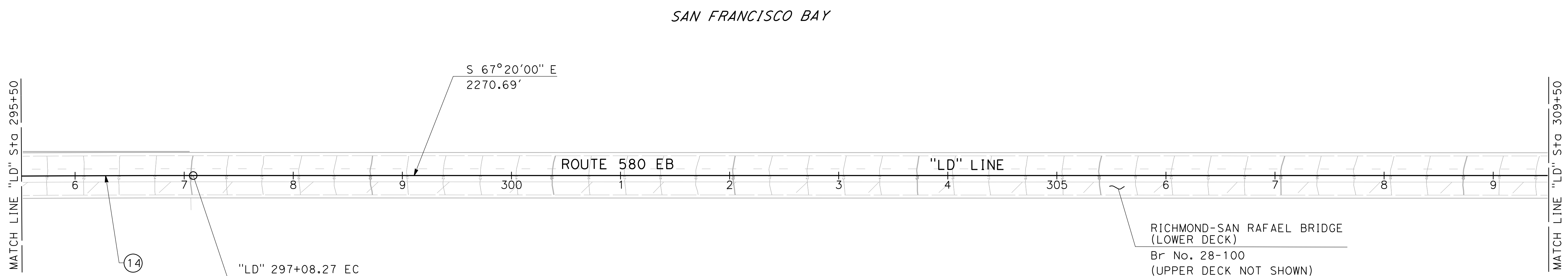
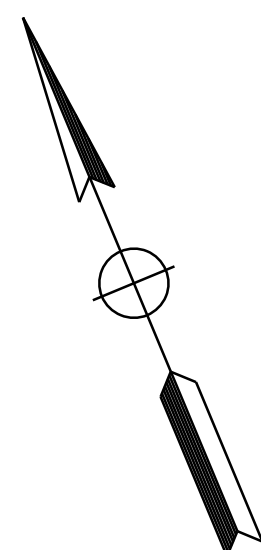
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	25	564

REGISTERED CIVIL ENGINEER DATE 7/13/16  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE 7/26/2016

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



No.	R	Δ	CURVE DATA		CURVE CENTER	
			T	L	N	E
14	26000'	3°04'58"	699.63'	1398.92'	2146258.993	5985864.473

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

LAST REVISION: 00-00-00 DATE PLOTTED => 7/14/2016 TIME PLOTTED => 2:57:36 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 DESIGNED BY: QIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 REVISIONS: (Grid with 'x' marks)

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

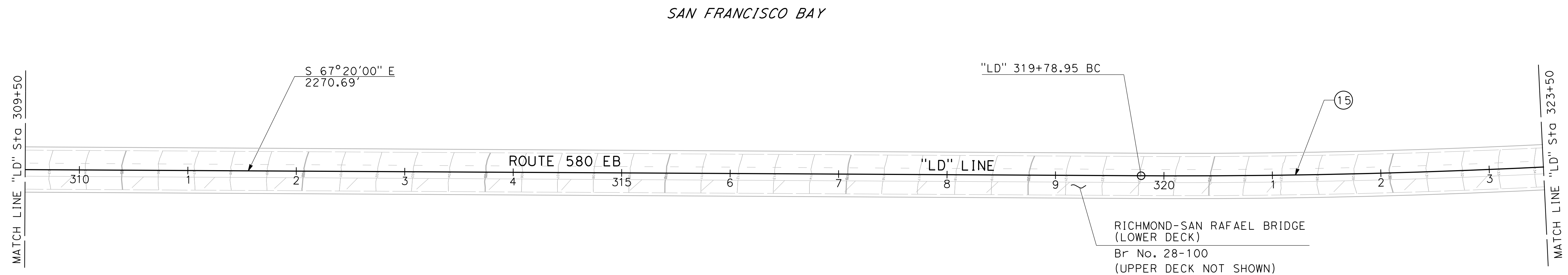
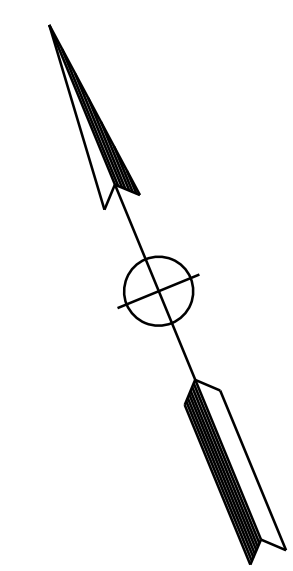
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	26	564

REGISTERED CIVIL ENGINEER: *[Signature]* DATE: 7/13/16  
 PLANS APPROVAL DATE: 7/26/2016

REGISTERED PROFESSIONAL ENGINEER  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



No.	CURVE DATA				CURVE CENTER	
	R	Δ	T	L	N	E
15	6850'	16°40'00"	1003.38'	1992.58'	2175696.686	6000619.160

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

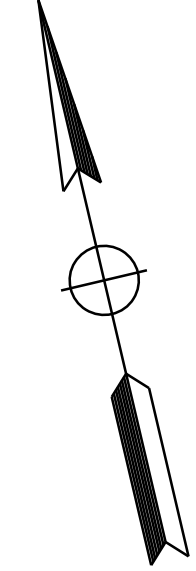
SCALE: 1" = 50'

**L-9**

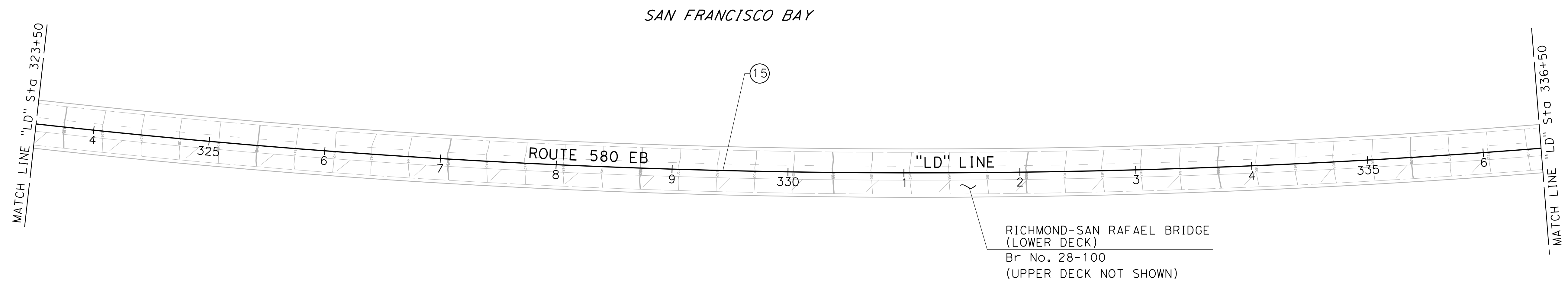
LAST REVISION: 00-00-00      DATE PLOTTED => 7/14/2016      TIME PLOTTED => 2:57:37 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 DESIGNED BY: OIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 REVISED BY: [ ]  
 DATE REVISED: [ ]

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	27	564
REGISTERED CIVIL ENGINEER			DATE	7/13/16	
PLANS APPROVAL DATE			7/26/2016		
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



No.	CURVE DATA				CURVE CENTER	
	R	$\Delta$	T	L	N	E
15	6850'	16°40'00"	1003.38'	1992.58'	2175696.686	6000619.160

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-10**

LAST REVISION: 00-00-00      DATE PLOTTED => 7/14/2016      TIME PLOTTED => 2:57:38 PM



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 CALCULATED/DESIGNED BY: QIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 REVISED BY: [ ]  
 DATE REVISED: [ ]

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

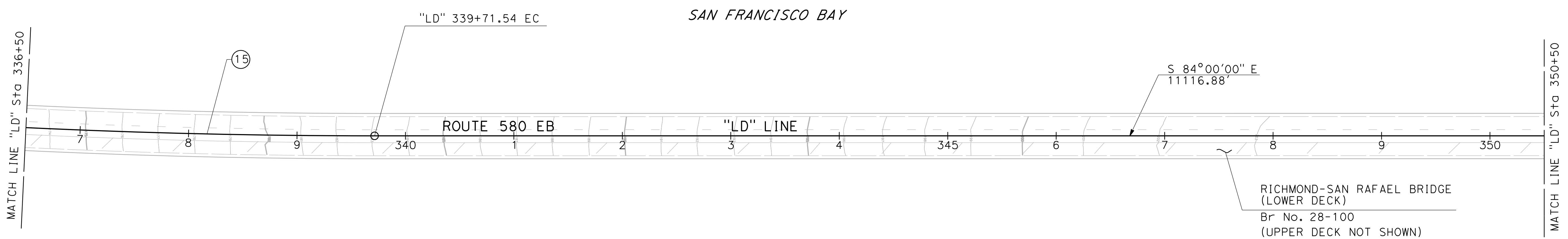
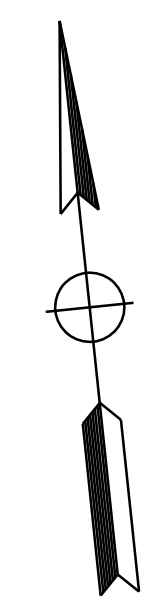
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	28	564

REGISTERED CIVIL ENGINEER DATE 7/13/16  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE 7/26/2016

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



No.	CURVE DATA				CURVE CENTER	
	R	Δ	T	L	N	E
15	6850'	16°40'00"	1003.38'	1992.58'	2175696.686	6000619.160

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-11**

LAST REVISION: 00-00-00 DATE PLOTTED => 7/14/2016 TIME PLOTTED => 2:57:39 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT FUNCTIONAL SUPERVISOR: JAMES PUN  
 CALCULATED/DESIGNED BY: OIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 REVISED BY: [ ]  
 DATE REVISED: [ ]

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

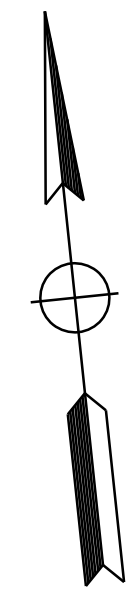
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	29	564

REGISTERED CIVIL ENGINEER: *[Signature]*  
 DATE: 7/13/16  
 PLANS APPROVAL DATE: 7/26/2016

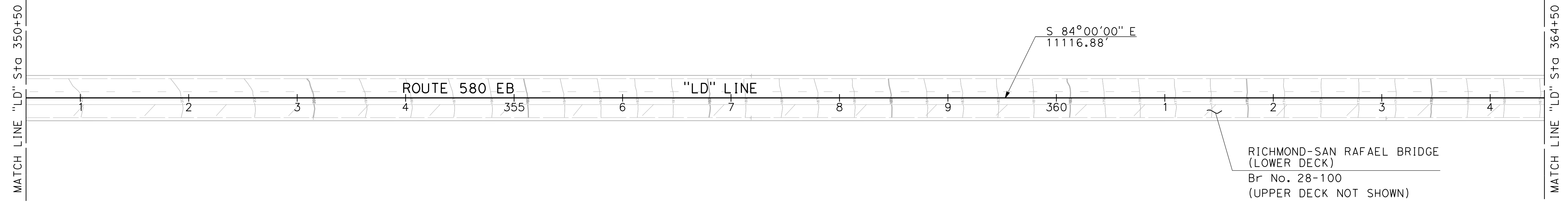
REGISTERED PROFESSIONAL ENGINEER  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



SAN FRANCISCO BAY



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

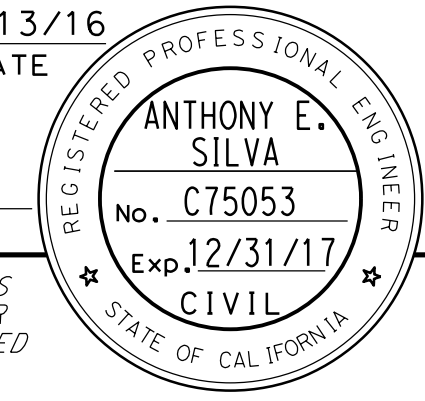
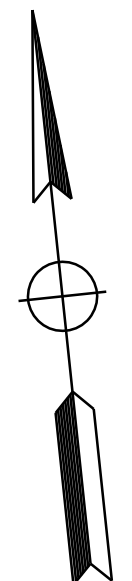
**L-12**

LAST REVISION: 00-00-00 DATE PLOTTED => 7/14/2016 TIME PLOTTED => 2:57:40 PM

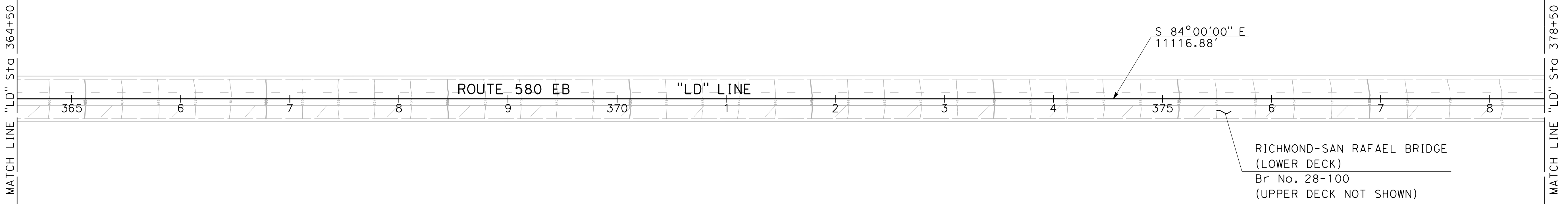
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	DESIGNED BY	REVISOR	DATE
	JAMES PUN	OIANWEN DENG	ANTHONY SILVA			

**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	30	564
			7/13/16		
REGISTERED CIVIL ENGINEER			DATE		
			7/26/2016		
			PLANS APPROVAL DATE		
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



SAN FRANCISCO BAY



FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-13**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: FUNCTIONAL SUPERVISOR: JAMES PUN  
 CALCULATED/DESIGNED BY: OIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 REVISED BY: DATE REVISD:

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

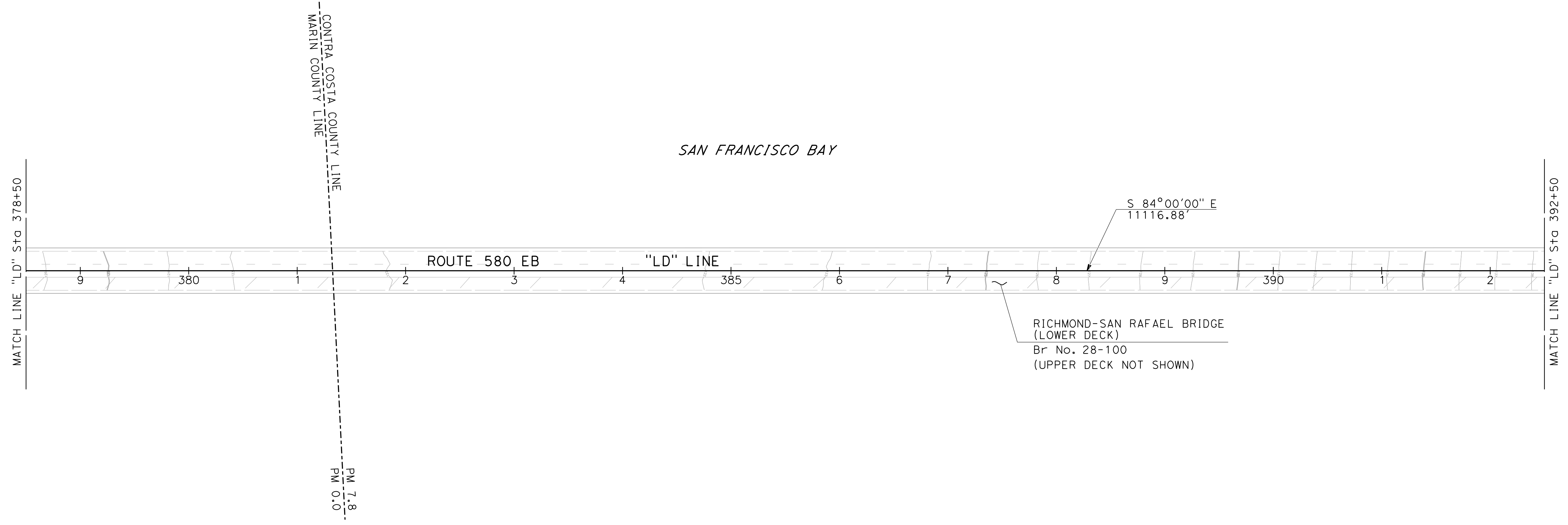
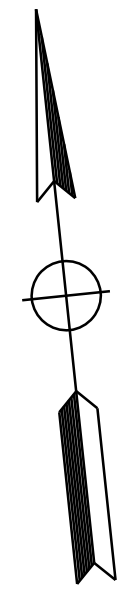
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	31	564

REGISTERED CIVIL ENGINEER: *[Signature]* DATE: 7/13/16  
 PLANS APPROVAL DATE: 7/26/2016

REGISTERED PROFESSIONAL ENGINEER: ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-14**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 DESIGNED BY: QIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 REVISED BY: [ ]  
 DATE REVISED: [ ]

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

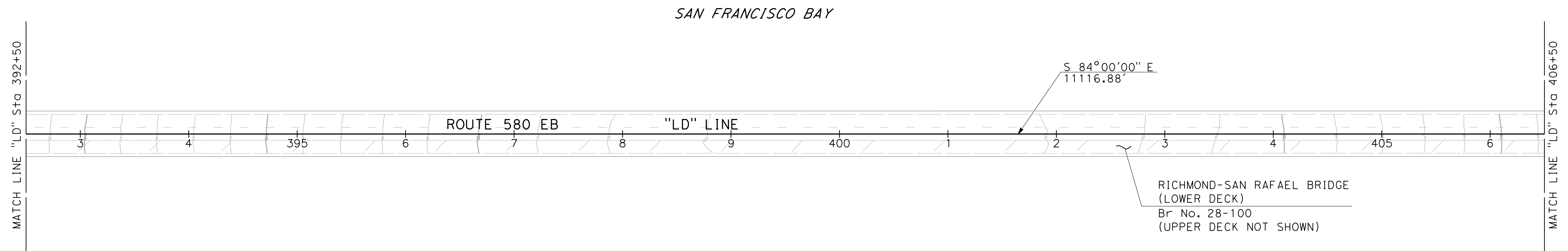
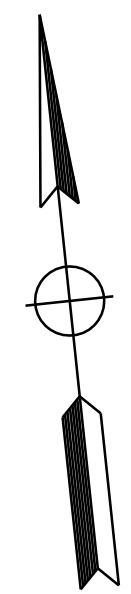
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	32	564

REGISTERED CIVIL ENGINEER: *[Signature]* DATE: 7/13/16  
 PLANS APPROVAL DATE: 7/26/2016

REGISTERED PROFESSIONAL ENGINEER  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-15**

LAST REVISION: 00-00-00 DATE PLOTTED => 7/14/2016 TIME PLOTTED => 2:57:42 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 DESIGNED BY: OIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 REVISIONS: (Empty table)

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

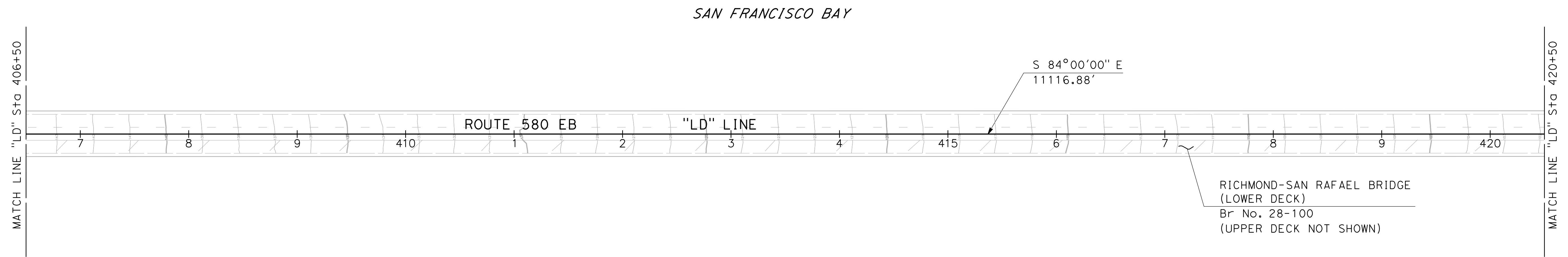
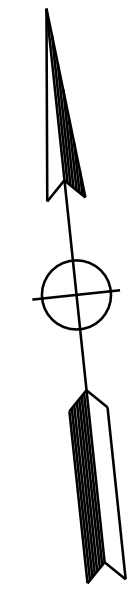
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	33	564

REGISTERED CIVIL ENGINEER: *[Signature]* DATE: 7/13/16  
 PLANS APPROVAL DATE: 7/26/2016

REGISTERED PROFESSIONAL ENGINEER  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-16**

LAST REVISION: 00-00-00 DATE PLOTTED => 7/14/2016 TIME PLOTTED => 2:57:43 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 DESIGNED BY: QIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 REVISED BY: [ ]  
 DATE REVISED: [ ]

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

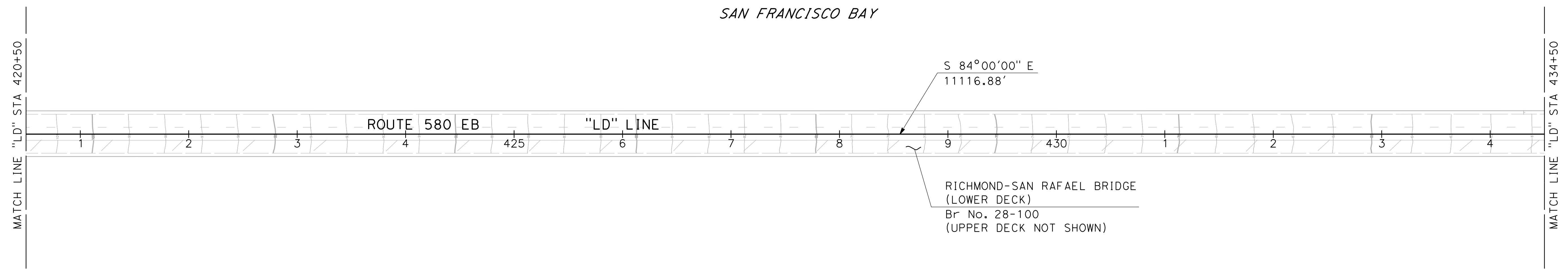
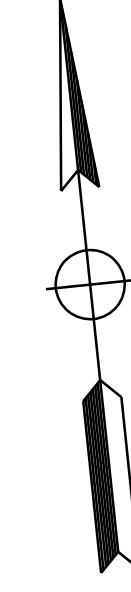
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	34	564

REGISTERED CIVIL ENGINEER: *[Signature]* DATE: 7/13/16  
 PLANS APPROVAL DATE: 7/26/2016

REGISTERED PROFESSIONAL ENGINEER  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-17**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 DESIGNED BY: OIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 REVISIONS: [Blank]

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

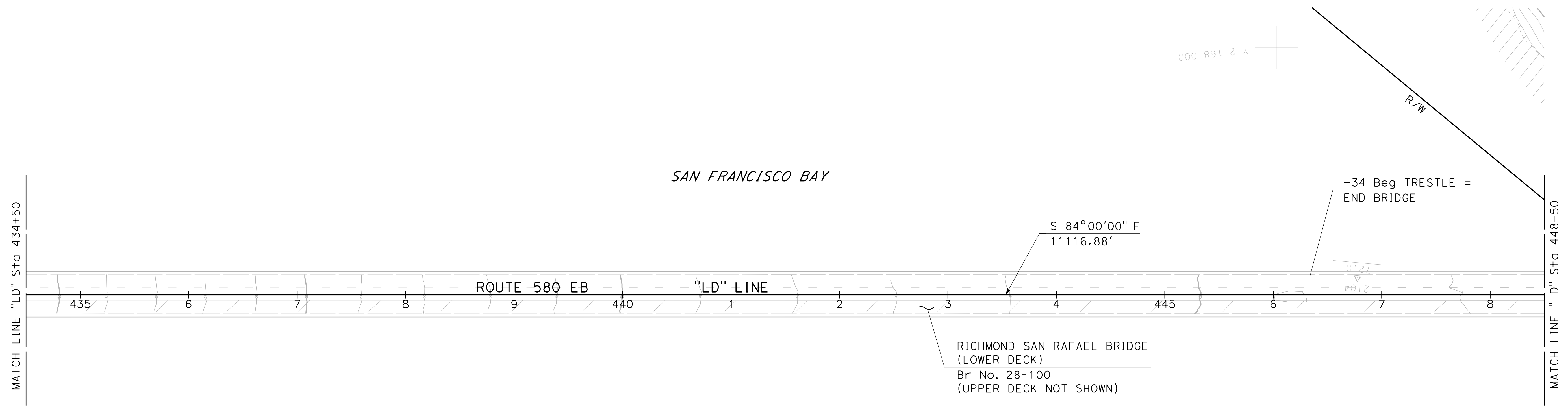
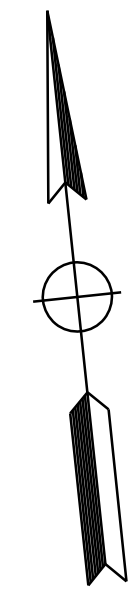
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	35	564

REGISTERED CIVIL ENGINEER: [Signature]  
 DATE: 7/13/16  
 PLANS APPROVAL DATE: 7/26/2016

REGISTERED PROFESSIONAL ENGINEER  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-18**

LAST REVISION: 00-00-00 DATE PLOTTED => 7/14/2016 TIME PLOTTED => 2:57:45 PM



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT - FUNCTIONAL SUPERVISOR: JAMES PUN  
 CALCULATED/DESIGNED BY: QIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 REVISED BY: ANTHONY SILVA  
 DATE REVISED: 7/26/2016

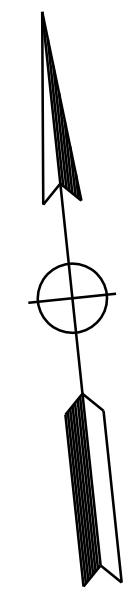
**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	36	564
REGISTERED CIVIL ENGINEER			DATE	7/13/16	
PLANS APPROVAL DATE			7/26/2016		

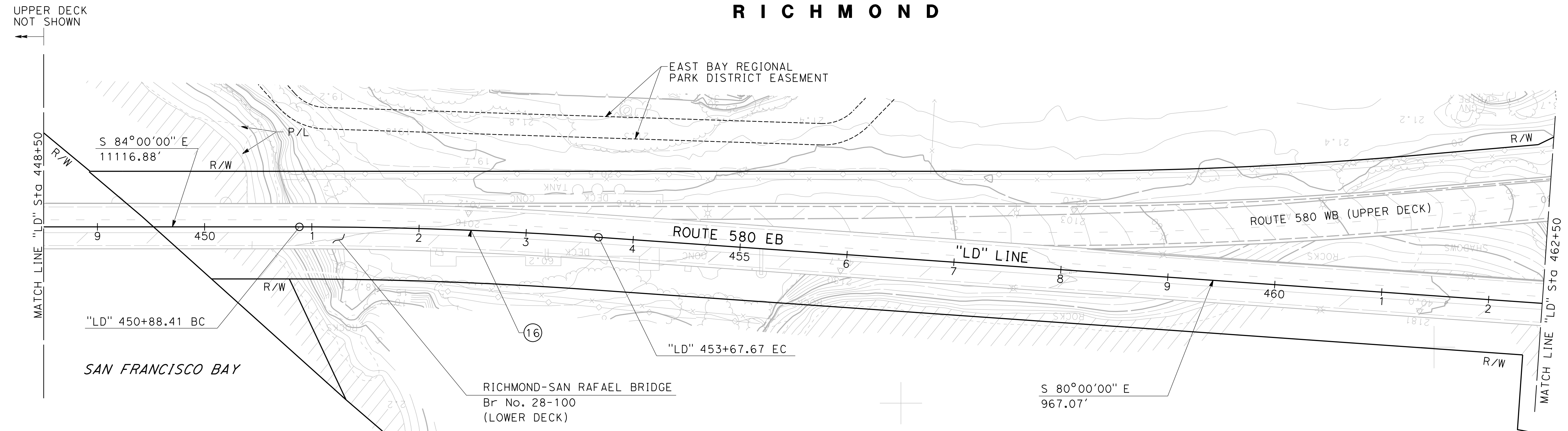
ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

HNTB CORPORATION  
 1111 BROADWAY  
 9TH FLOOR  
 OAKLAND, CA 94607

BAY AREA TOLL AUTHORITY  
 375 BEALE STREET  
 SUITE 800  
 SAN FRANCISCO, CA 94105



**R I C H M O N D**



No.	R	Δ	CURVE DATA		CURVE CENTER	
			T	L	N	E
16	4000'	4°00'00"	139.68'	279.25'	2163744.093	6010541.003

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

LAST REVISION: 00-00-00 DATE PLOTTED => 7/14/2016 TIME PLOTTED => 2:57:46 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	37	564

REGISTERED CIVIL ENGINEER  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL

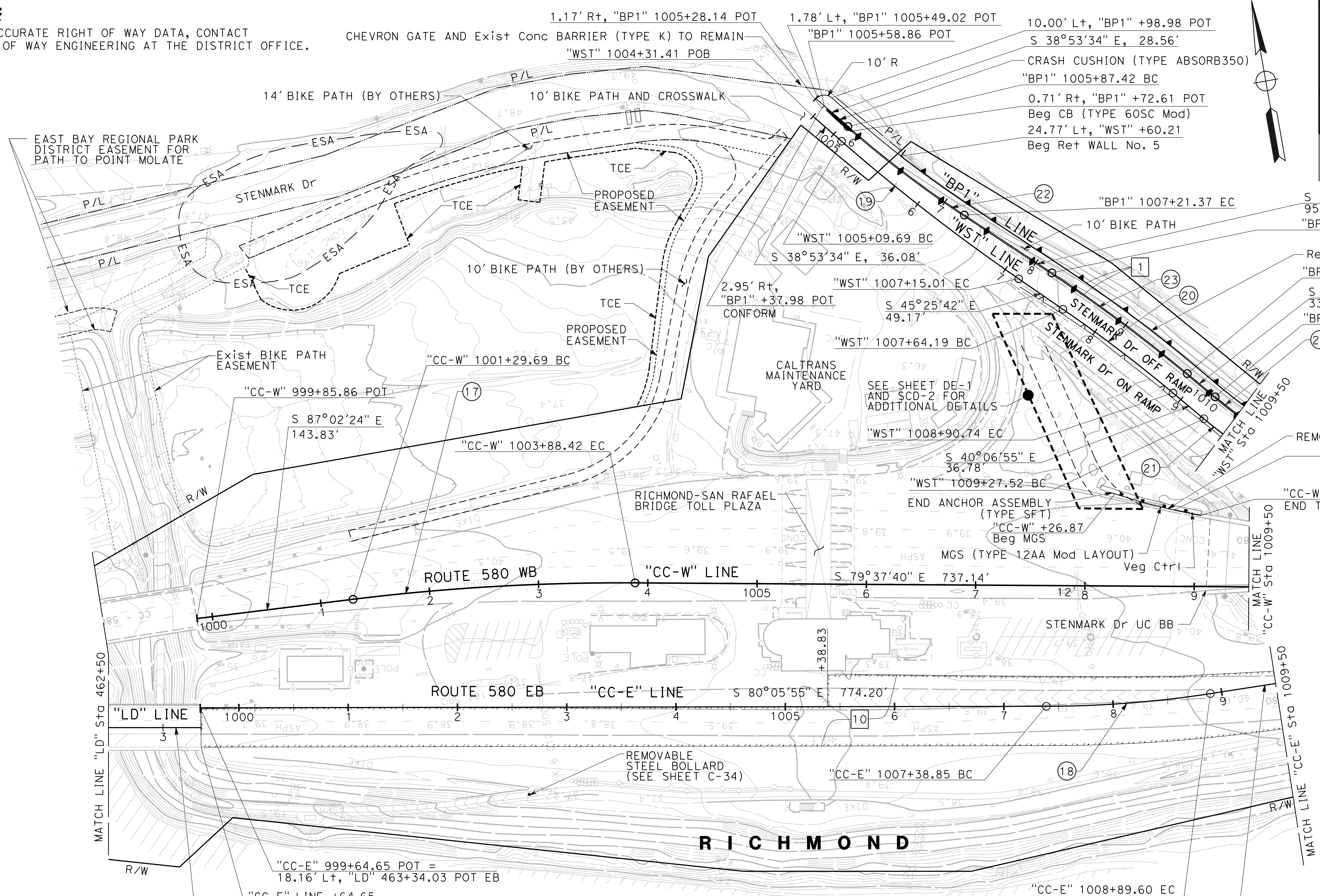
7/13/16  
 DATE

7/26/2016  
 PLANS APPROVAL DATE

HNTB CORPORATION  
 1111 BROADWAY  
 9TH FLOOR  
 OAKLAND, CA 94607

BAY AREA TOLL AUTHORITY  
 375 BEALE STREET  
 SUITE 800  
 SAN FRANCISCO, CA 94105

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



**CURVE DATA**

No.	R	Δ	CURVE DATA		CURVE CENTER	
			T	L	N	E
17	2000'	07°24'44"	129.55'	258.73'	2165609.562	6012242.080
18	996'	08°40'20"	75.52'	150.75'	2168381.441	6013124.355
19	1800'	06°32'08"	102.77'	205.32'	2169072.243	6014259.401
20	1350'	5°22'16"	63.32'	126.55'	2166793.761	6012083.754
21	490'	41°52'59"	187.52'	358.19'	2167950.150	6013515.473
22	1000'	7°40'29"	67.08'	133.95'	2167902.123	6012908.589
23	1372'	6°30'37"	78.03'	155.90'	2167736.439	6013083.670
24	468'	43°22'35"	186.13'	354.31'	2167510.016	6013274.336

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

**Caltrans**

CONSULTANT FUNCTIONAL SUPERVISOR: JAMES PUN

REVISOR: OIANWEN DENG

CHECKED BY: ANTHONY SILVA

DATE REVISION: 7/2/2016

DATE REVISION: 7/26/2016



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	38	564

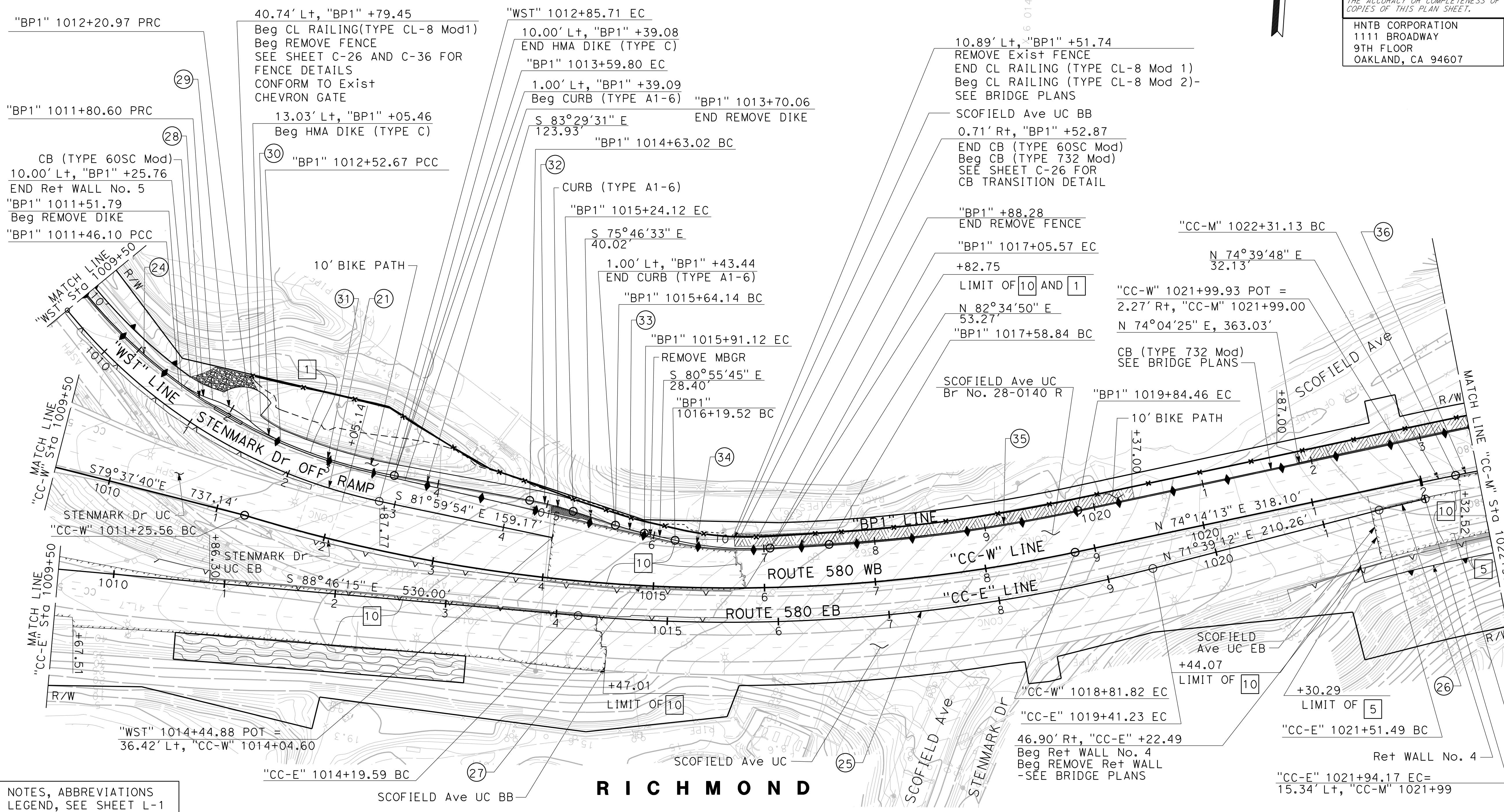
REGISTERED CIVIL ENGINEER  
DATE 7/13/16  
7/26/2016  
PLANS APPROVAL DATE

ANTHONY E. SILVA  
No. C75053  
Exp 12/31/17  
CIVIL  
STATE OF CALIFORNIA

HNTB CORPORATION  
1111 BROADWAY  
9TH FLOOR  
OAKLAND, CA 94607

BAY AREA TOLL AUTHORITY  
375 BEALE STREET  
SUITE 800  
SAN FRANCISCO, CA 94105

**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET L-1

No.	CURVE DATA				CURVE CENTER	
	R	Δ	T	L	N	E
21	490'	41°52'59"	187.52'	358.19'	2167950.150	6013515.473
24	468'	17°15'40"	71.03'	140.99'	2167953.903	6013512.310
25	1527'	19°34'33"	263.38'	521.63'	2168900.700	6013665.616
26	1472'	1°39'40"	21.34'	42.68'	2166120.559	6014809.091
27	1500'	28°53'13"	386.35'	756.26'	2168904.989	6013667.838
28	110'	17°58'07"	17.39'	34.50'	2167652.384	6013319.307
29	100'	23°07'52"	20.46'	40.37'	2167449.216	6013266.178
30	100'	18°09'43"	15.98'	31.70'	2167607.277	6013388.720

No.	CURVE DATA				CURVE CENTER	
	R	Δ	T	L	N	E
31	468'	13°06'56"	53.80'	107.13'	2167953.903	6013512.310
32	300'	7°42'57"	20.23'	40.40'	2167176.806	6013548.390
33	300'	5°09'12"	13.50'	26.98'	2167748.580	6013734.604
34	299'	16°29'25"	43.27'	86.06'	2167743.115	6013762.490
35	1523'	8°29'17"	113.02'	225.62'	2168963.746	6013657.253
36	1615'	39°59'35"	587.70'	1127.29'	2167745.819	6014932.861

**LAYOUT**

SCALE: 1" = 50'

**L-21**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
Caltrans

REVISOR: OIANWEN DENG  
CHECKED BY: ANTHONY SILVA  
DESIGNED BY: JAMES PUN  
SUPERVISOR: JAMES PUN

REVISIONS:  
DATE: 7/2/2010  
USER: rdeleon  
FILE: 0414000552ea021.dgn

RELATIVE BORDER SCALE  
15 IN INCHES

UNIT 0000

PROJECT NUMBER & PHASE  
04140005521

DATE PLOTTED => 7/14/2016  
TIME PLOTTED => 2:57:46 PM



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	39	564

REGISTERED CIVIL ENGINEER	DATE
<i>Anthony E. Silva</i>	7/13/16

7/26/2016
PLANS APPROVAL DATE

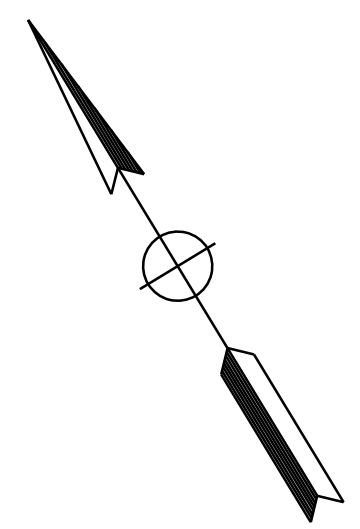
  

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
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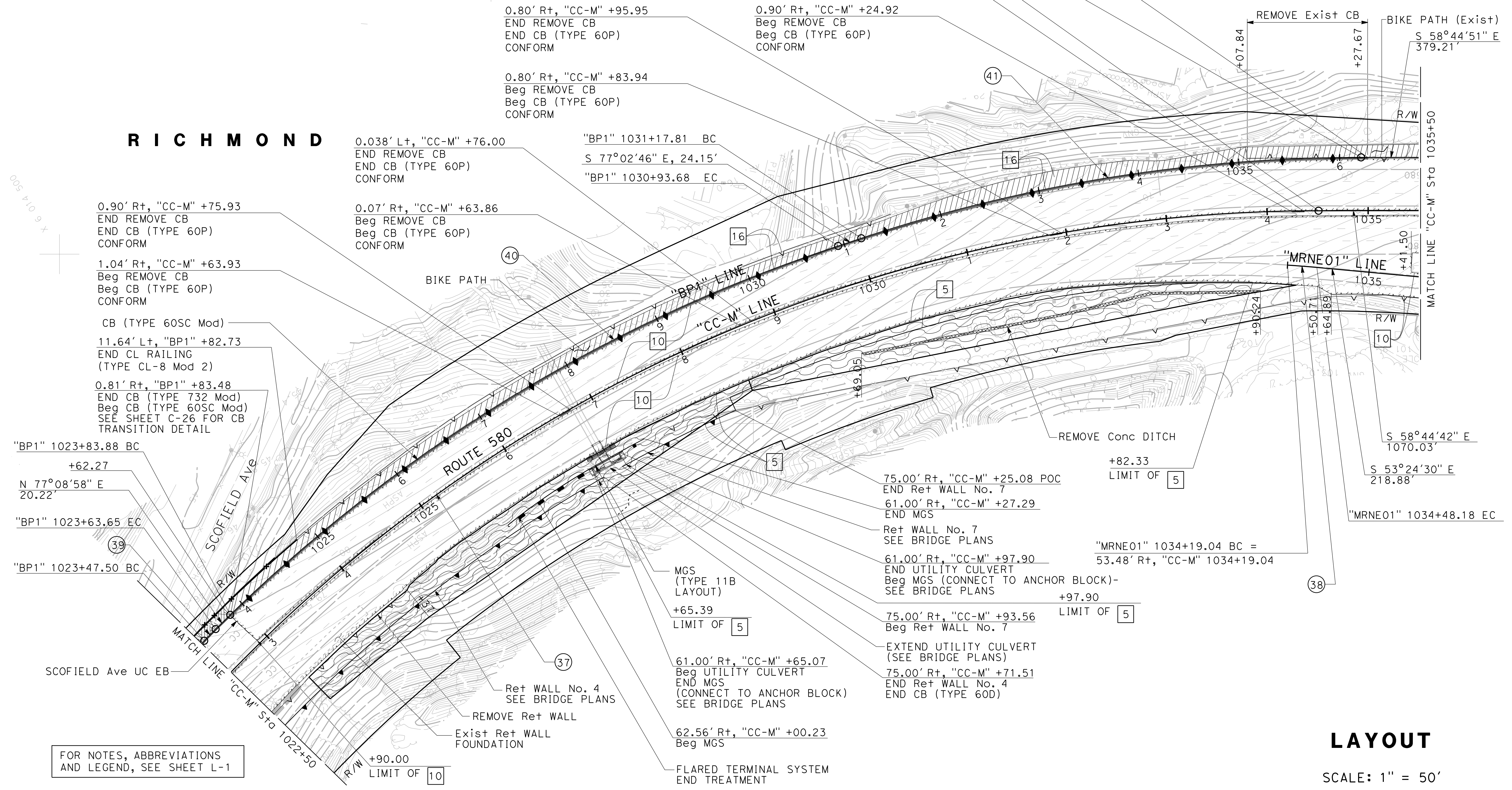
**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA					CURVE CENTER	
No.	R	$\Delta$	T	L	N	E
37	1500'	46°35'30"	645.87'	1219.77'	2167745.819	6014932.861
38	1012'	1°39'00"	14.57'	29.14'	2166529.697	6014953.634
39	301'	3°04'33"	8.08'	16.16'	2167309.240	6014506.378
40	1576'	25°48'16"	361.02'	709.79'	2166070.672	6014953.634
41	1576'	18°17'55"	253.82'	503.33'	6166065.259	6014833.196



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
*Caltrans*  
 CONSULTANT SUPERVISOR: JAMES PUN  
 CHECKED BY: ANTHONY SILVA  
 DESIGNED BY: ANTHONY SILVA  
 REVISIONS: (None listed)

**RICHMOND**



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	40	564

7/13/16  
REGISTERED CIVIL ENGINEER DATE

7/26/2016  
PLANS APPROVAL DATE

ANTHONY E. SILVA  
No. C75053  
Exp. 12/31/17  
CIVIL

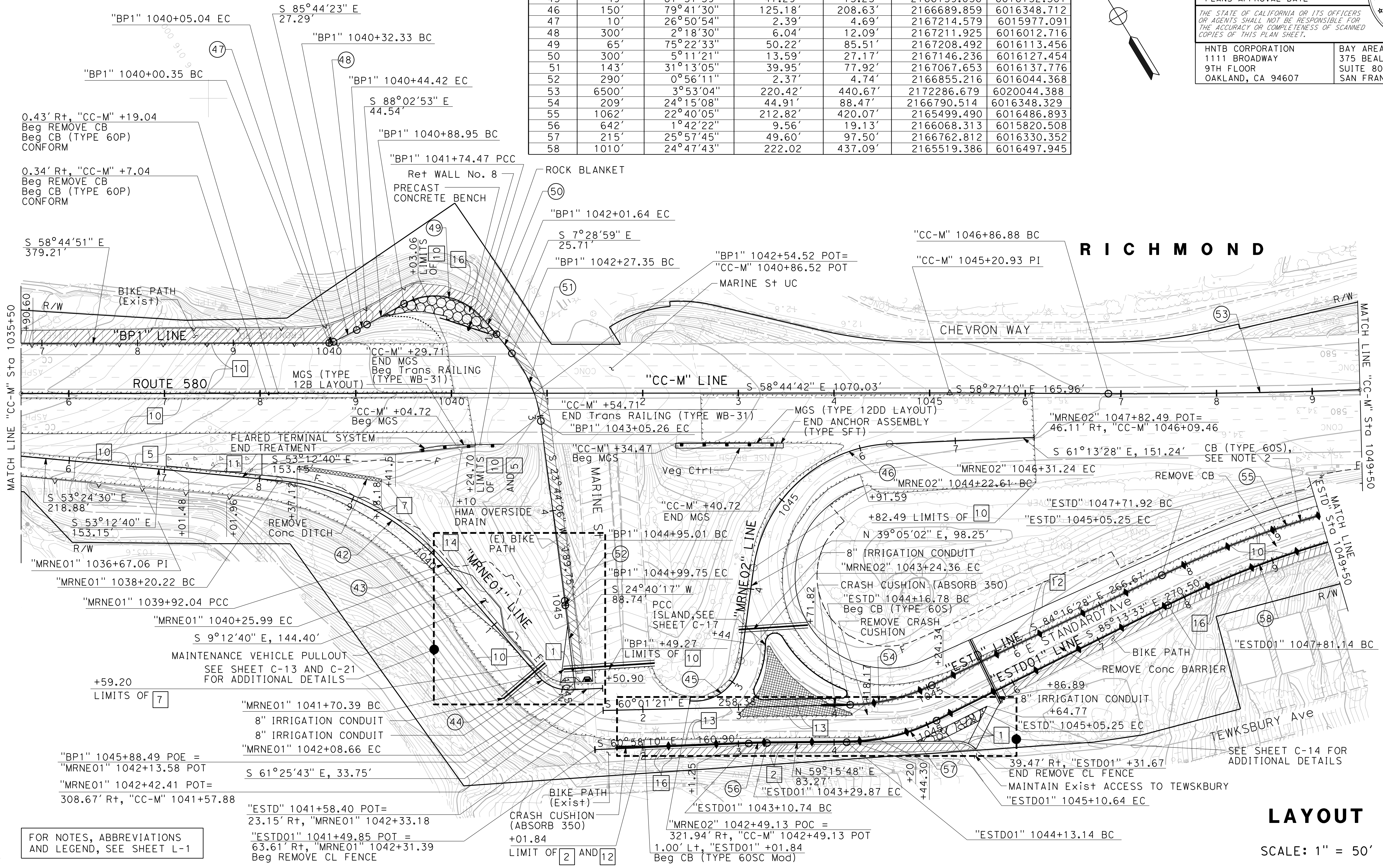
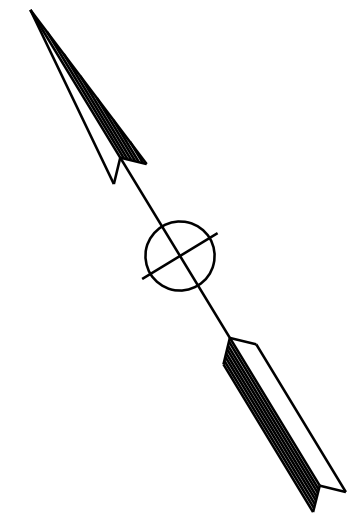
HNTB CORPORATION  
1111 BROADWAY  
OAKLAND, CA 94607

BAY AREA TOLL AUTHORITY  
375 BEALE STREET  
SUITE 800  
SAN FRANCISCO, CA 94105

**NOTES:**

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- FOR CB (TYPE 60S/ 60SC) SCUPPER LOCATION, SEE SHEET C-29.

No.	CURVE DATA			CURVE CENTER		
	R	Δ	T	L	N	E
42	260'	37°51'49"	89.18'	171.82'	2166911.819	6015699.583
43	317'	6°08'10"	16.99'	33.95'	2166896.733	6015644.616
44	42'	52°13'02"	20.58'	38.28'	2166811.662	6016022.101
45	49'	87°57'59"	47.29'	75.23'	2166739.056	6016132.301
46	150'	79°41'30"	125.18'	208.63'	2166689.859	6016348.712
47	10'	26°50'54"	2.39'	4.69'	2167214.579	6015977.091
48	300'	2°18'30"	6.04'	12.09'	2167211.925	6016012.716
49	65'	75°22'33"	50.22'	85.51'	2167208.492	6016113.456
50	300'	5°11'21"	13.59'	27.17'	2167146.236	6016127.454
51	143'	31°13'05"	39.95'	77.92'	2167067.653	6016137.776
52	290'	0°56'11"	2.37'	4.74'	2166855.216	6016044.368
53	6500'	3°53'04"	220.42'	440.67'	2172286.679	6020044.388
54	209'	24°15'08"	44.91'	88.47'	2166790.514	6016348.329
55	1062'	22°40'05"	212.82'	420.07'	2165499.490	6016486.893
56	642'	1°42'22"	9.56'	19.13'	2166068.313	6015820.508
57	215'	25°57'45"	49.60'	97.50'	2166762.812	6016330.352
58	1010'	24°47'43"	222.02'	437.09'	2165519.386	6016497.945



**LAYOUT**

SCALE: 1" = 50'

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

CONSULTANT SUPERVISOR: JAMES PUN

DESIGNED BY: QIANWEN DENG

CHECKED BY: ANTHONY SILVA

REVISOR: ANTHONY SILVA

DATE: 7/26/2016

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

DATE PLOTTED => 7/14/2016  
TIME PLOTTED => 2:57:52 PM



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	41	564

REGISTERED CIVIL ENGINEER DATE 7/13/16

7/26/2016  
PLANS APPROVAL DATE

ANTHONY E. SILVA  
No. C75053  
Exp. 12/31/17  
CIVIL

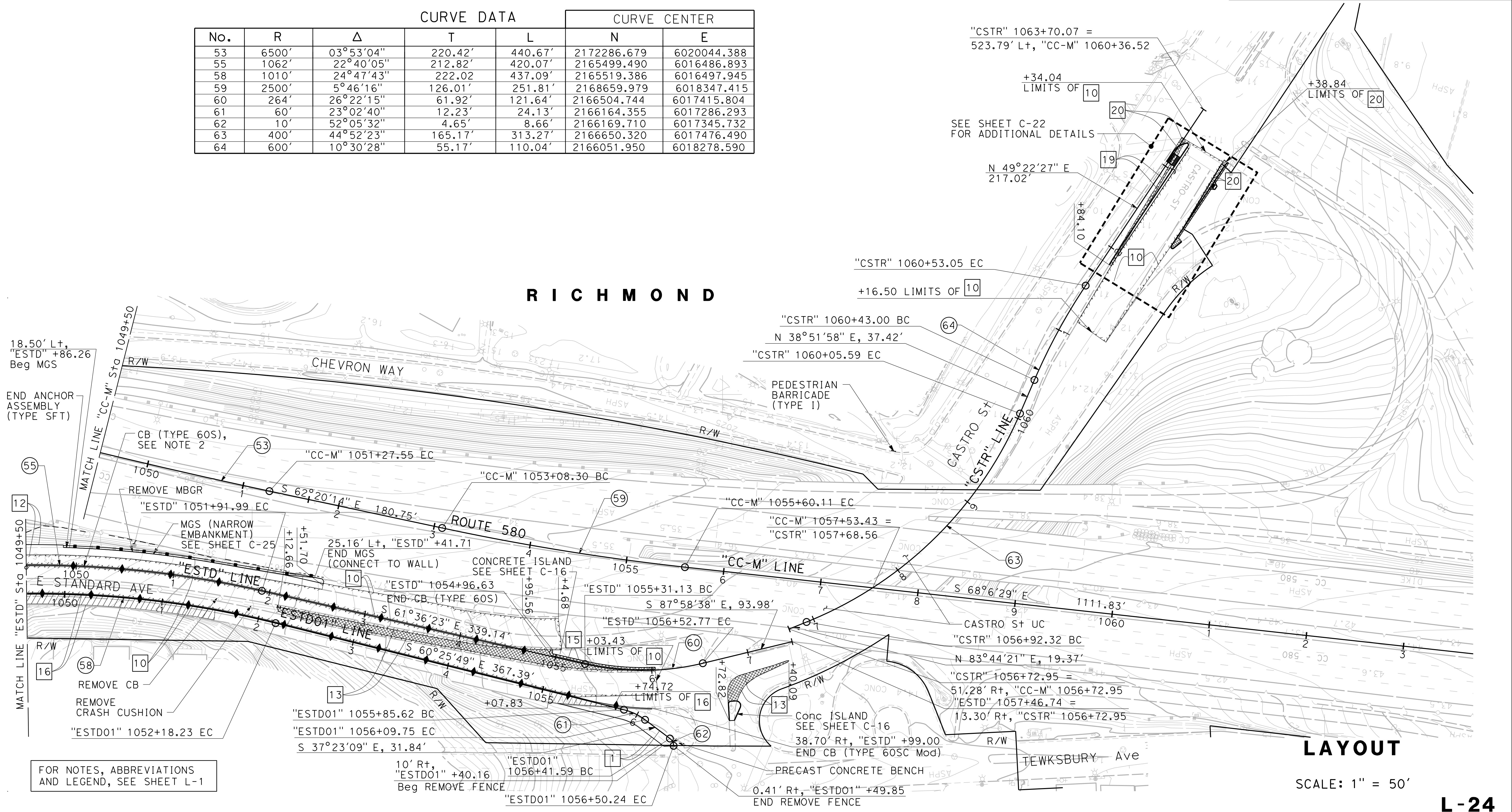
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION  
1111 BROADWAY  
9TH FLOOR  
OAKLAND, CA 94607

BAY AREA TOLL AUTHORITY  
375 BEALE STREET  
SUITE 800  
SAN FRANCISCO, CA 94105

- NOTE:**
- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
  - FOR CB (TYPE 60S/ 60SC) SCUPPER LOCATION, SEE SHEET C-29.

No.	CURVE DATA				CURVE CENTER	
	R	Δ	T	L	N	E
53	6500'	03°53'04"	220.42'	440.67'	2172286.679	6020044.388
55	1062'	22°40'05"	212.82'	420.07'	2165499.490	6016486.893
58	1010'	24°47'43"	222.02	437.09'	2165519.386	6016497.945
59	2500'	5°46'16"	126.01'	251.81'	2168659.979	6018347.415
60	264'	26°22'15"	61.92'	121.64'	2166504.744	6017415.804
61	60'	23°02'40"	12.23'	24.13'	2166164.355	6017286.293
62	10'	52°05'32"	4.65'	8.66'	2166169.710	6017345.732
63	400'	44°52'23"	165.17'	313.27'	2166650.320	6017476.490
64	600'	10°30'28"	55.17'	110.04'	2166051.950	6018278.590



**R I C H M O N D**

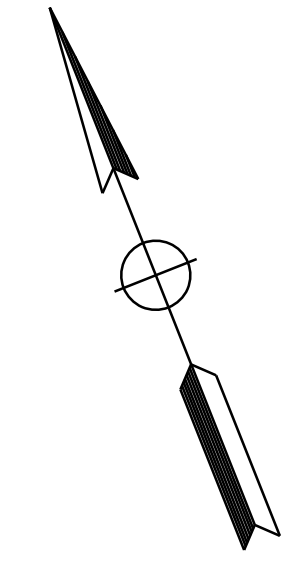
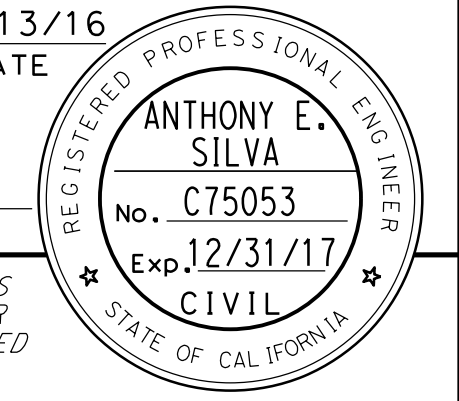
**LAYOUT**

SCALE: 1" = 50'

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR: JAMES PUN  
 CALCULATED/DESIGNED BY: OIANWEN DENG  
 CHECKED BY: ANTHONY SILVA  
 REVISED BY: DATE  
 REVISIONS: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	187	564
REGISTERED CIVIL ENGINEER			DATE	7/13/16	
7/26/2016			PLANS APPROVAL DATE		
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



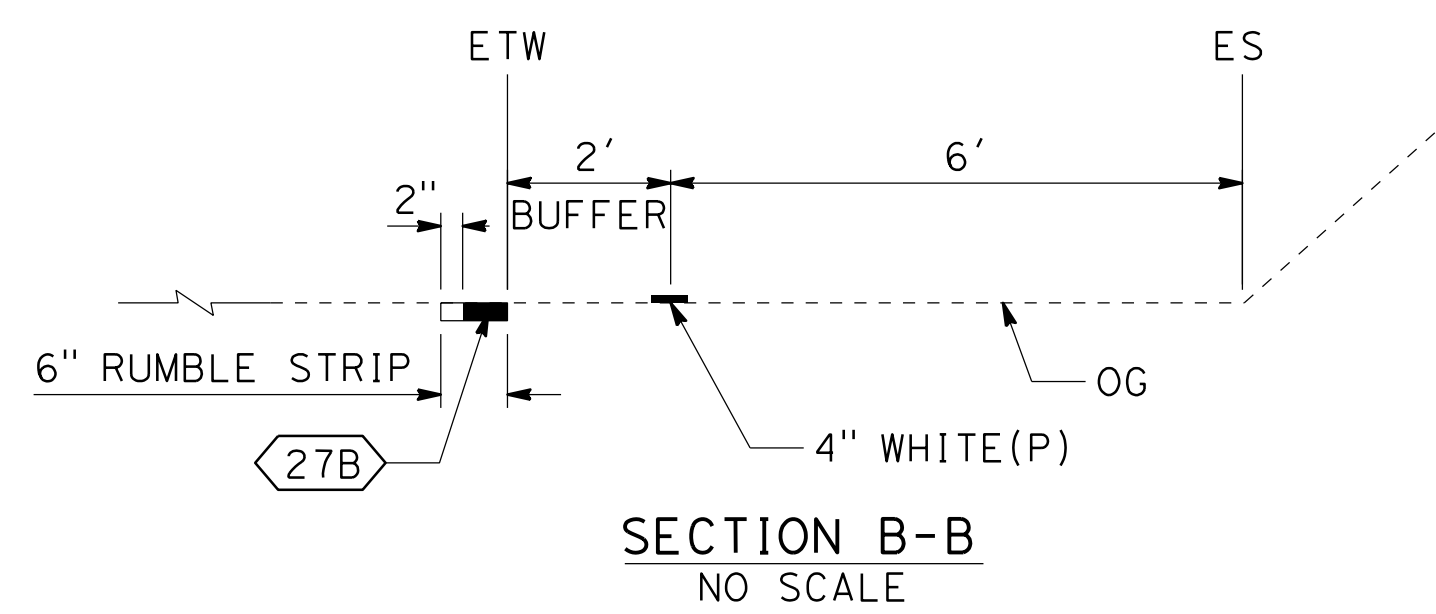
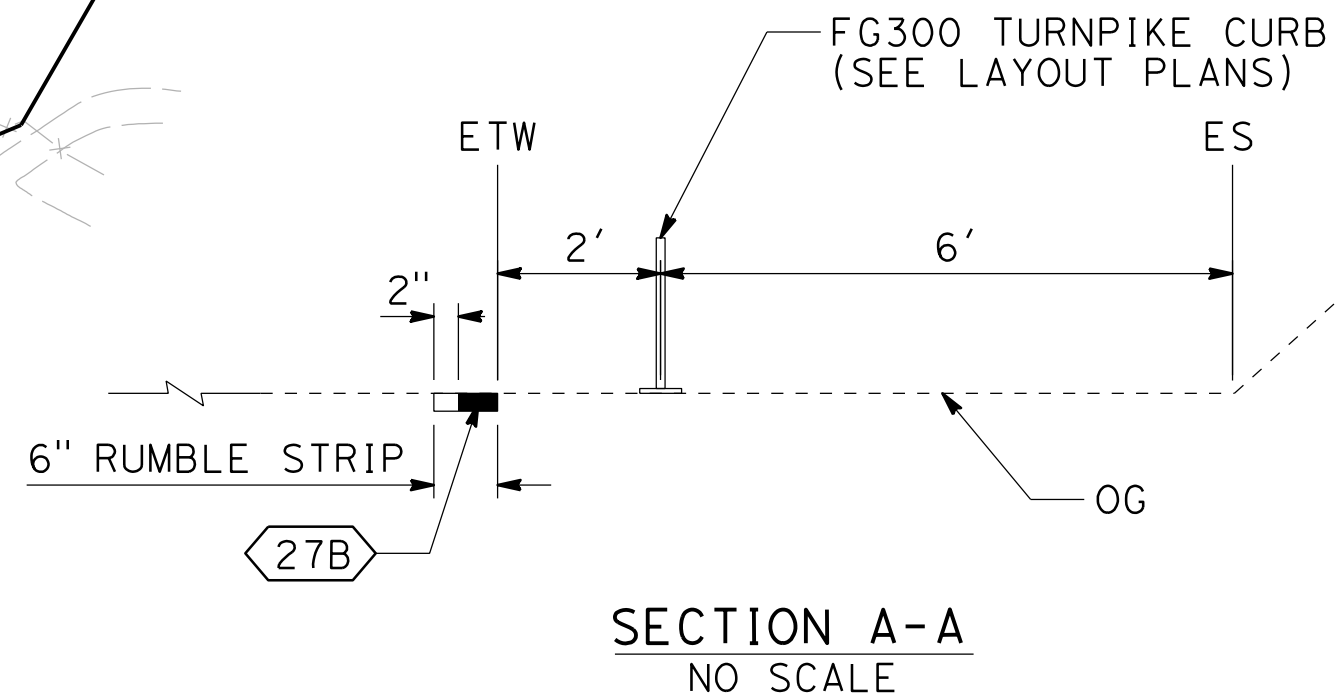
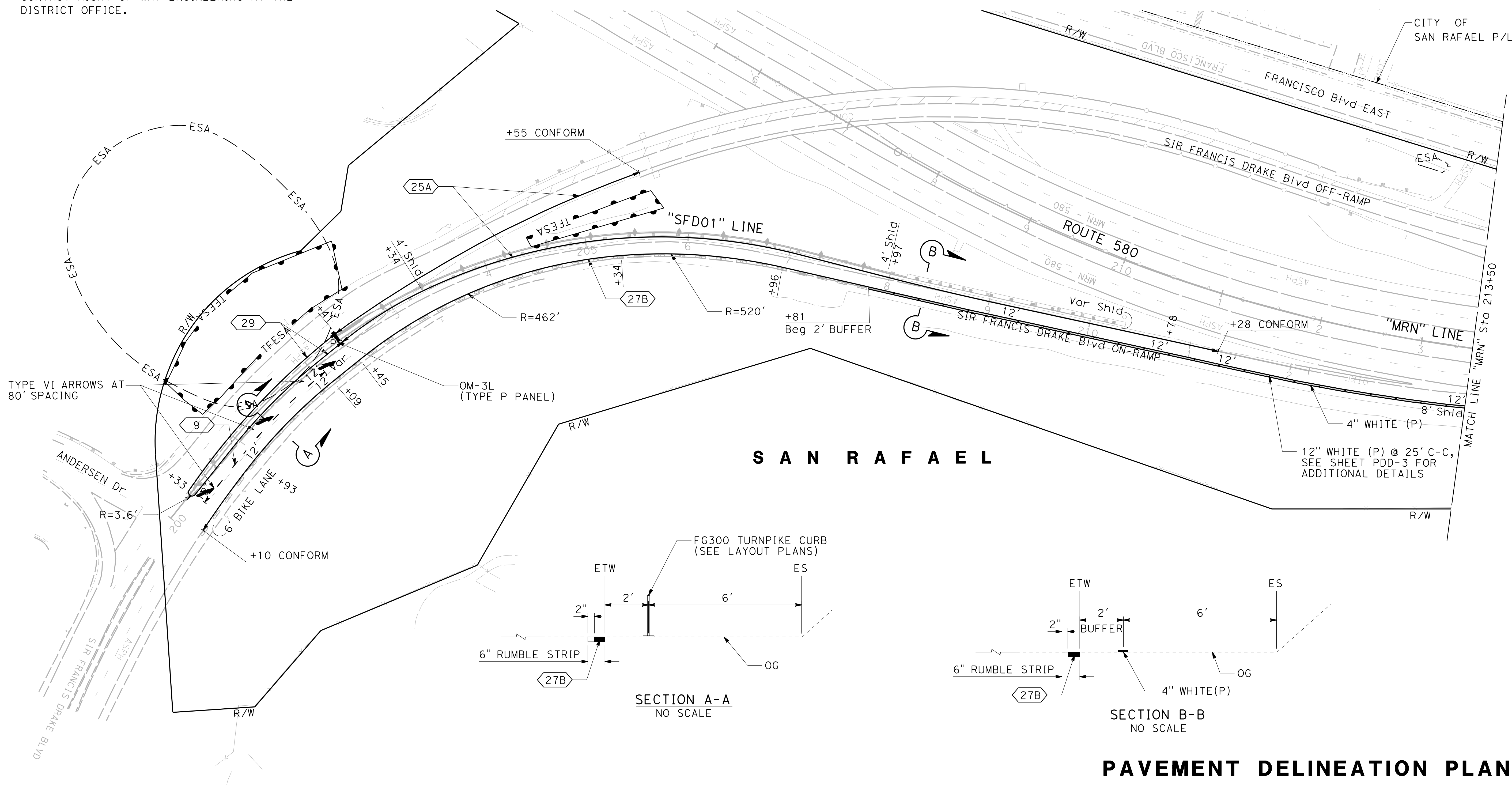
**NOTES:**

- ALL STRIPING AND PAVEMENT MARKINGS SHALL BE ENHANCED WET NIGHT VISIBILITY THERMOPLASTIC UNLESS OTHERWISE NOTED ON THE PLANS.
- CONFLICTING STRIPING AND PAVEMENT MARKINGS SHALL BE REMOVED PRIOR TO THE INSTALLATION OF NEW STRIPING AND PAVEMENT MARKINGS
- SEE PAVEMENT DELINEATION QUANTITIES FOR EXACT LOCATION OF PAVEMENT MARKINGS.
- FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

**LEGEND/ABBREVIATIONS:**

- BEGIN/END OF TRAFFIC STRIPE DETAIL
- CHANGE OF TRAFFIC STRIPE DETAIL
- (No.) TRAFFIC STRIPE DETAIL NUMBER
- BG CONCRETE BARRIER DELINEATOR (TYPE F & G)
- F DELINEATOR (CLASS 1) - (TYPE F & G)
- P OBJECT MARKER (TYPE P & R)
- L-1 OBJECT MARKER (TYPE L-1)
- BEGIN OR END TRANSITION
- BP BIKE PATH
- TTS THERMOPLASTIC TRAFFIC STRIPE OR PAVEMENT MARKING
- (P) PAINT (1 COAT)
- ESA — LIMIT OF ESA
- TFESA— TEMPORARY FENCE (TYPE ESA) - SEE LAYOUT PLANS

REVISOR	DATE	REVISION
EDWIN XIE		
JAMES PUN		
CALCULATED/DESIGNED BY	CHECKED BY	
JAMES PUN	JAMES PUN	
CONSULTANT FUNCTIONAL SUPERVISOR		
JAMES PUN		
DEPARTMENT OF TRANSPORTATION		
STATE OF CALIFORNIA		



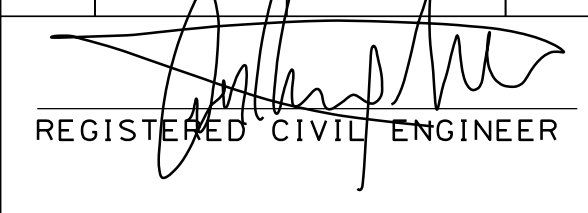
**PAVEMENT DELINEATION PLAN**

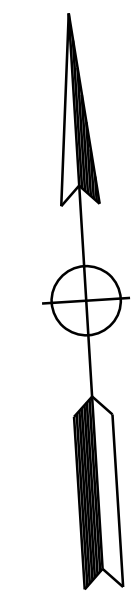
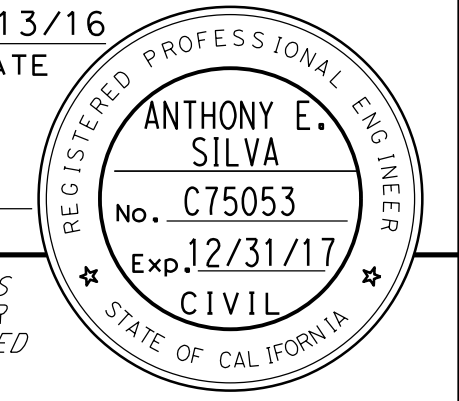
SCALE: 1" = 50'

APPROVED FOR PAVEMENT DELINEATION WORK ONLY


PD-1

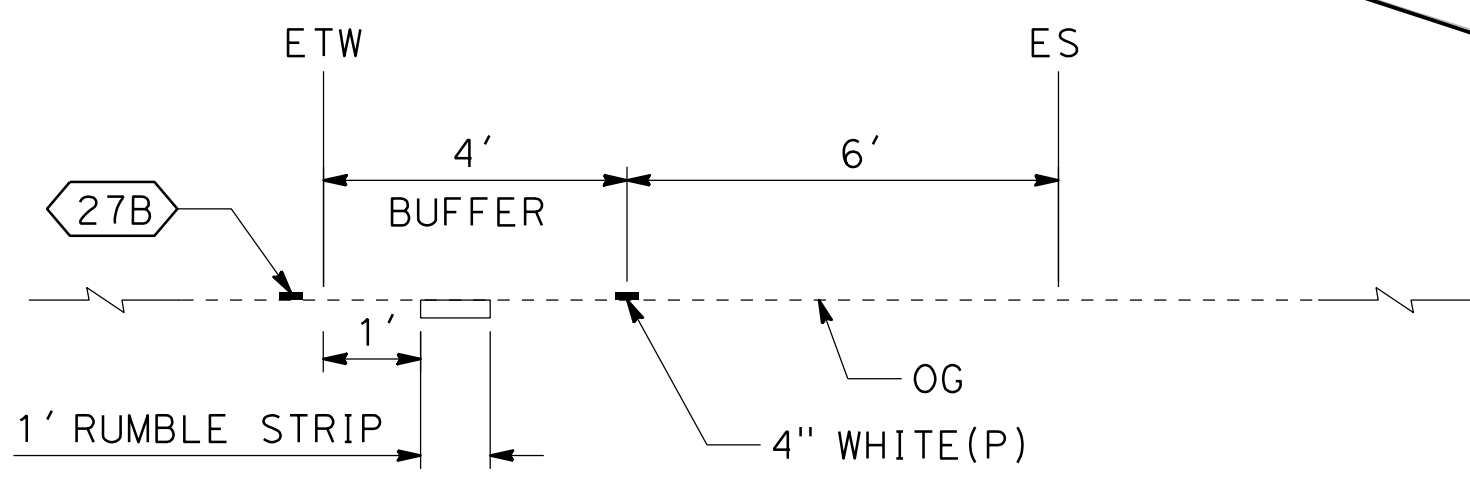
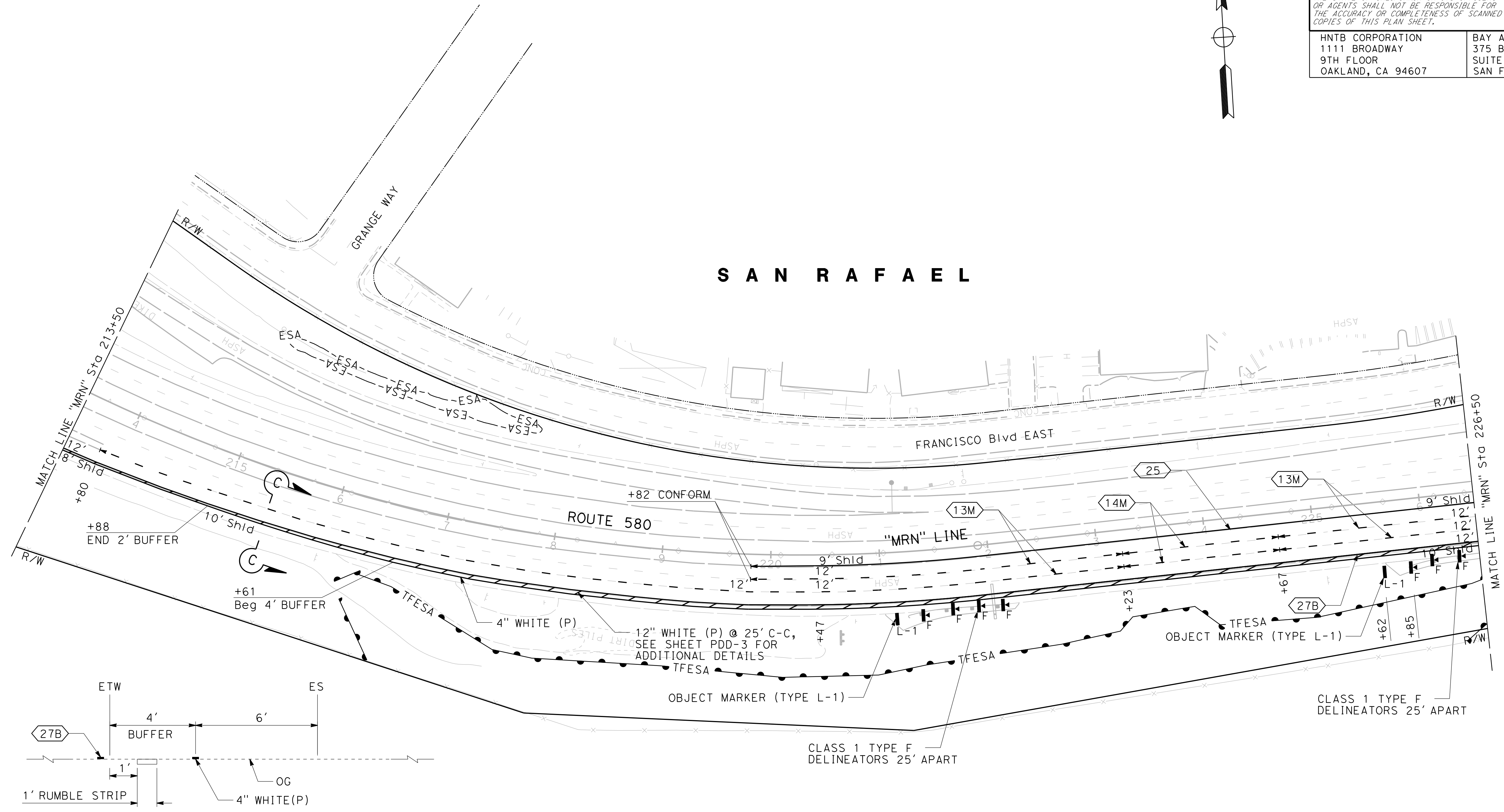


Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	188	564
 REGISTERED CIVIL ENGINEER			7/13/16	DATE	
7/26/2016			PLANS APPROVAL DATE		
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR
	JAMES PUN	EDWIN XIE	EDWIN XIE
		CHECKED BY	DATE REVISOR
		JAMES PUN	JAMES PUN



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET PD-1

**PAVEMENT DELINEATION PLAN**


SCALE: 1" = 50'

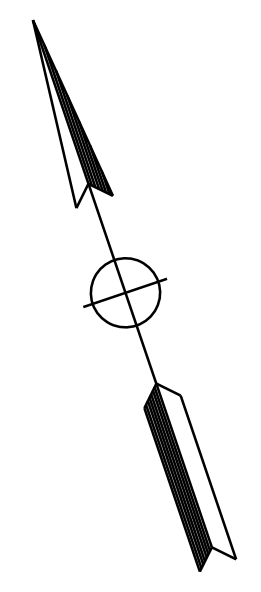
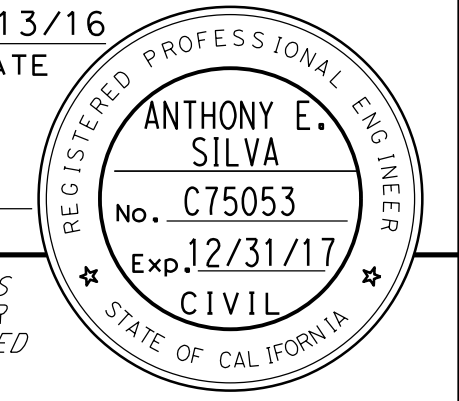
**PD-2**

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

LAST REVISION: DATE PLOTTED => 7/14/2016      TIME PLOTTED => 2:59:38 PM

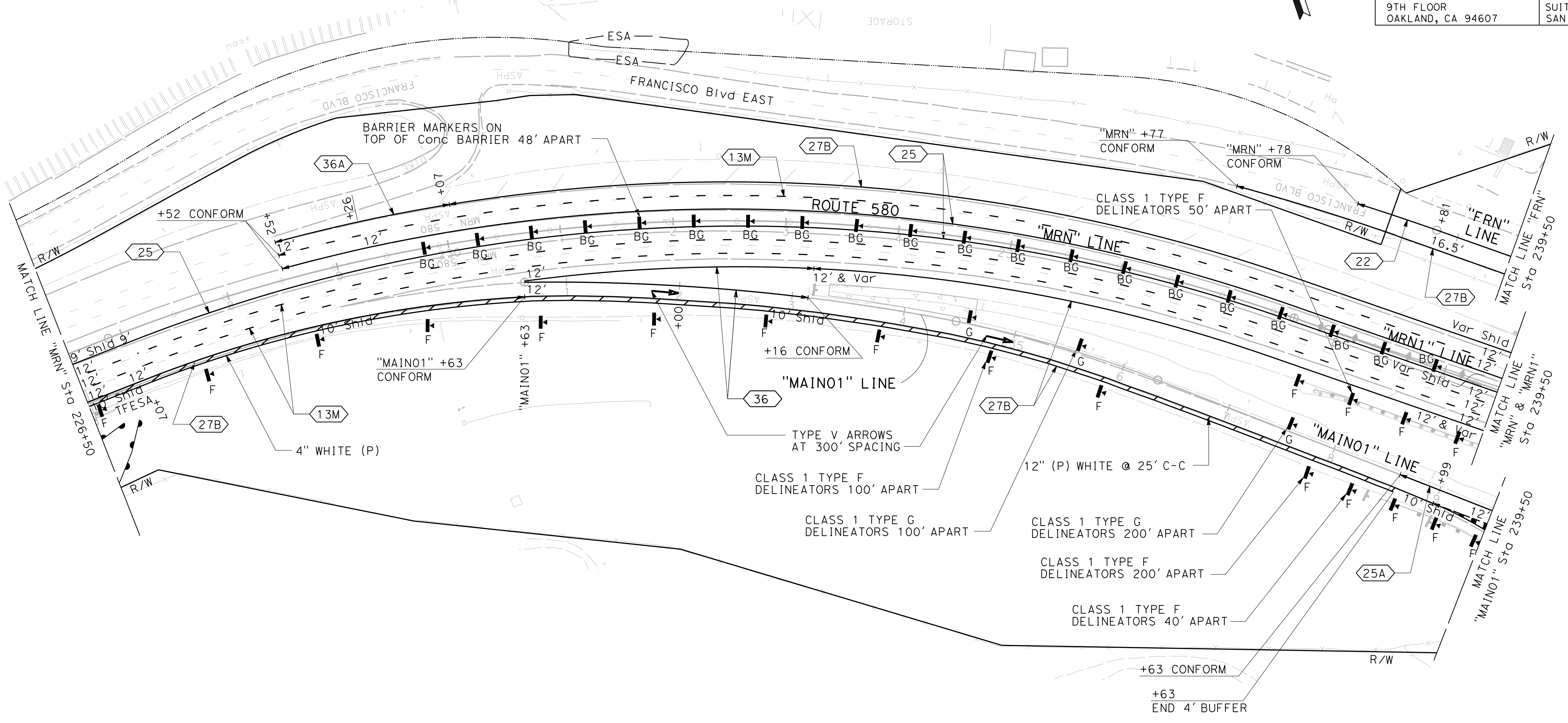


Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	189	564
 REGISTERED CIVIL ENGINEER			7/13/16	DATE	
PLANS APPROVAL DATE 7/26/2016					
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

**SAN RAFAEL**




FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET PD-1

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

**PAVEMENT DELINEATION PLAN**

SCALE: 1" = 50'

**PD-3**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	EDWIN XIE	REVISOR
	JAMES PUN	DATE
CONSULTANT - FUNCTIONAL SUPERVISOR	JAMES PUN	REVISOR
CALCULATED - DESIGNED BY	JAMES PUN	DATE
CHECKED BY	JAMES PUN	REVISOR
	JAMES PUN	DATE

LAST REVISION: DATE PLOTTED => 7/14/2016    TIME PLOTTED => 2:59:39 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: FUNCTIONAL SUPERVISOR: JAMES PUN  
 CALCULATED/DESIGNED BY: JAMES PUN  
 CHECKED BY: JAMES PUN  
 REVISED BY: EDWIN XIE  
 DATE: 7/2/2010  
 REVISED BY: JAMES PUN  
 DATE: 7/2/2010

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

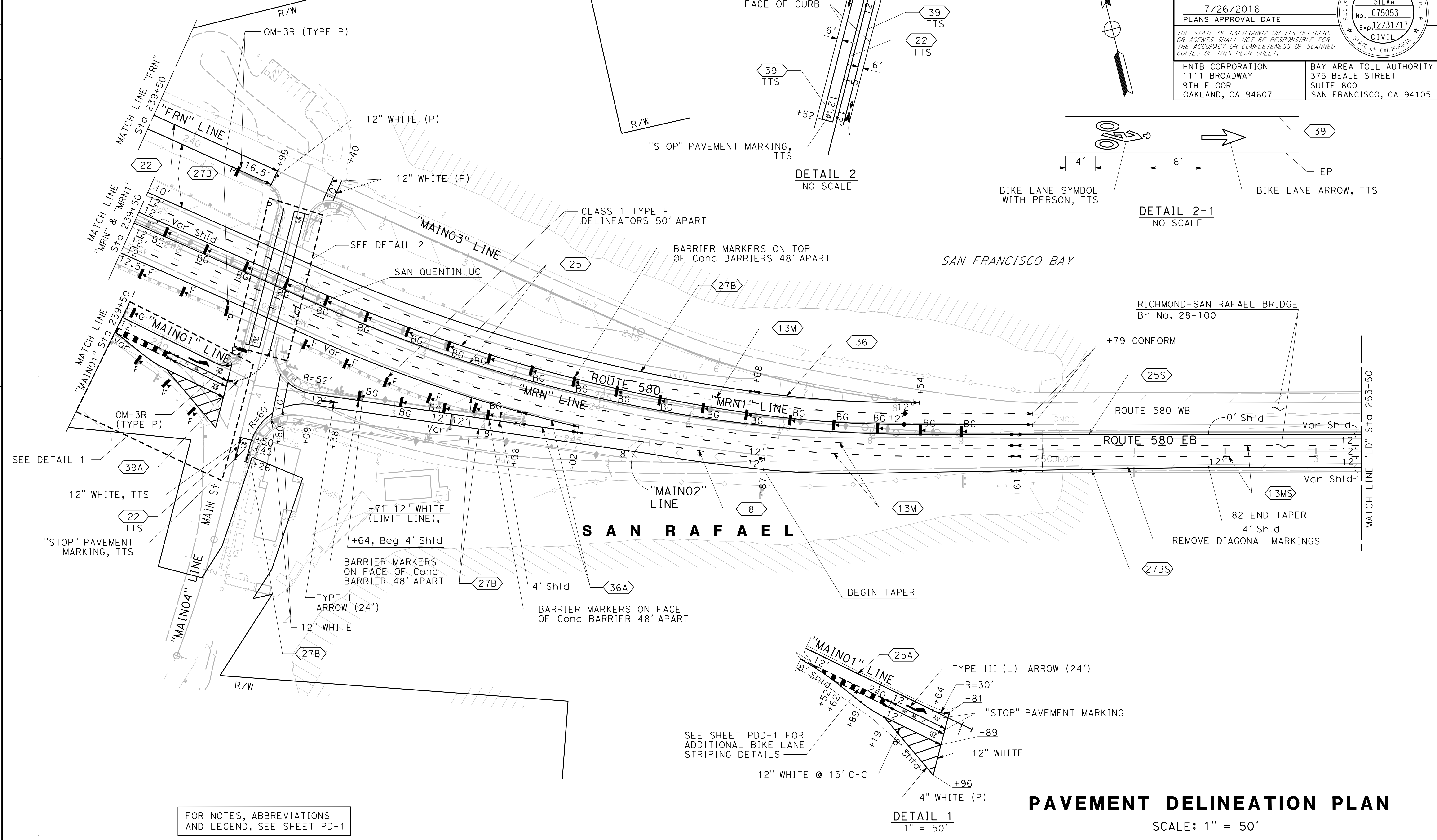
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	190	564

REGISTERED CIVIL ENGINEER: ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE: 7/26/2016  
 DATE: 7/13/16

HNTB CORPORATION  
 1111 BROADWAY  
 OAKLAND, CA 94607

BAY AREA TOLL AUTHORITY  
 375 BEALE STREET  
 SUITE 800  
 SAN FRANCISCO, CA 94105



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET PD-1

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

**PAVEMENT DELINEATION PLAN**

SCALE: 1" = 50'

**PD-4**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT - FUNCTIONAL SUPERVISOR: JAMES PUN  
 CHECKED BY: JAMES PUN  
 DESIGNED BY: EDWIN XIE  
 REVISIONS: (None listed)

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

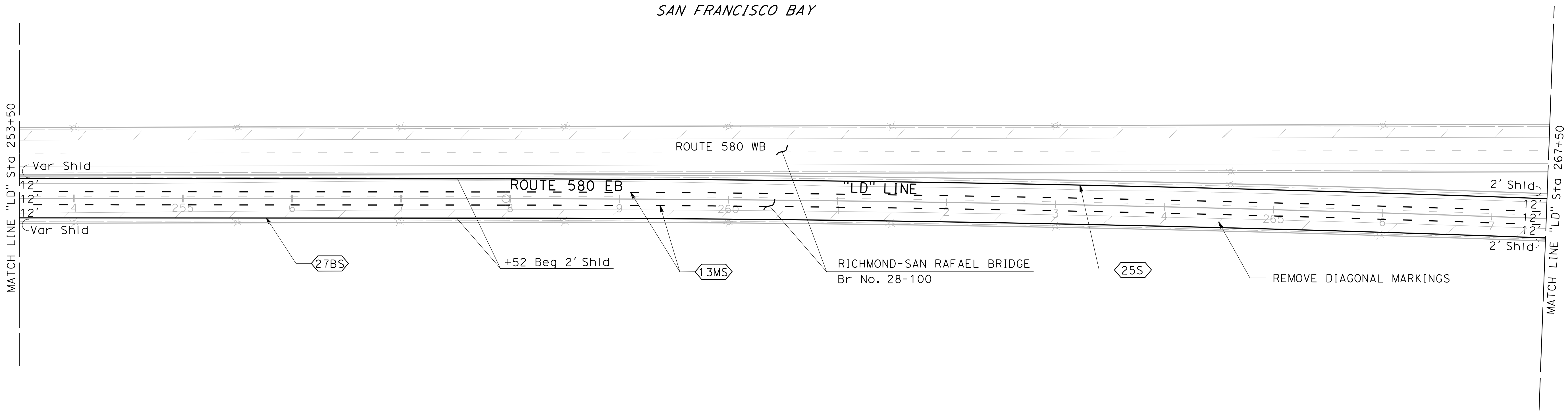
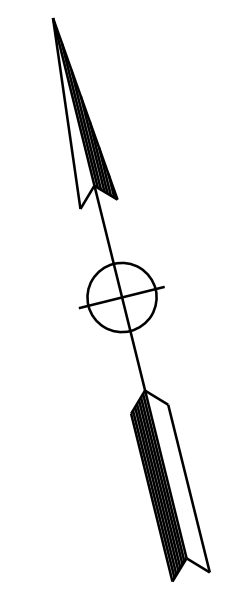
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	191	564

REGISTERED CIVIL ENGINEER: *[Signature]*  
 DATE: 7/13/16  
 PLANS APPROVAL DATE: 7/26/2016

REGISTERED PROFESSIONAL ENGINEER  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET PD-1

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

**PAVEMENT DELINEATION PLAN**

SCALE: 1" = 50'

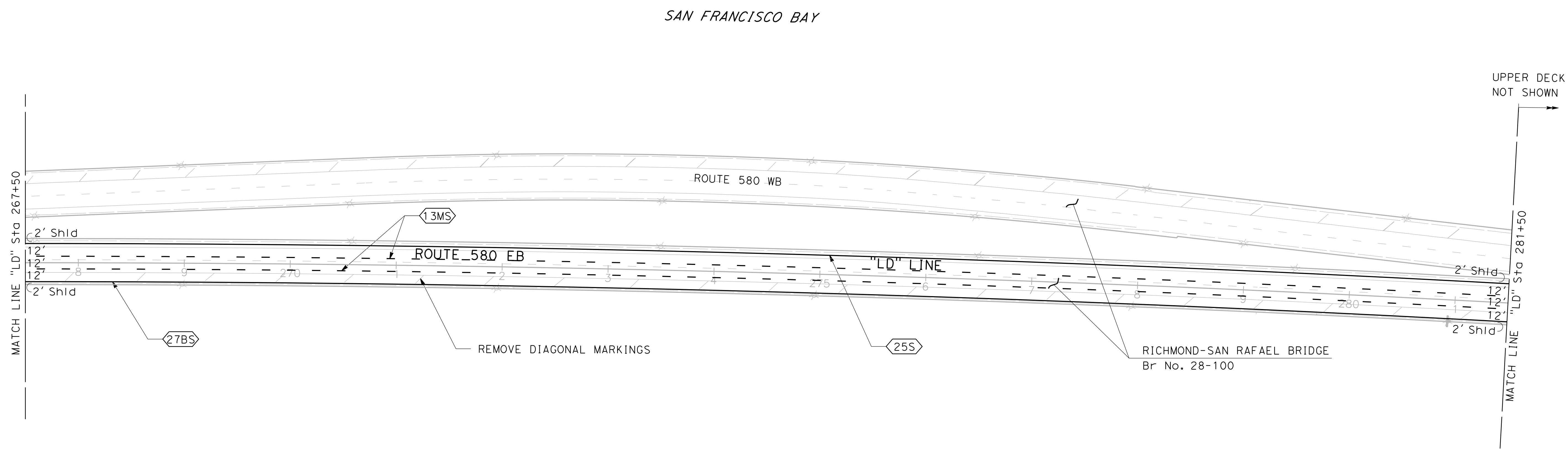
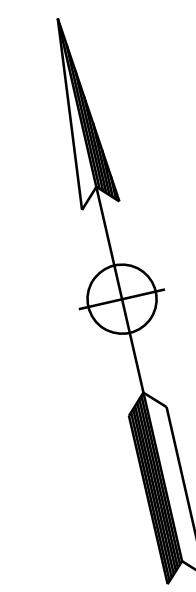
**PD-5**

LAST REVISION: 00-00-00  
 DATE PLOTTED => 7/14/2016  
 TIME PLOTTED => 2:59:42 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: FUNCTIONAL SUPERVISOR: JAMES PUN  
 CALCULATED/DESIGNED BY: EDWIN XIE  
 CHECKED BY: JAMES PUN  
 REVISED BY: DATE REVISD

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	192	564
REGISTERED CIVIL ENGINEER			7/13/16	DATE	
7/26/2016			PLANS APPROVAL DATE		
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET PD-1

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

**PAVEMENT DELINEATION PLAN**

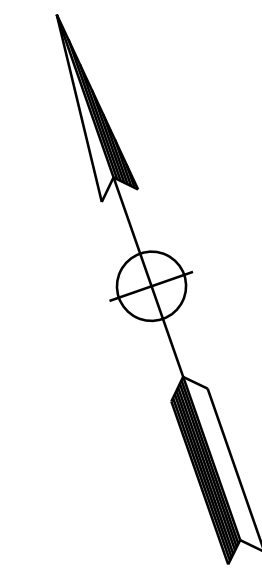
SCALE: 1" = 50'

**PD-6**

LAST REVISION DATE PLOTTED => 7/14/2016 00-00-00 TIME PLOTTED => 2:59:43 PM



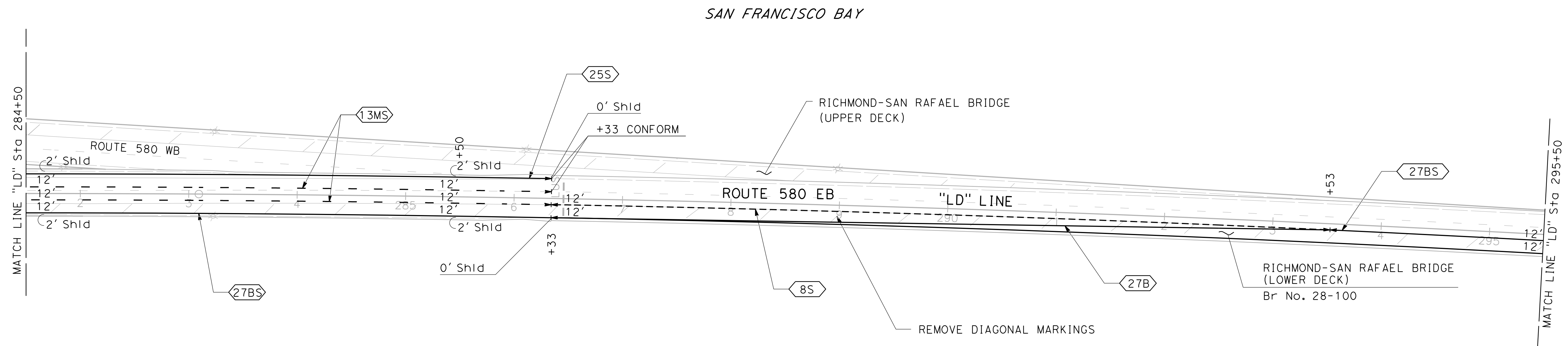
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	193	564
			7/13/16		
REGISTERED CIVIL ENGINEER			DATE		
7/26/2016			PLANS APPROVAL DATE		
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	EDWIN XIE	REVISOR
	JAMES PUN	DATE
CONSULTANT - FUNCTIONAL SUPERVISOR	JAMES PUN	CHECKED BY
	JAMES PUN	DESIGNED BY



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET PD-1

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

**PAVEMENT DELINEATION PLAN**

SCALE: 1" = 50'

**PD-7**

LAST REVISION: DATE PLOTTED => 7/14/2016 00-00-00 TIME PLOTTED => 2:59:45 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT - FUNCTIONAL SUPERVISOR: JAMES PUN  
 CALCULATED/DESIGNED BY: EDWIN XIE  
 CHECKED BY: JAMES PUN  
 REVISED BY: EDWIN XIE  
 DATE REVISED: JAMES PUN

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

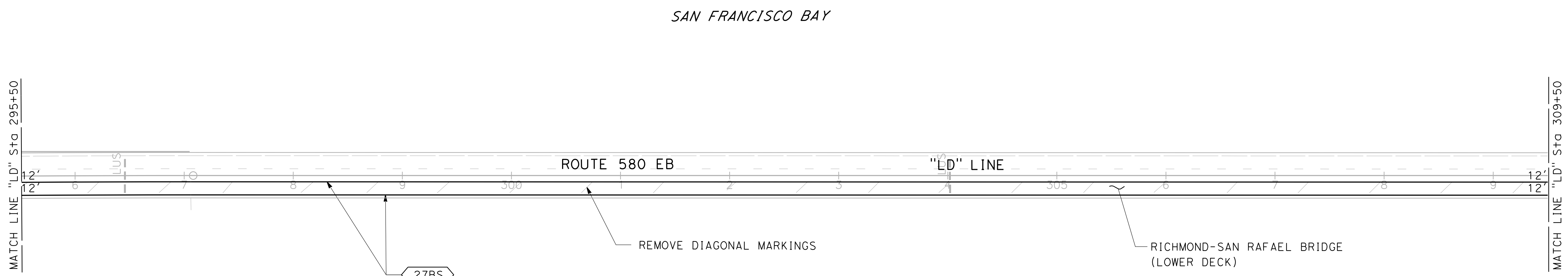
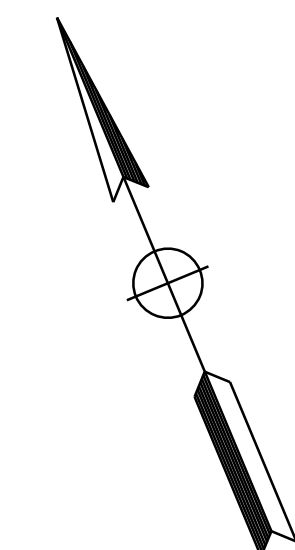
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	194	564

REGISTERED CIVIL ENGINEER: *[Signature]*  
 DATE: 7/13/16  
 PLANS APPROVAL DATE: 7/26/2016

REGISTERED PROFESSIONAL ENGINEER  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET PD-1

**PAVEMENT DELINEATION PLAN**

SCALE: 1" = 50'

**PD-8**

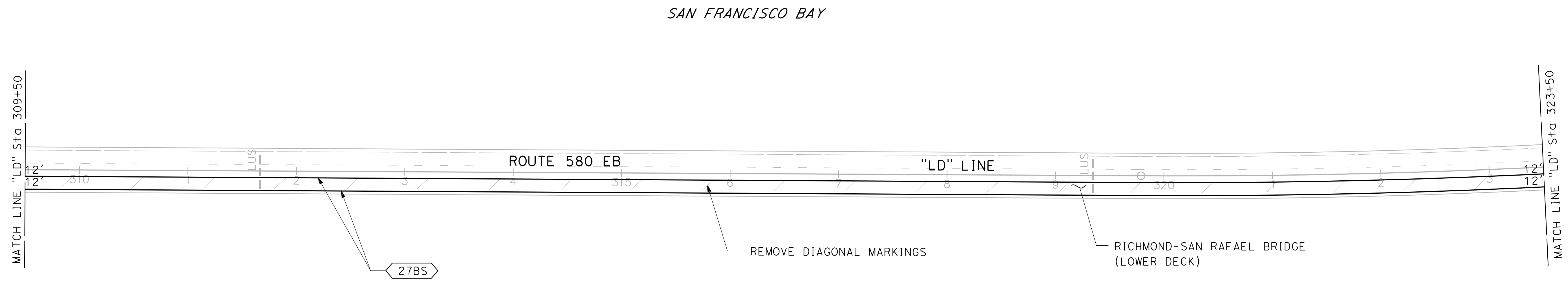
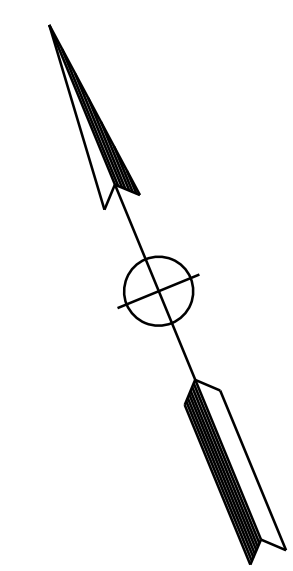
APPROVED FOR PAVEMENT DELINEATION WORK ONLY



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 FUNCTIONAL SUPERVISOR: JAMES PUN  
 CALCULATED/DESIGNED BY: EDWIN XIE  
 CHECKED BY: JAMES PUN  
 REVISED BY: EDWIN XIE  
 DATE REVISED: JAMES PUN

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	195	564
REGISTERED CIVIL ENGINEER			DATE	7/13/16	
7/26/2016			PLANS APPROVAL DATE		
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET PD-1

**PAVEMENT DELINEATION PLAN**  
 SCALE: 1" = 50'

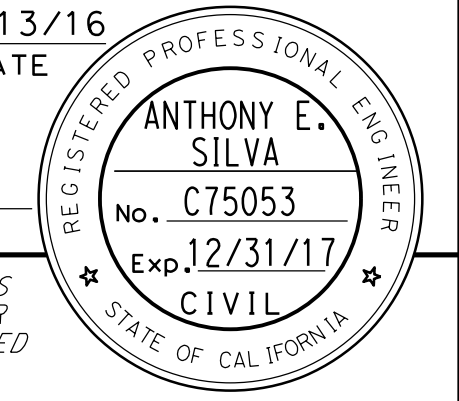
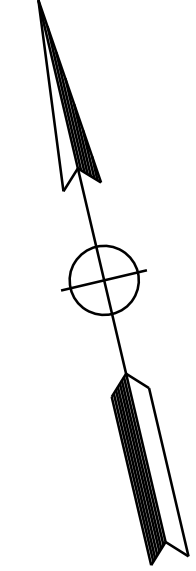
APPROVED FOR PAVEMENT DELINEATION WORK ONLY

**PD-9**

LAST REVISION: 00-00-00      DATE PLOTTED => 7/14/2016      TIME PLOTTED => 2:59:47 PM

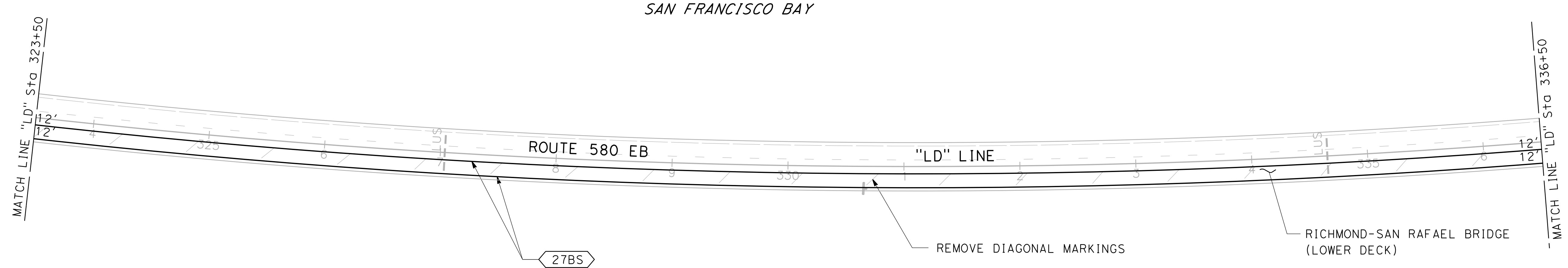


Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	196	564
			7/13/16		
REGISTERED CIVIL ENGINEER			DATE		
			7/26/2016		
			PLANS APPROVAL DATE		
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT	FUNCTIONAL SUPERVISOR	CALCULATED- DESIGNED BY	EDWIN XIE	REVISOR	DATE
<b>Caltrans</b>	JAMES PUN	JAMES PUN	CHECKED BY	JAMES PUN		



SAN FRANCISCO BAY

**PAVEMENT DELINEATION PLAN**

SCALE: 1" = 50'

**PD-10**

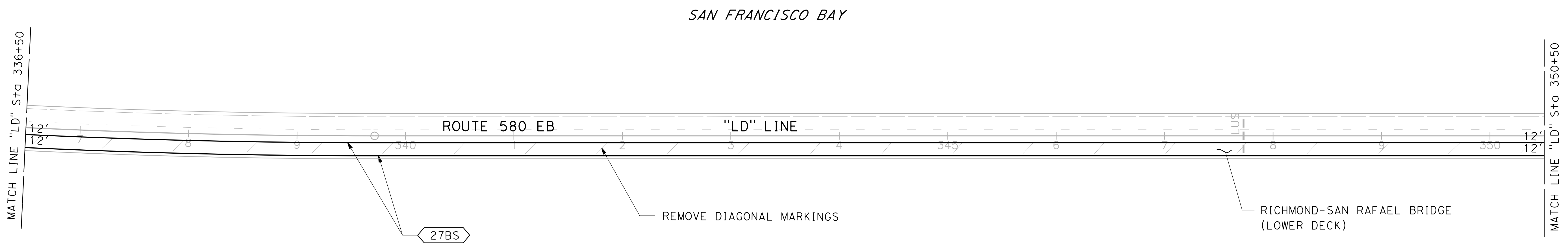
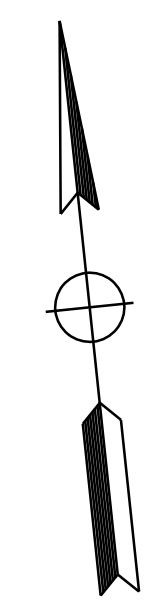
FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET PD-1

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	EDWIN XIE	REVISOR	DATE
<b>Caltrans</b>	JAMES PUN	JAMES PUN	CHECKED BY	JAMES PUN		

**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	197	564
			7/13/16		
REGISTERED CIVIL ENGINEER			DATE		
			7/26/2016		
			PLANS APPROVAL DATE		
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



SAN FRANCISCO BAY

ROUTE 580 EB

"LD" LINE

27BS

REMOVE DIAGONAL MARKINGS

RICHMOND-SAN RAFAEL BRIDGE  
(LOWER DECK)

FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET PD-1

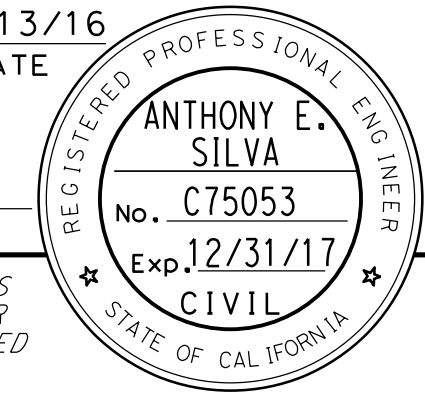
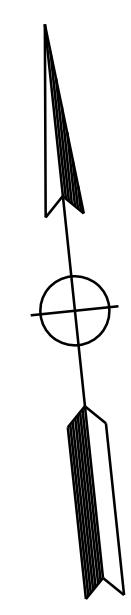
**PAVEMENT DELINEATION PLAN**

SCALE: 1" = 50'

**PD-11**

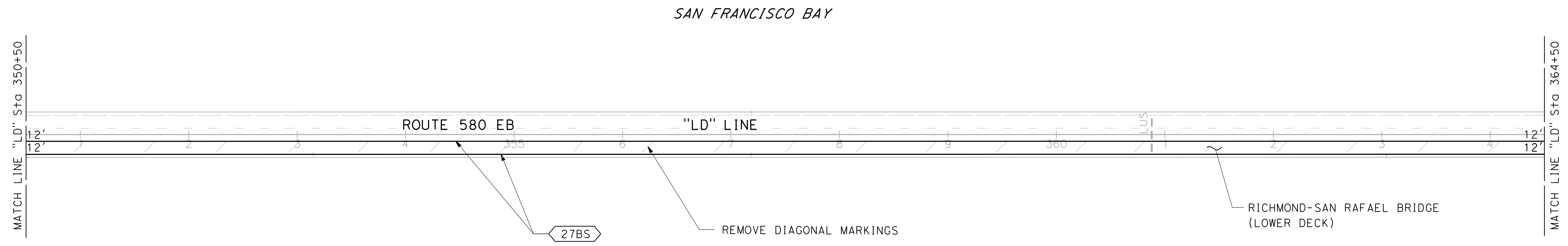
APPROVED FOR PAVEMENT DELINEATION WORK ONLY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	198	564
			7/13/16		
REGISTERED CIVIL ENGINEER			DATE		
			7/26/2016		
			PLANS APPROVAL DATE		
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT	FUNCTIONAL SUPERVISOR	CALCULATED- DESIGNED BY	EDWIN XIE	REVISOR	DATE
<b>Caltrans</b>	JAMES PUN	JAMES PUN	CHECKED BY	JAMES PUN		



FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET PD-1

**PAVEMENT DELINEATION PLAN**

SCALE: 1" = 50'

**PD-12**

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	EDWIN XIE	REVISOR	DATE
<b>Caltrans</b>	JAMES PUN	CHECKED BY	JAMES PUN	DATE	

**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	199	564

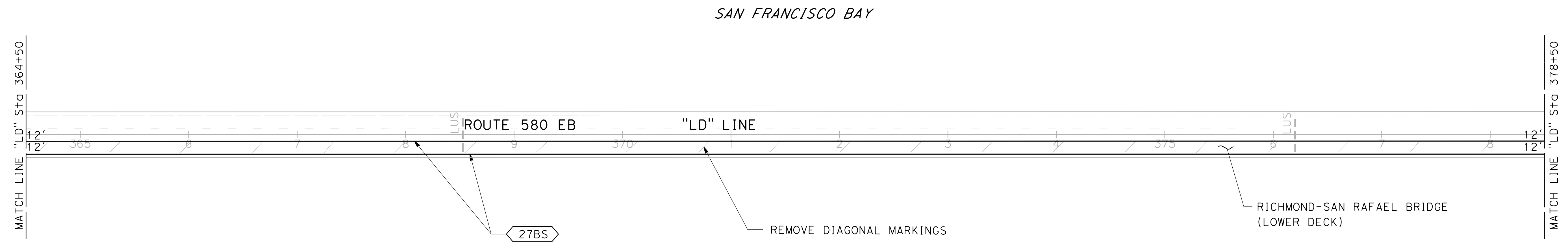
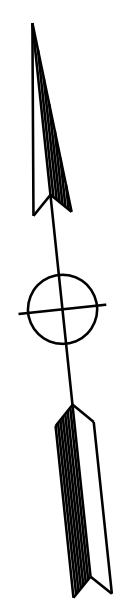
REGISTERED CIVIL ENGINEER: *[Signature]* DATE: 7/13/16

PLANS APPROVAL DATE: 7/26/2016

REGISTERED PROFESSIONAL ENGINEER: ANTHONY E. SILVA  
No. C75053  
Exp. 12/31/17  
CIVIL  
STATE OF CALIFORNIA

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HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET PD-1

**PAVEMENT DELINEATION PLAN**

SCALE: 1" = 50'

**PD-13**

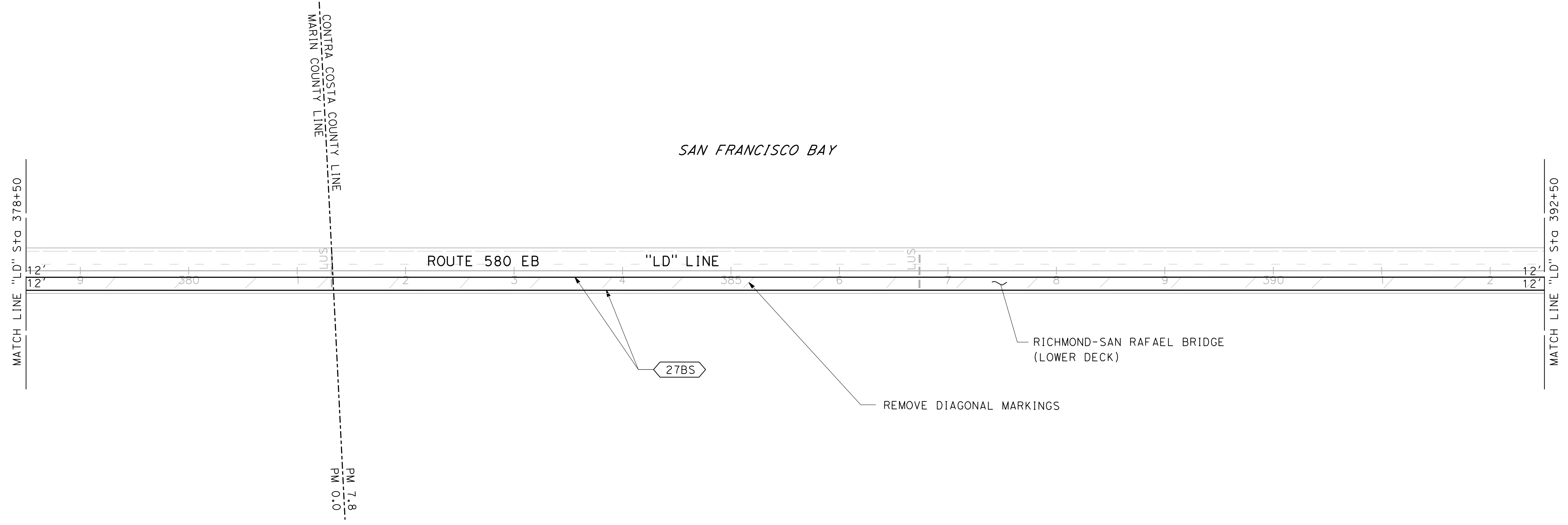
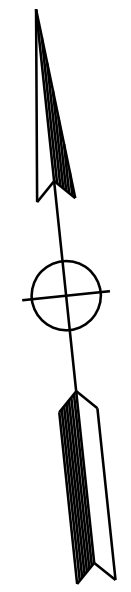
APPROVED FOR PAVEMENT DELINEATION WORK ONLY

LAST REVISION: 00-00-00      DATE PLOTTED => 7/14/2016      TIME PLOTTED => 2:59:52 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	EDWIN XIE	REVISOR	DATE
<b>Caltrans</b>	JAMES PUN	CHECKED BY	JAMES PUN	DATE	

**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	200	564
			REGISTERED CIVIL ENGINEER	DATE	
			7/13/16		
			PLANS APPROVAL DATE		
			7/26/2016		
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET PD-1

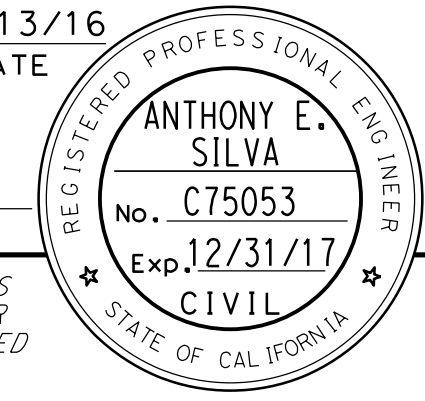
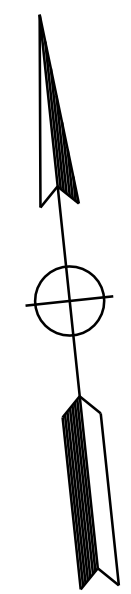
**PAVEMENT DELINEATION PLAN**  
SCALE: 1" = 50'

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

**PD-14**

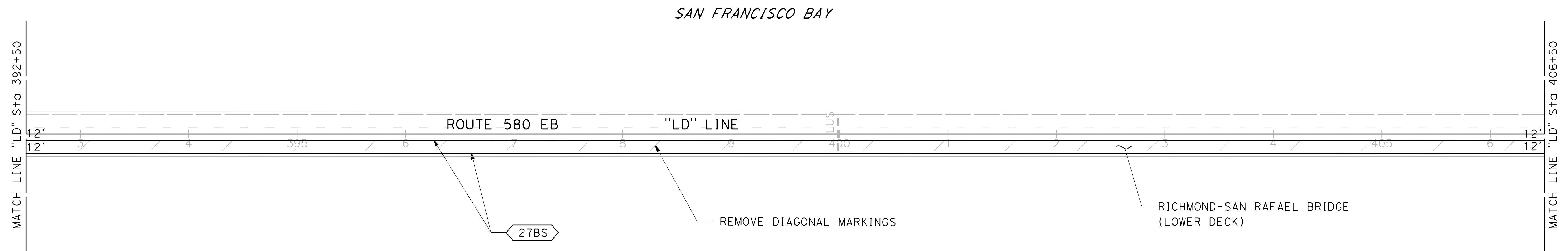
LAST REVISION      DATE PLOTTED => 7/14/2016      00-00-00      TIME PLOTTED => 2:59:53 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	201	564
			7/13/16		
REGISTERED CIVIL ENGINEER			DATE		
			7/26/2016		
			PLANS APPROVAL DATE		
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT	FUNCTIONAL SUPERVISOR	CALCULATED- DESIGNED BY	EDWIN XIE	REVISOR	DATE
<b>Caltrans</b>	JAMES PUN	JAMES PUN	CHECKED BY	JAMES PUN		



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET PD-1

# PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

**PD-15**

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

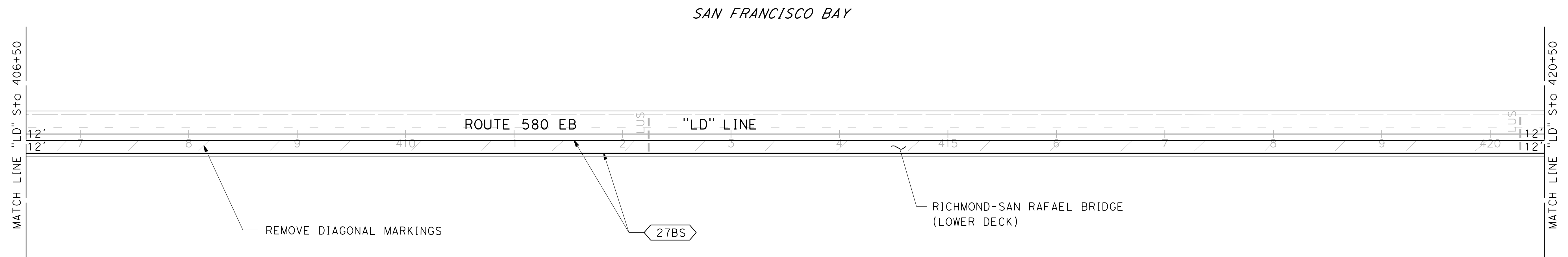
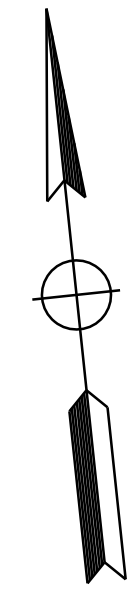
LAST REVISION: 00-00-00      DATE PLOTTED => 7/14/2016      TIME PLOTTED => 2:59:54 PM



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	EDWIN XIE	REVISOR BY	
<b>Caltrans</b>	JAMES PUN	CHECKED BY	JAMES PUN	DATE REVISED	

**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	202	564
REGISTERED CIVIL ENGINEER			DATE		
7/26/2016			7/13/16		
PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET PD-1

# PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

**PD-16**

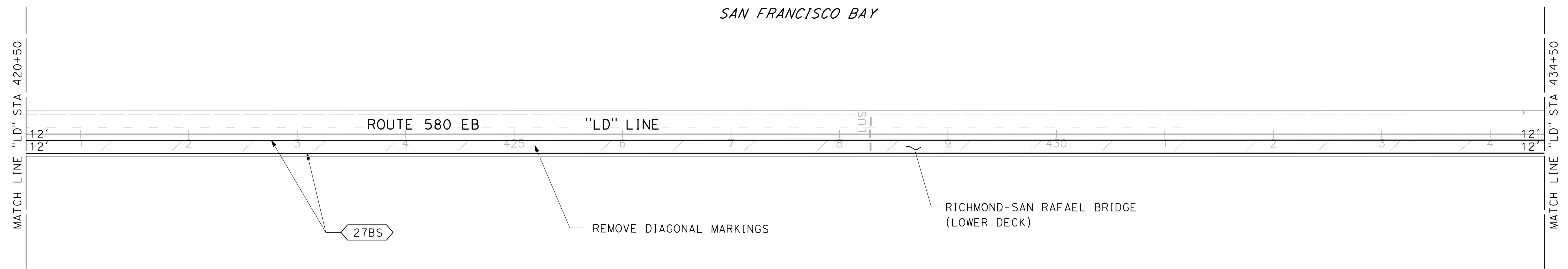
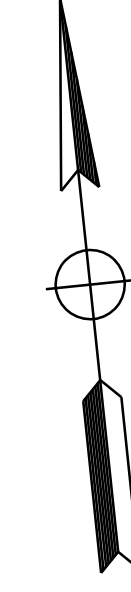
APPROVED FOR PAVEMENT DELINEATION WORK ONLY

LAST REVISION:      DATE PLOTTED => 7/14/2016      00-00-00      TIME PLOTTED => 2:59:55 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	EDWIN XIE	REVISOR	
Caltrans	JAMES PUN	DATE	
CONSULTANT - FUNCTIONAL SUPERVISOR	EDWIN XIE	REVISOR	
JAMES PUN	JAMES PUN	DATE	
CALCULATED - DESIGNED BY		REVISOR	
CHECKED BY		DATE	

**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	203	564
			7/13/16		
REGISTERED CIVIL ENGINEER			DATE		
			7/26/2016		
			PLANS APPROVAL DATE		
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET PD-1

**PAVEMENT DELINEATION PLAN**

SCALE: 1" = 50'

**PD-17**

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: FUNCTIONAL SUPERVISOR: JAMES PUN  
 CALCULATED/DESIGNED BY: EDWIN XIE  
 CHECKED BY: JAMES PUN  
 REVISED BY: DATE REVISD:

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

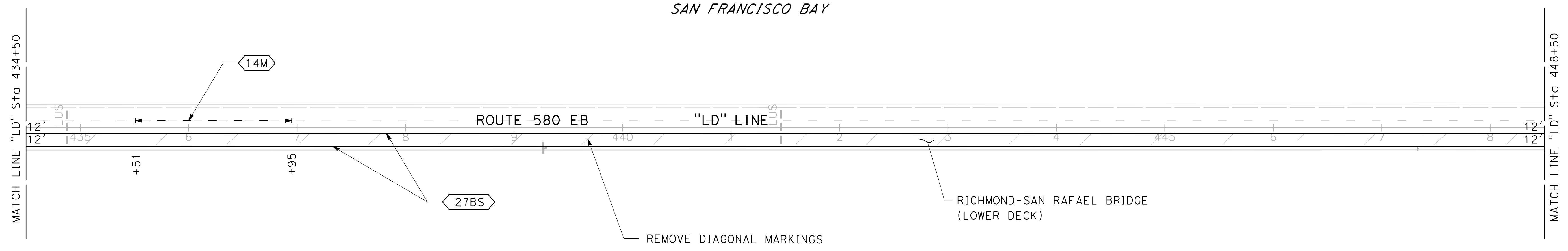
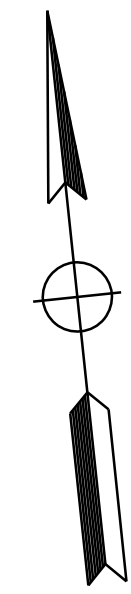
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	204	564

REGISTERED CIVIL ENGINEER: *[Signature]* DATE: 7/13/16  
 PLANS APPROVAL DATE: 7/26/2016

REGISTERED PROFESSIONAL ENGINEER  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET PD-1

**PAVEMENT DELINEATION PLAN**

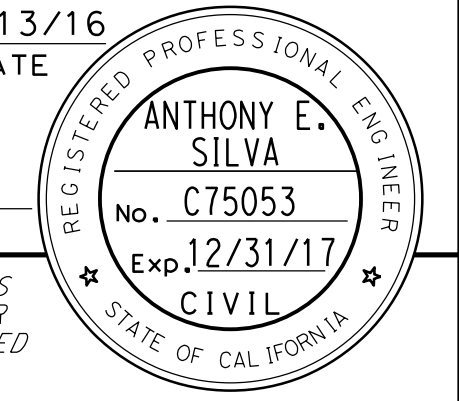
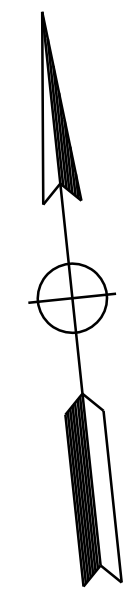
SCALE: 1" = 50'

**PD-18**

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

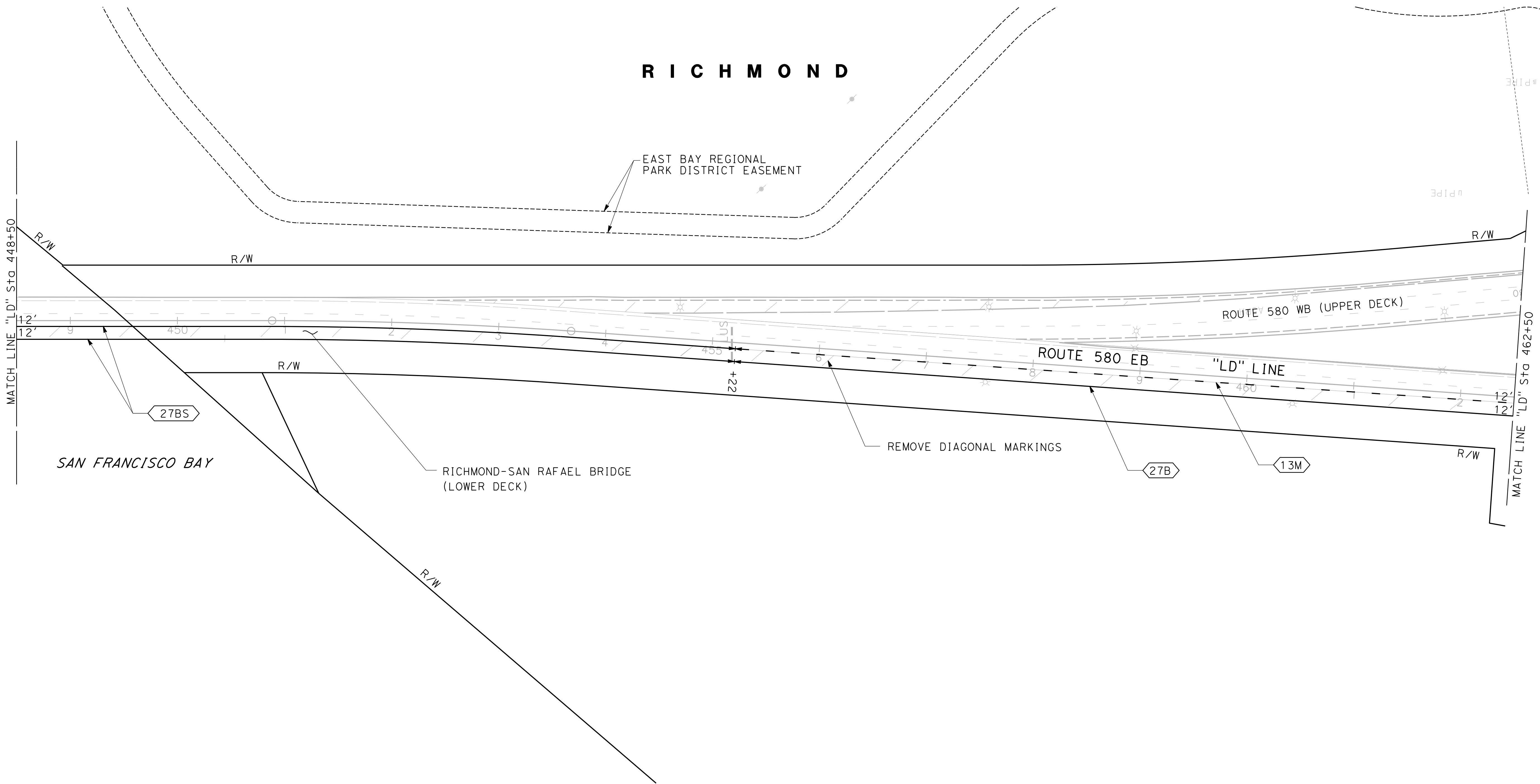
LAST REVISION: DATE PLOTTED => 7/14/2016 00-00-00 TIME PLOTTED => 2:59:57 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	205	564
REGISTERED CIVIL ENGINEER			DATE	7/13/16	
7/26/2016			PLANS APPROVAL DATE		
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR
Ed Caltrans	JAMES PUN	EDWIN XIE	EDWIN XIE
	JAMES PUN	JAMES PUN	JAMES PUN



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET PD-1

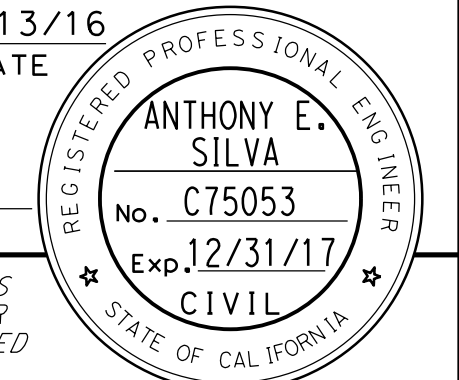
**PAVEMENT DELINEATION PLAN**  
 SCALE: 1" = 50'

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

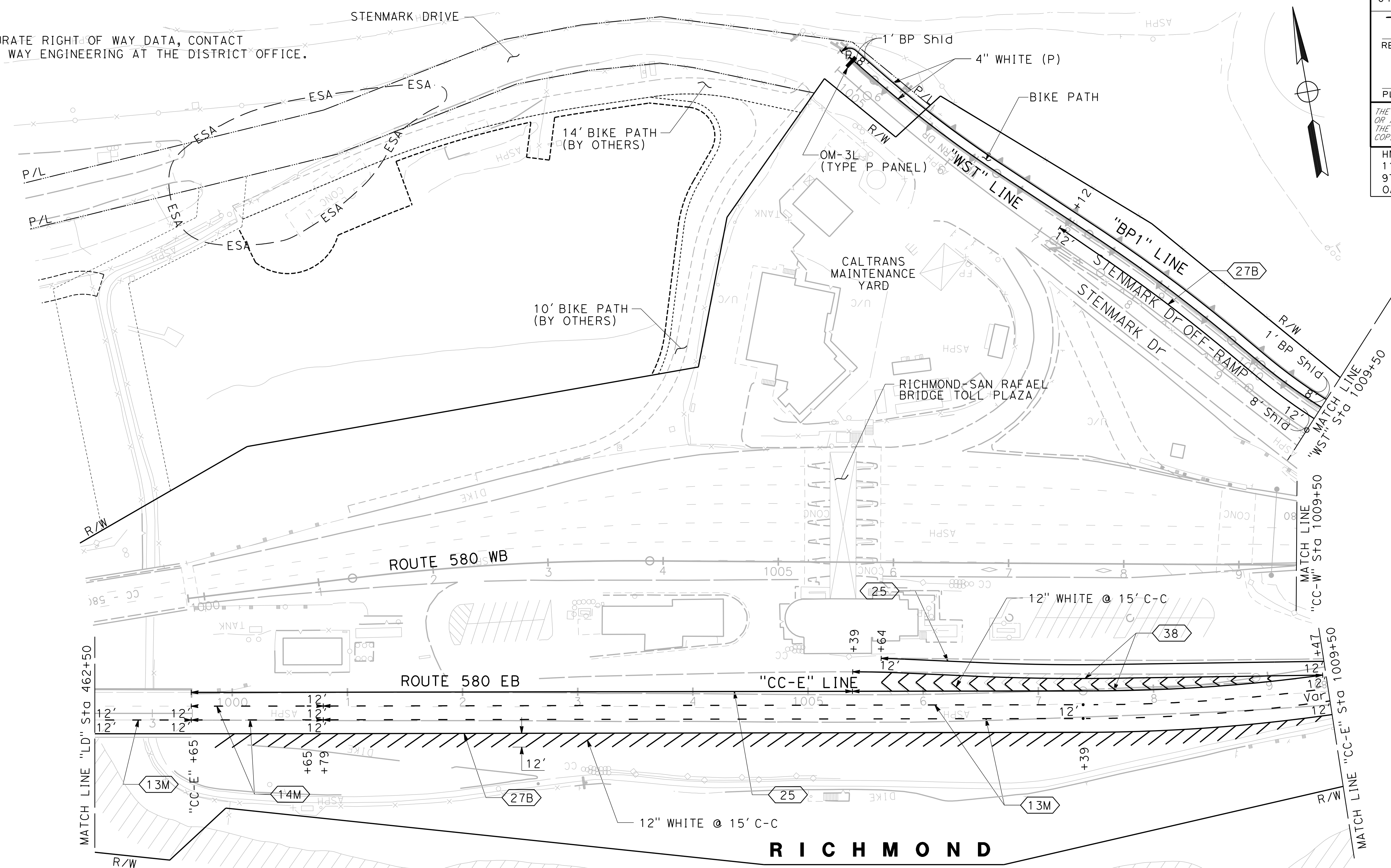
**PD-19**

LAST REVISION:      DATE PLOTTED => 7/14/2016      00-00-00      TIME PLOTTED => 2:59:59 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	206	564
REGISTERED CIVIL ENGINEER			DATE	7/13/16	
PLANS APPROVAL DATE			7/26/2016		
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



**PAVEMENT DELINEATION PLAN**

SCALE: 1" = 50'

**PD-20**

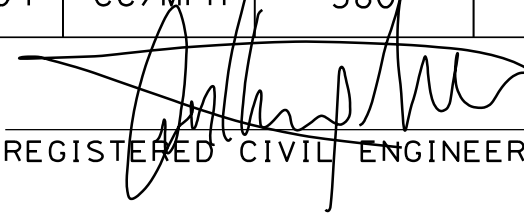
FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET PD-1

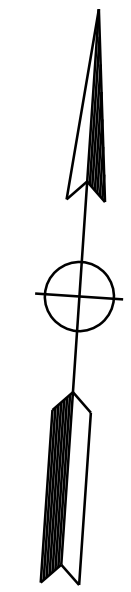
APPROVED FOR PAVEMENT DELINEATION WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR
<b>Caltrans</b>	JAMES PUN	CHECKED BY	EDWIN XIE
			JAMES PUN
			DATE REVISOR

LAST REVISION: DATE PLOTTED => 7/14/2016 00:00:00 TIME PLOTTED => 3:00:00 PM

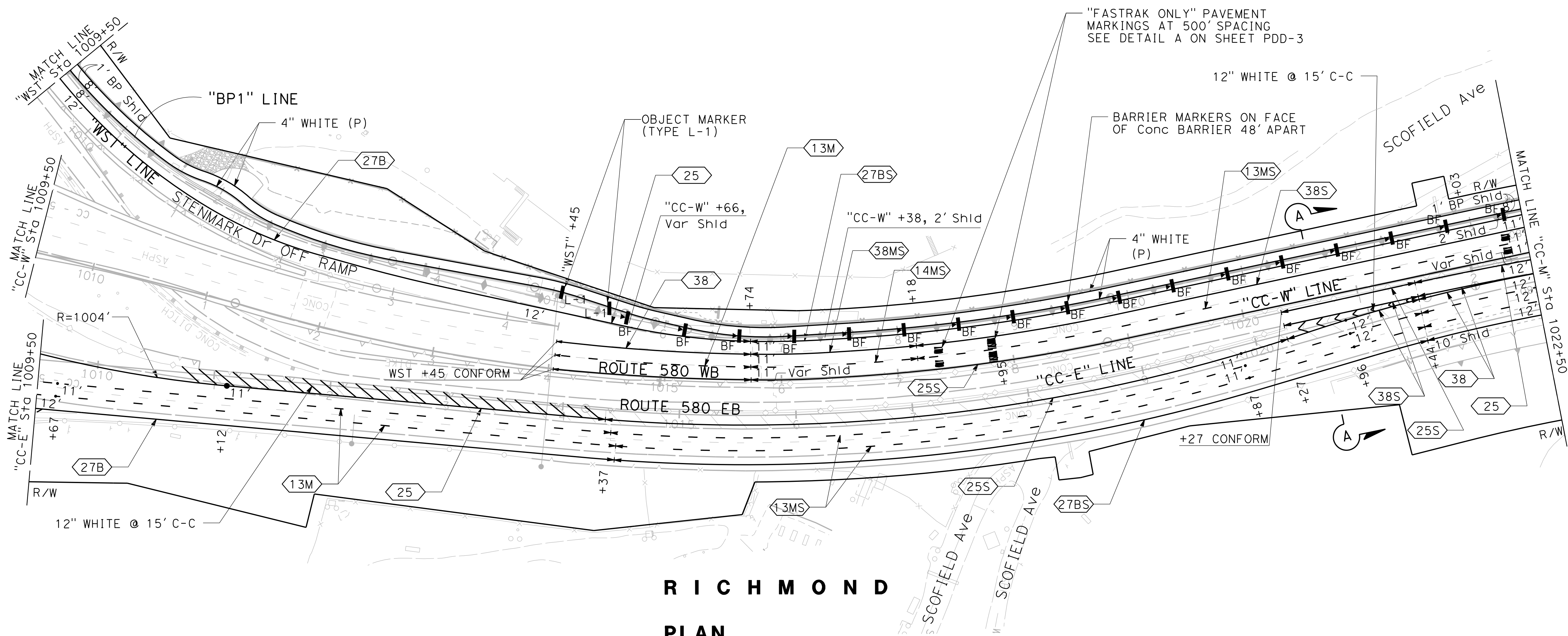


Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	207	564
 REGISTERED CIVIL ENGINEER			7/13/16	DATE	
7/26/2016			PLANS APPROVAL DATE		
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HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

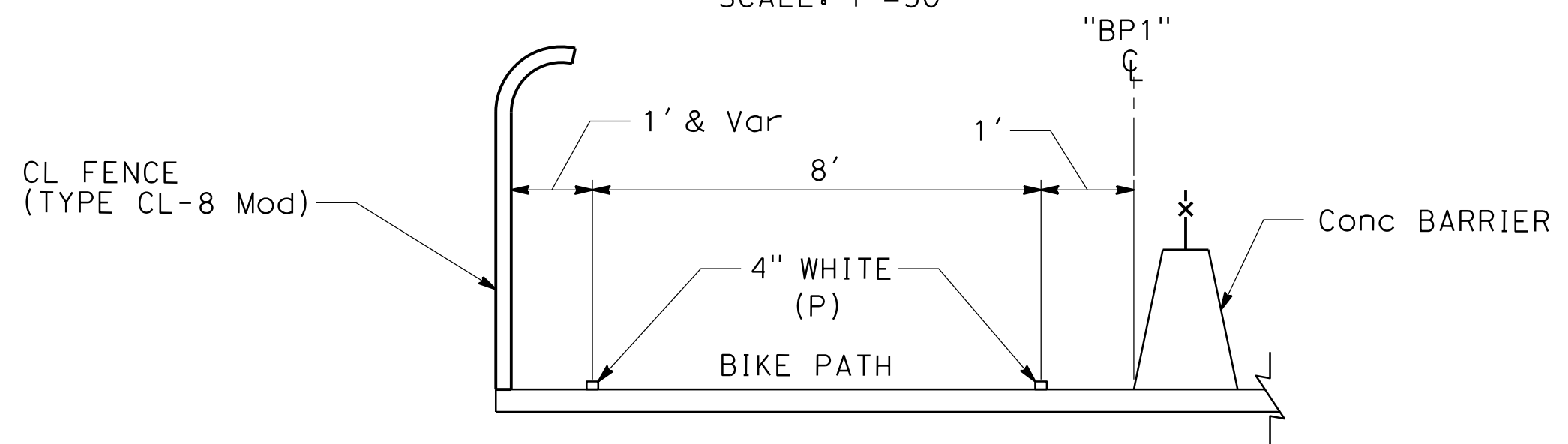
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	EDWIN XIE	REVISOR
Caltrans	JAMES PUN	DATE
CONSULTANT SUPERVISOR	JAMES PUN	REVISOR
DESIGNED BY	JAMES PUN	DATE
CHECKED BY	JAMES PUN	DATE



**RICHMOND**

**PLAN**

SCALE: 1"=50'



**SECTION A-A**

NO SCALE

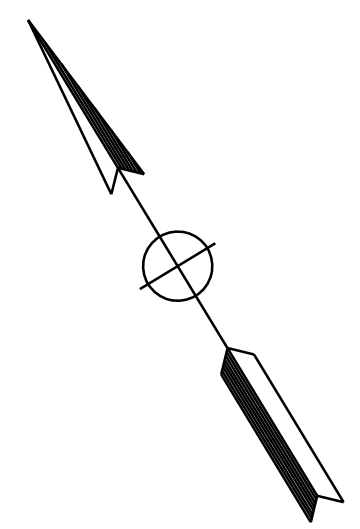
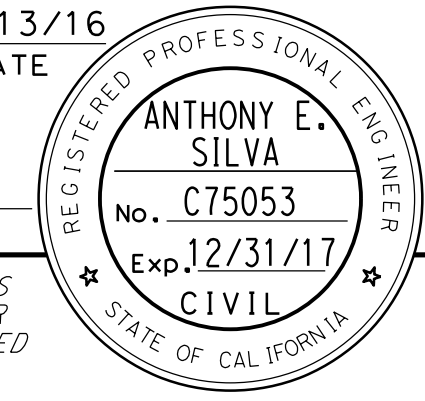
**PAVEMENT DELINEATION PLAN**

SCALE AS SHOWN

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET PD-1

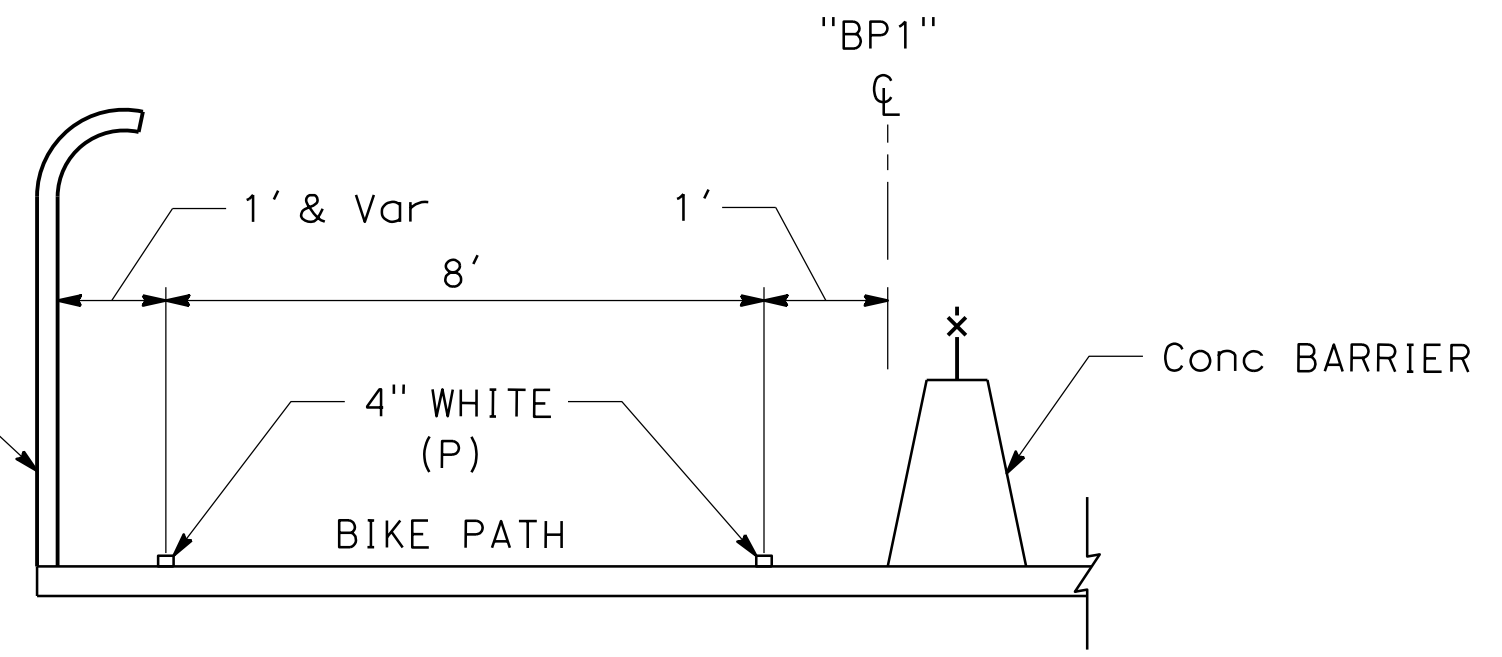
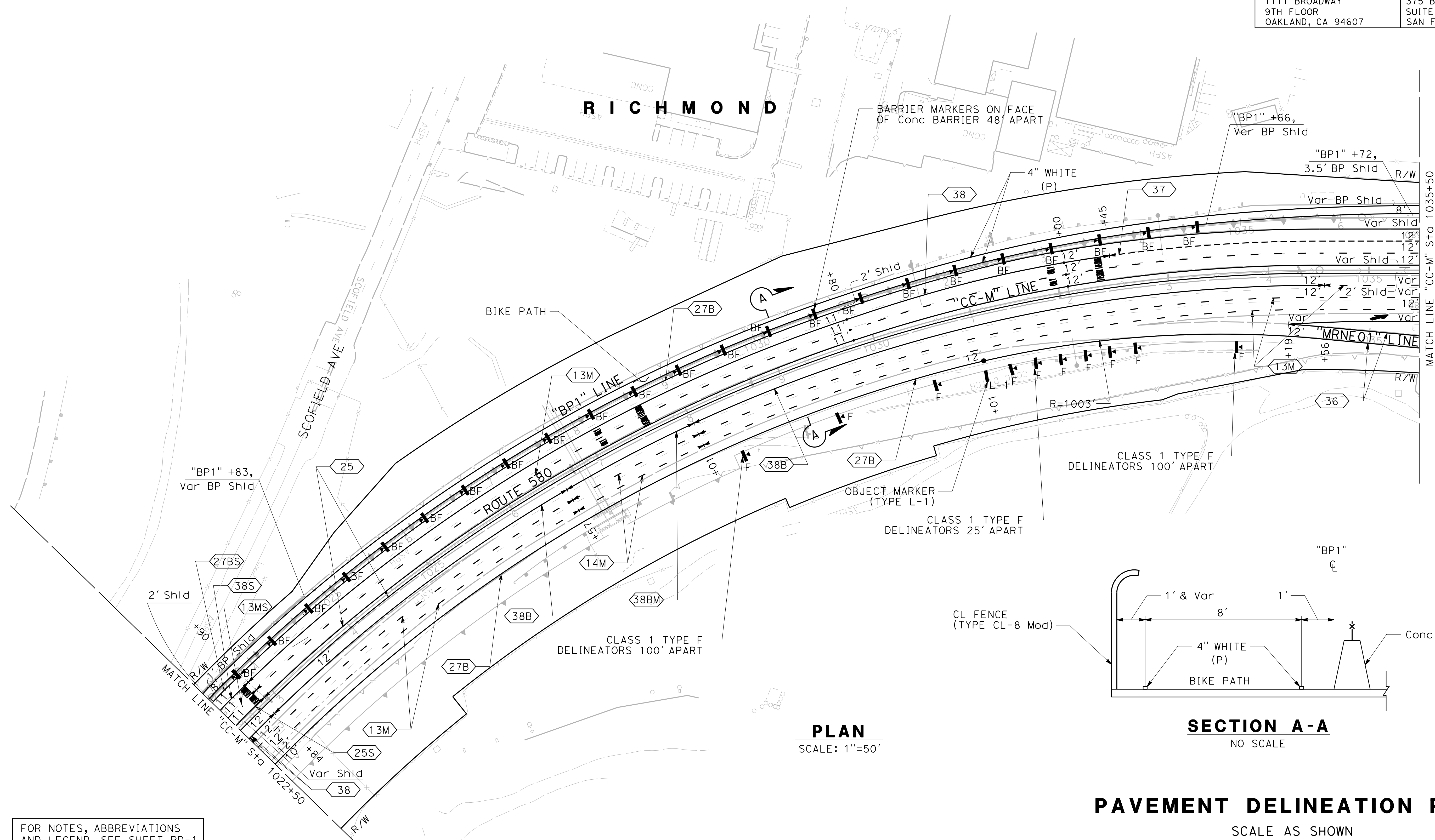
APPROVED FOR PAVEMENT DELINEATION WORK ONLY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	208	564
REGISTERED CIVIL ENGINEER			DATE	7/13/16	
PLANS APPROVAL DATE			7/26/2016		
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HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR
Ed Catrans	JAMES PUN	EDWIN XIE	EDWIN XIE
		CHECKED BY	DATE REVISOR
		JAMES PUN	JAMES PUN



**PLAN**  
 SCALE: 1"=50'

**SECTION A-A**  
 NO SCALE

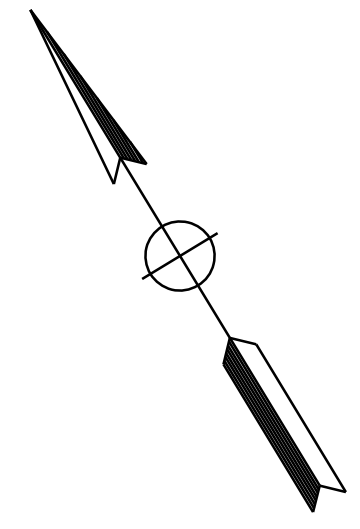
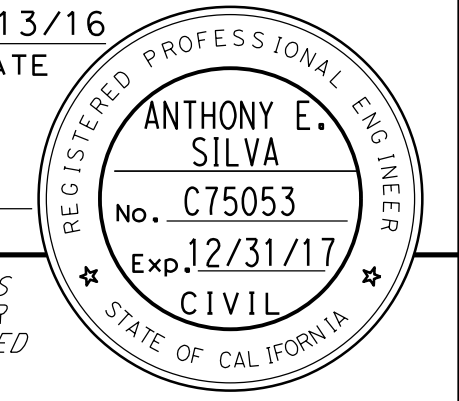
**PAVEMENT DELINEATION PLAN**  
 SCALE AS SHOWN

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET PD-1

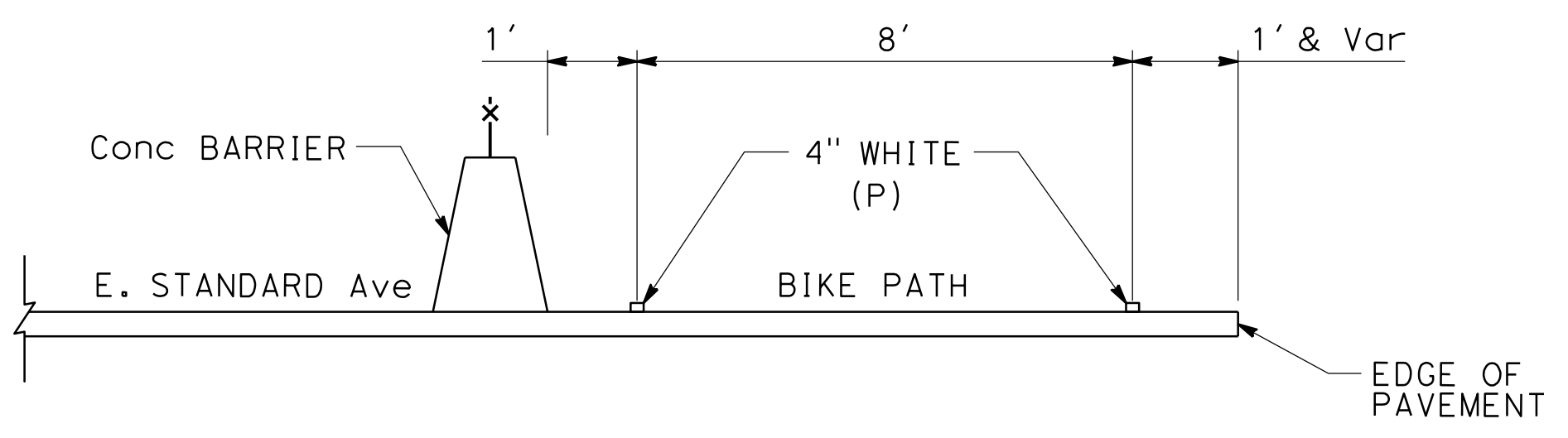
APPROVED FOR PAVEMENT DELINEATION WORK ONLY



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	209	564
REGISTERED CIVIL ENGINEER			DATE	7/13/16	
PLANS APPROVAL DATE			7/26/2016		
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HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		

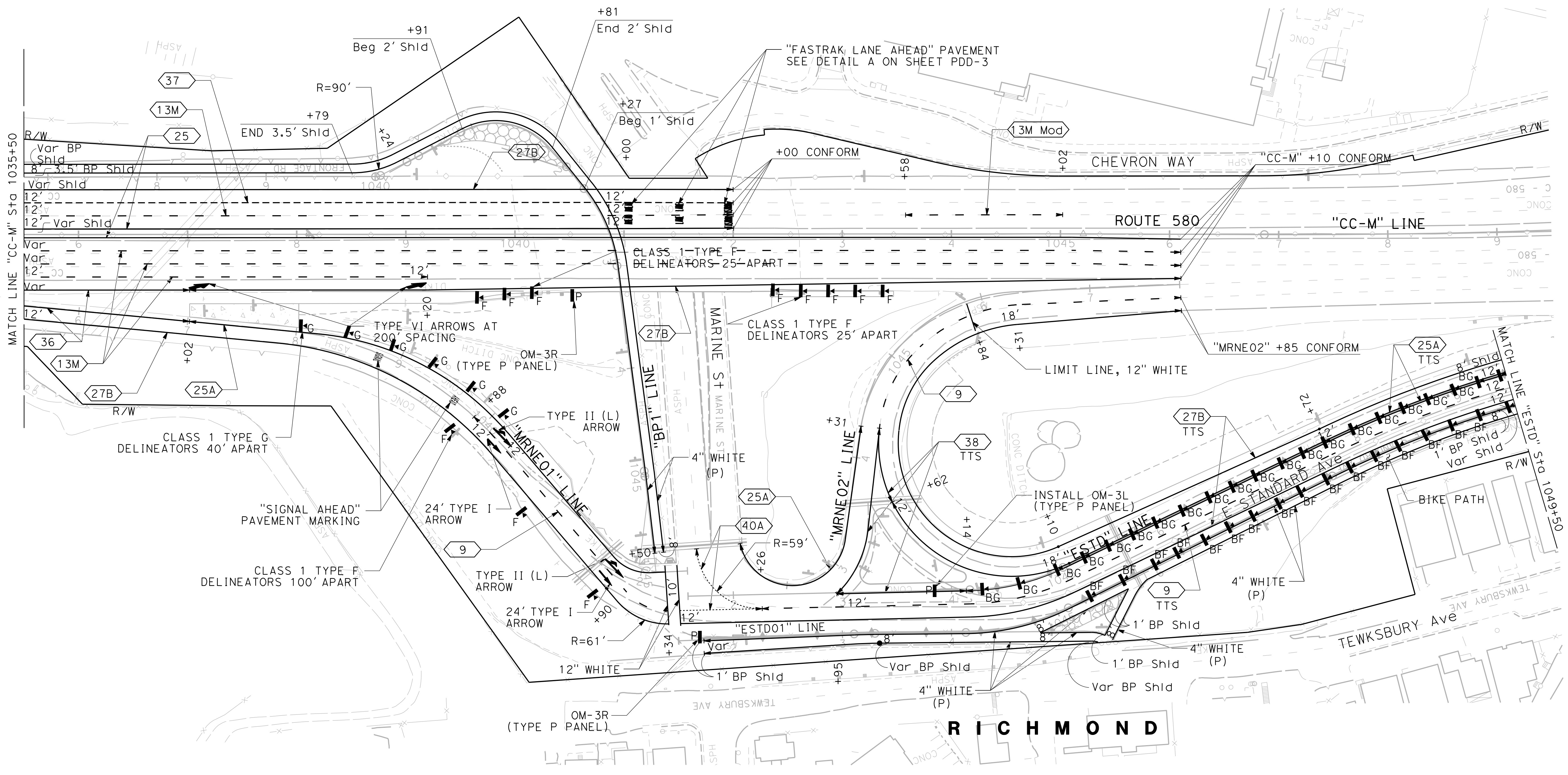


**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



"ESTD01" 1045+87 TO "ESTD01" 1048+25.42

**BIKE PATH STRIPING DETAILS**  
 NO SCALE



**PLAN**  
 SCALE: 1"=50'

**PAVEMENT DELINEATION PLAN**  
 SCALE AS SHOWN

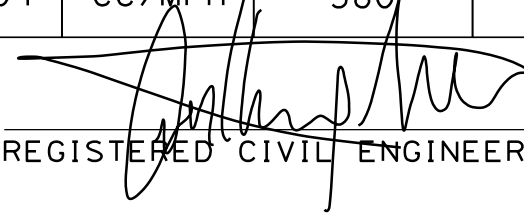
FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET PD-1

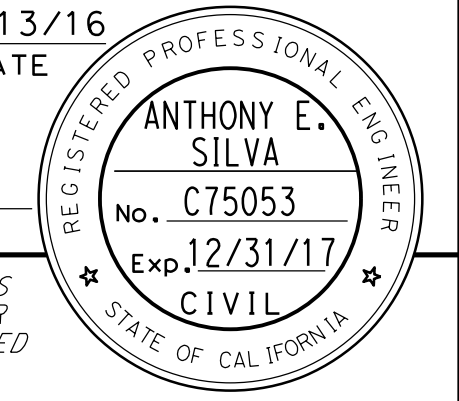
APPROVED FOR PAVEMENT DELINEATION WORK ONLY

**PD-23**

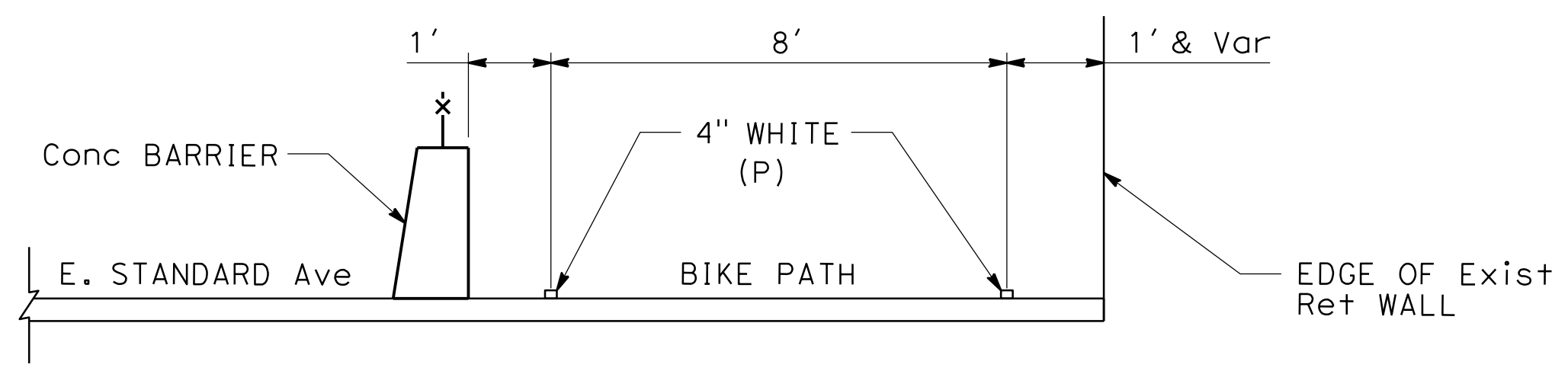
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR BY
Ed Catrans	JAMES PUN	EDWIN XIE	EDWIN XIE
		CHECKED BY	DATE REVISED
		JAMES PUN	

LAST REVISION DATE PLOTTED => 7/14/2016 00-00-00 TIME PLOTTED => 3:00:04 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	5.0/7.8, 0.0/3.3	210	564
 REGISTERED CIVIL ENGINEER			7/13/16	DATE	
7/26/2016			PLANS APPROVAL DATE		
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		

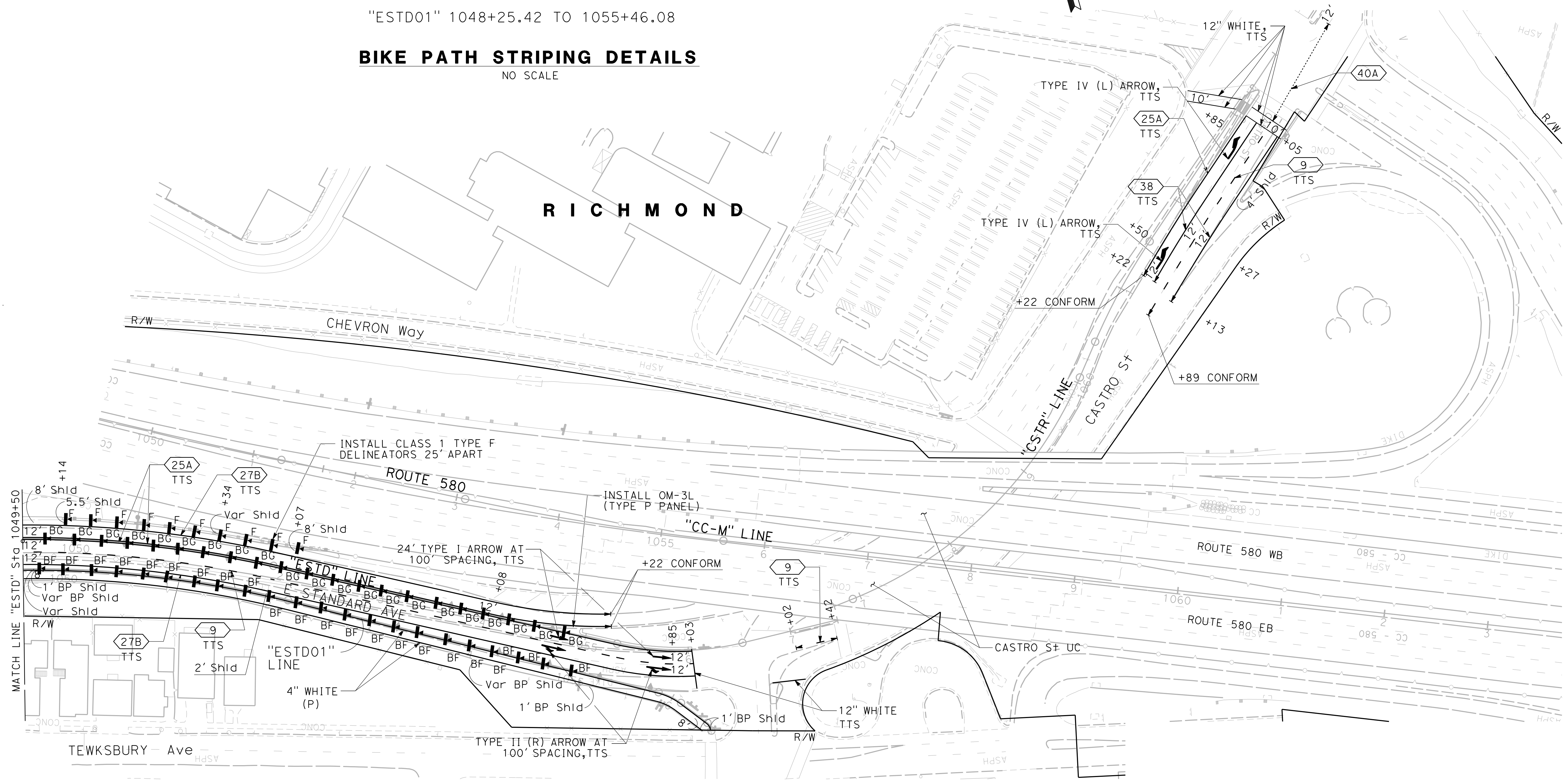


**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



"ESTD01" 1048+25.42 TO 1055+46.08

**BIKE PATH STRIPING DETAILS**  
 NO SCALE



**PLAN**  
 SCALE: 1"=50'

**PAVEMENT DELINEATION PLAN**  
 SCALE AS SHOWN

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET PD-1

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	REVISOR	DATE
Ed Catrans	JAMES PUN	EDWIN XIE	
	CHECKED BY	DATE	
	JAMES PUN		

USERNAME => rdeleon  
 DGN FILE => 0414000552na024.dgn



UNIT 0000

PROJECT NUMBER & PHASE

04140005521

LAST REVISION DATE PLOTTED => 7/14/2016  
 00-00-00 TIME PLOTTED => 3:00:06 PM



APPROVED AS TO IMPACT ON STATE FACILITIES AND CONFORMANCE WITH APPLICABLE STATE STANDARDS AND PRACTICES AND THAT TECHNICAL OVERSIGHT WAS PERFORMED.  
 DATE SIGNED \_\_\_\_\_  
 LICENSE Exp DATE \_\_\_\_\_  
 REGISTRATION No. \_\_\_\_\_  
 CALTRANS DESIGN OVERSIGHT APPROVAL  
 VINCE BONNER  
 CONSULTANT DESIGN MANAGER  
 CHADI CHAZBEK

**INDEX OF PLANS**

SHEET NO.	DESCRIPTION
	TITLE AND LOCATION MAP
	TYPICAL CROSS SECTIONS
	KEY MAP AND LINE INDEX
	PROJECT CONTROL LAYOUTS
	PROFILES AND SUPERELEVATION DIAGRAMS
	CONSTRUCTION DETAILS
	TEMPORARY WATER POLLUTION CONTROL PLANS AND QUANTITIES
	DRAINAGE PLANS, PROFILES, DETAILS AND QUANTITIES
	UTILITY PLANS
	CONSTRUCTION AREA SIGNS
	MOTORIST INFORMATION PLAN AND QUANTITIES
	STAGE CONSTRUCTION TRAFFIC HANDLING DETOURS
	PLANS, QUANTITIES AND DETAILS
	PAVEMENT DELINEATION PLANS, DETAILS AND QUANTITIES
	SIGN PLAN, DETAILS AND QUANTITIES
	SUMMARY OF QUANTITIES
	IRRIGATION SCHEDULE, PLAN, DETAILS AND QUANTITIES
	PLANTING LIST, PLANS AND QUANTITIES
	EROSION CONTROL LEGEND, PLANS, DETAILS AND QUANTITIES

**STRUCTURAL PLANS**

RICHMOND SAN RAFAEL BRIDGE (MODIFY)-GENERAL PLAN  
 RICHMOND SAN RAFAEL BRIDGE (MODIFY)-INDEX AND GENERAL NOTES  
 RICHMOND SAN RAFAEL BRIDGE (MODIFY)-JOINT MODIFICATION DETAILS  
 RICHMOND SAN RAFAEL BRIDGE (MODIFY)-NORTH RAILING DETAILS  
 MISCELLANEOUS ELECTRICAL CONNECTION DETAILS

**ELECTRICAL PLANS**

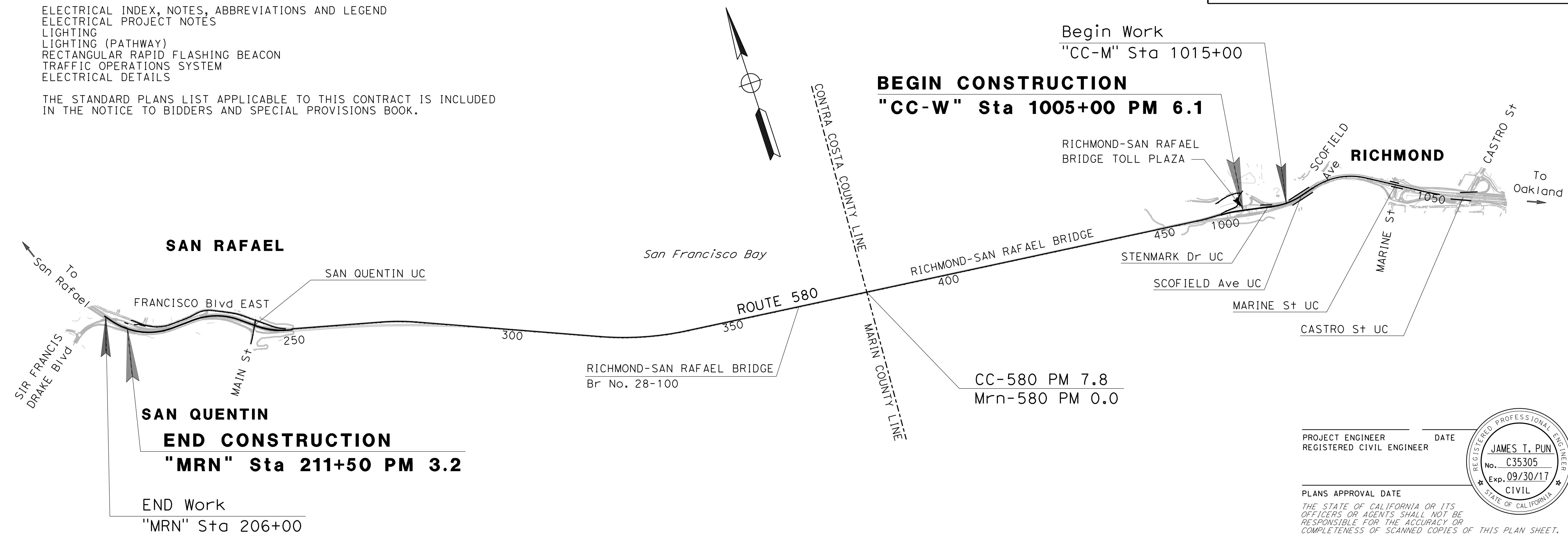
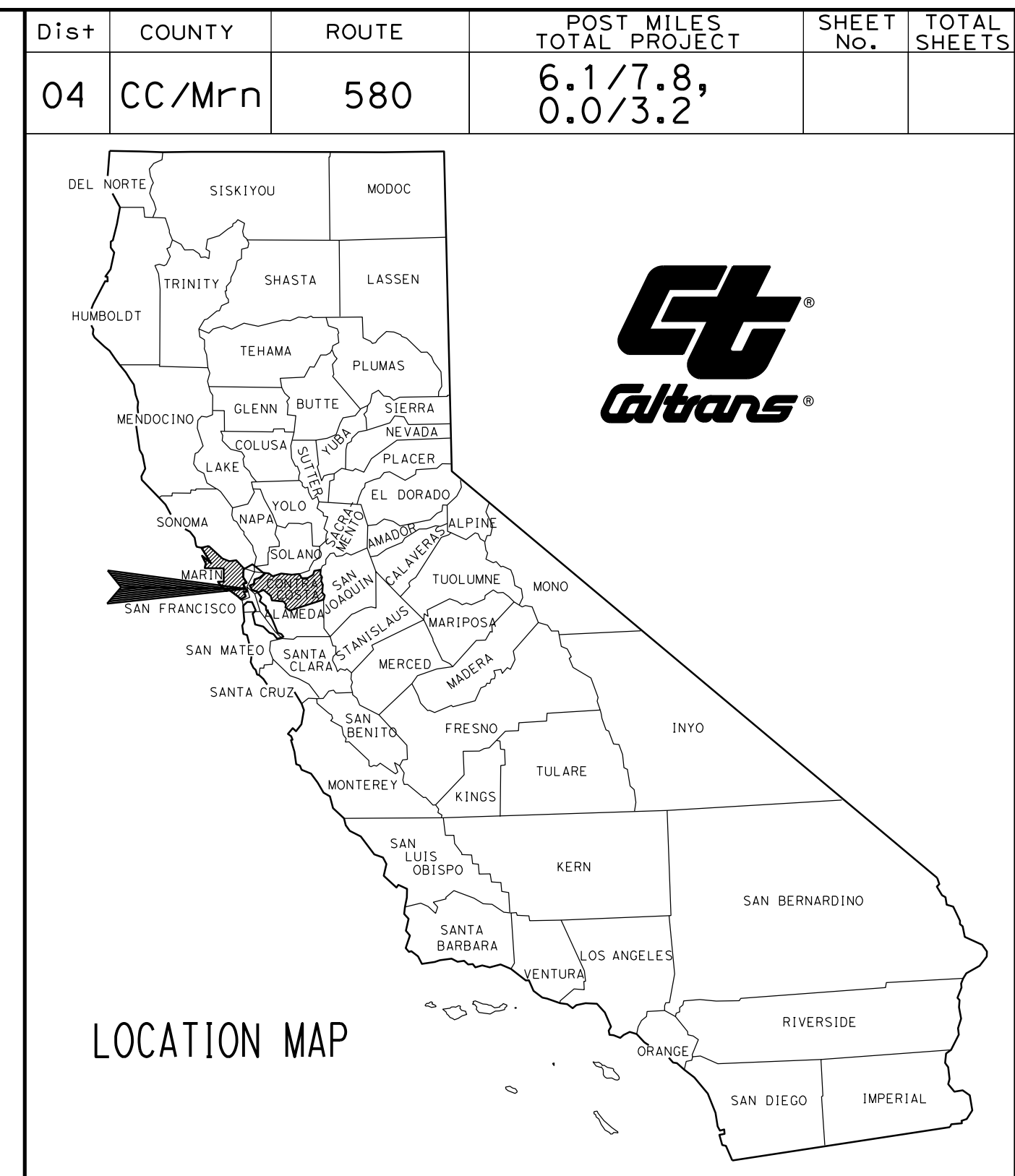
ELECTRICAL INDEX, NOTES, ABBREVIATIONS AND LEGEND  
 ELECTRICAL PROJECT NOTES  
 LIGHTING  
 LIGHTING (PATHWAY)  
 RECTANGULAR RAPID FLASHING BEACON  
 TRAFFIC OPERATIONS SYSTEM  
 ELECTRICAL DETAILS

THE STANDARD PLANS LIST APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE NOTICE TO BIDDERS AND SPECIAL PROVISIONS BOOK.

**STATE OF CALIFORNIA**  
**DEPARTMENT OF TRANSPORTATION**  
**PROJECT PLANS FOR CONSTRUCTION ON**  
**STATE HIGHWAY**

**IN CONTRA COSTA AND MARIN COUNTIES**  
**IN AND NEAR RICHMOND AND SAN RAFAEL**  
**FROM THE RICHMOND-SAN RAFAEL BRIDGE TOLL PLAZA**  
**TO 0.1 MILE EAST OF SIR FRANCIS DRAKE BOULEVARD**  
**IN SAN RAFAEL**

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010



**PS&E SUBMITTAL**  
**JUNE 13, 2016**

NO SCALE

PROJECT ENGINEER DATE  
 REGISTERED CIVIL ENGINEER  
  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION  
 1111 BROADWAY, 9TH FL  
 OAKLAND, CA 94607  
 BAY AREA TOLL AUTHORITY  
 375 BEALE STREET, SUITE 800  
 SAN FRANCISCO, CA 94105

CONTRACT No.	<b>04-4J7104</b>
PROJECT ID	<b>0415000402</b>

DATE PLOTTED => 6/10/2016  
 TIME PLOTTED => 2:57:03 PM  
 00-00-00

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER	DATE
ANTHONY E. SILVA	
No. C75053	
Exp. 12/31/17	
CIVIL	

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---

**NOTES:**

- DIMENSIONS OF THE PAVEMENT STRUCTURAL SECTIONS ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
- SUPERELEVATIONS ARE SHOWN ON THE PROFILE AND SUPERELEVATION DIAGRAMS.
- PLACE 0.33' (Min) HMA (TYPE A) UNDER DIKES AND CONCRETE BARRIERS, UNLESS OTHERWISE NOTED ON PLANS.
- FOR LOCATIONS AND LIMITS OF HMA DIKES AND CURBS, SEE LAYOUT AND QUANTITY SHEETS.
- FOR HMA OVERLAY CONFORM DETAILS, SEE CONSTRUCTION DETAIL SHEETS.
- TEXTURED PAVING TO BE BROOM FINISHED ON PLAIN CONCRETE SURFACE. BROOM FINISH TO BE 90 DEGREES TO THE MAINLINE.
- SEE SHEET C-9 FOR "COUNTY OF MARIN DETAIL" FOR CURBS "TYPE A-MC", "TYPE E-MC" AND "TYPE F-MC". USE 6" CURB HEIGHT FOR BOTH TYPE E-MC AND TYPE F-MC CURBS. SEE SHEET C-3 FOR DRIVEWAY DETAIL.
- VERTICAL ESA - NO PROJECT ACTIVITIES 3' BELOW OG. FOR VERTICAL ESA LOCATION & LIMITS SEE X-4 AND L-20.
- FOR V-DITCH DETAILS, SEE DRAINAGE DETAIL SHEETS.

**ABBREVIATIONS:**

SW SIDEWALK  
ADL AERIALY DEPOSITED LEAD

**LEGEND:**

ROADWAY AREA CONTAINING ADL

**STRUCTURAL SECTIONS:**

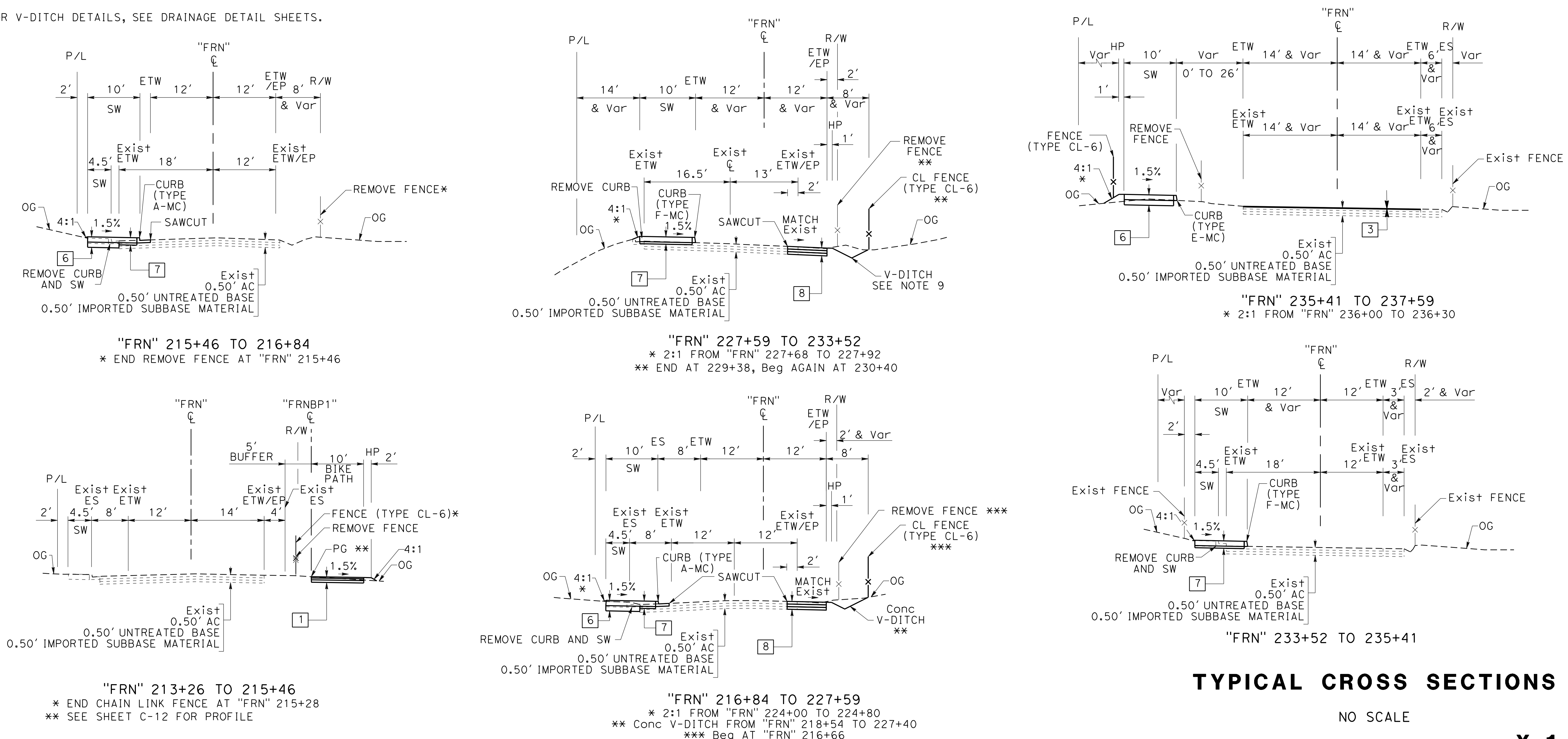
- |   |  |    |   |
|---|--|----|---|
| 1 | 0.25' HMA (TYPE A)<br>0.35' AB (CLASS 2)<br>0.45' AS (CLASS 2) | 5  | 0.33' PCC (TEXTURED PAVING)<br>0.50' AB (CLASS 2)<br>(SEE NOTE 6) |
| 2 | 0.60' HMA (TYPE A)   | 6  | 0.33' PCC<br>0.50' AB (CLASS 2)                                   |
| 3 | 0.10' COLD PLANE<br>0.10' RHMA-G                               | 7  | 0.33' PCC<br>0.17' AB (CLASS 2)                                   |
| 4 | 0.15' COLD PLANE<br>0.15' RHMA-G                               | 8  | 0.50' HMA (TYPE A)<br>0.75' AB (CLASS 2)<br>1.00' AS (CLASS 2)    |
|   |  | 9  | 0.10' HMA (TYPE A)  |
|   |  | 10 | 0.20' RHMA-G<br>1.40' HMA (TYPE A)                                |

**PAVEMENT CLIMATE REGION:**

NORTH COAST

**DESIGN DESIGNATION**

ADT (2020)	77,000	D	61%
ADT (2040)	91,000	T	7%
DHV	7,700	V	60 mph
ESAL	17,000,000	TI <sub>20</sub>	12.5



**TYPICAL CROSS SECTIONS**

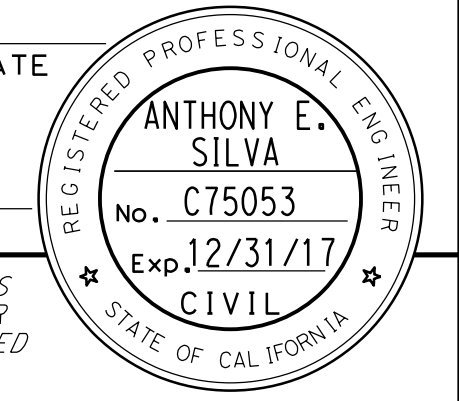
NO SCALE

**X-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT: FUNCTIONAL SUPERVISOR  
 RYAN LITTELL  
 CALCULATED/DESIGNED BY  
 JAMES PUN  
 CHECKED BY  
 JAMES PUN  
 SUPERVISOR  
 JAMES PUN  
 REVISIONS: 00-00-00

LAST REVISION DATE PLOTTED => 6/13/2016  
 00-00-00 TIME PLOTTED => 2:56:23 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		
REGISTERED CIVIL ENGINEER DATE					
PLANS APPROVAL DATE					
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		

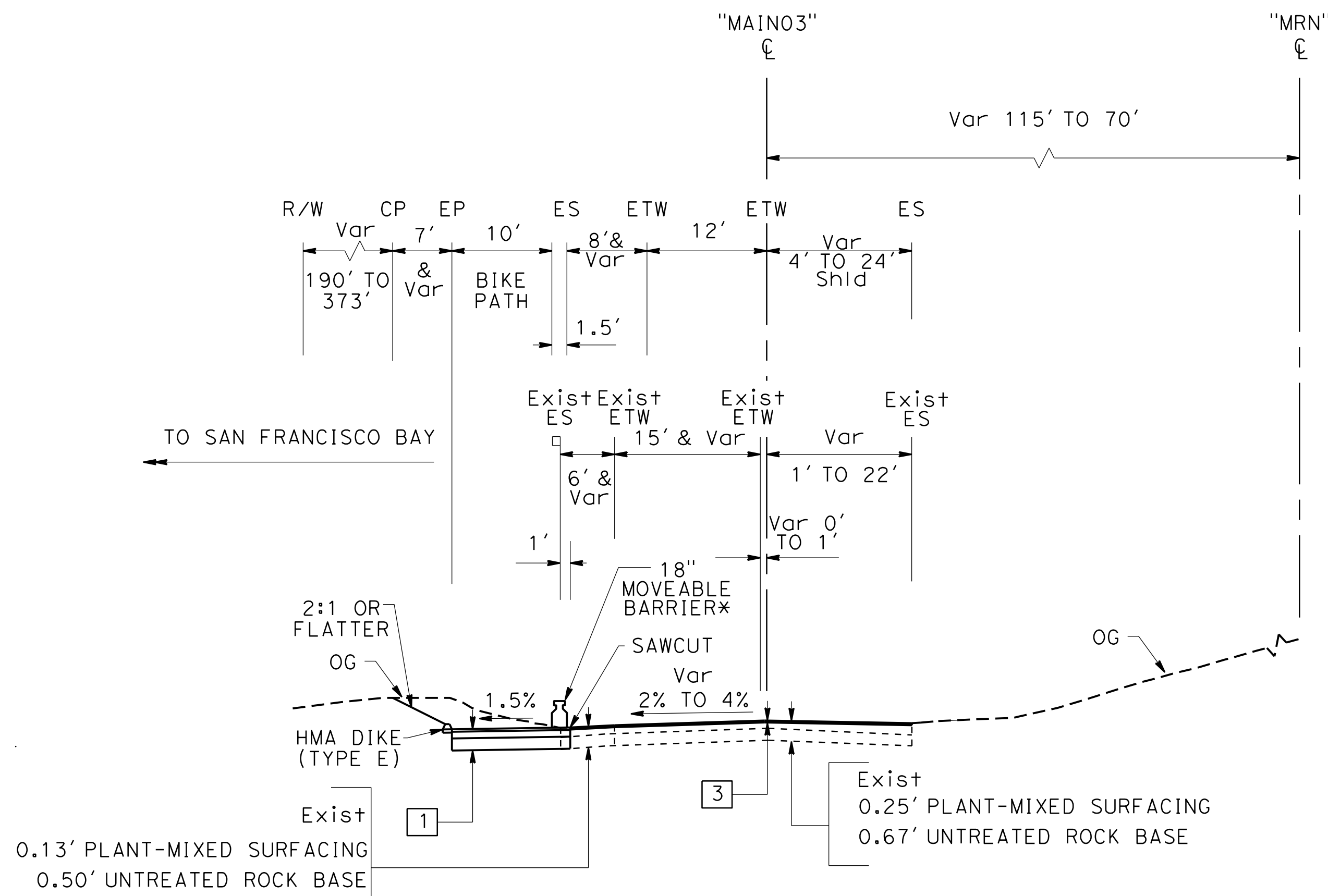


**NOTE:**

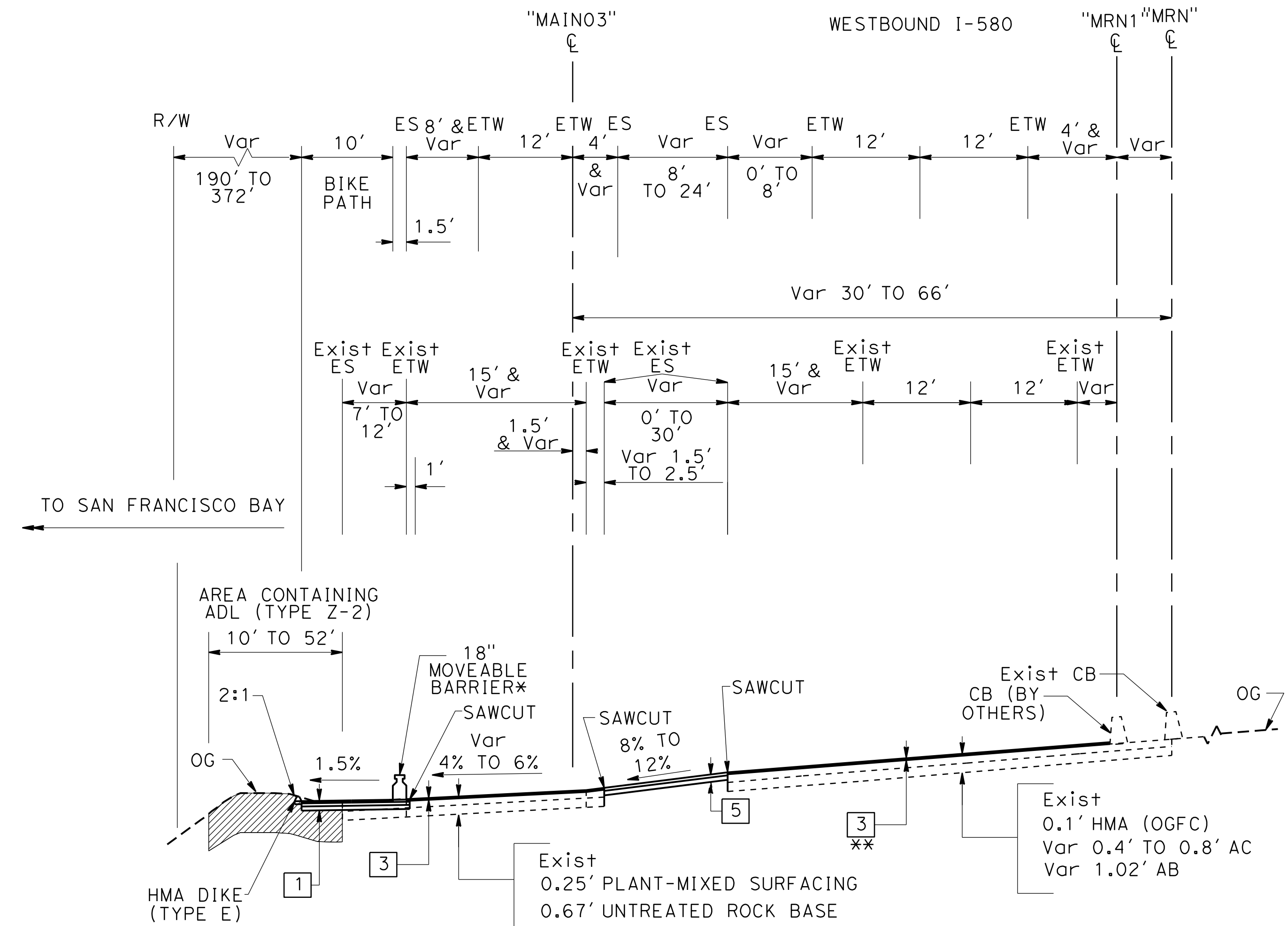
DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.

**LIMITS OF AREA CONTAINING AERIALY DEPOSITED LEAD (ADL)**

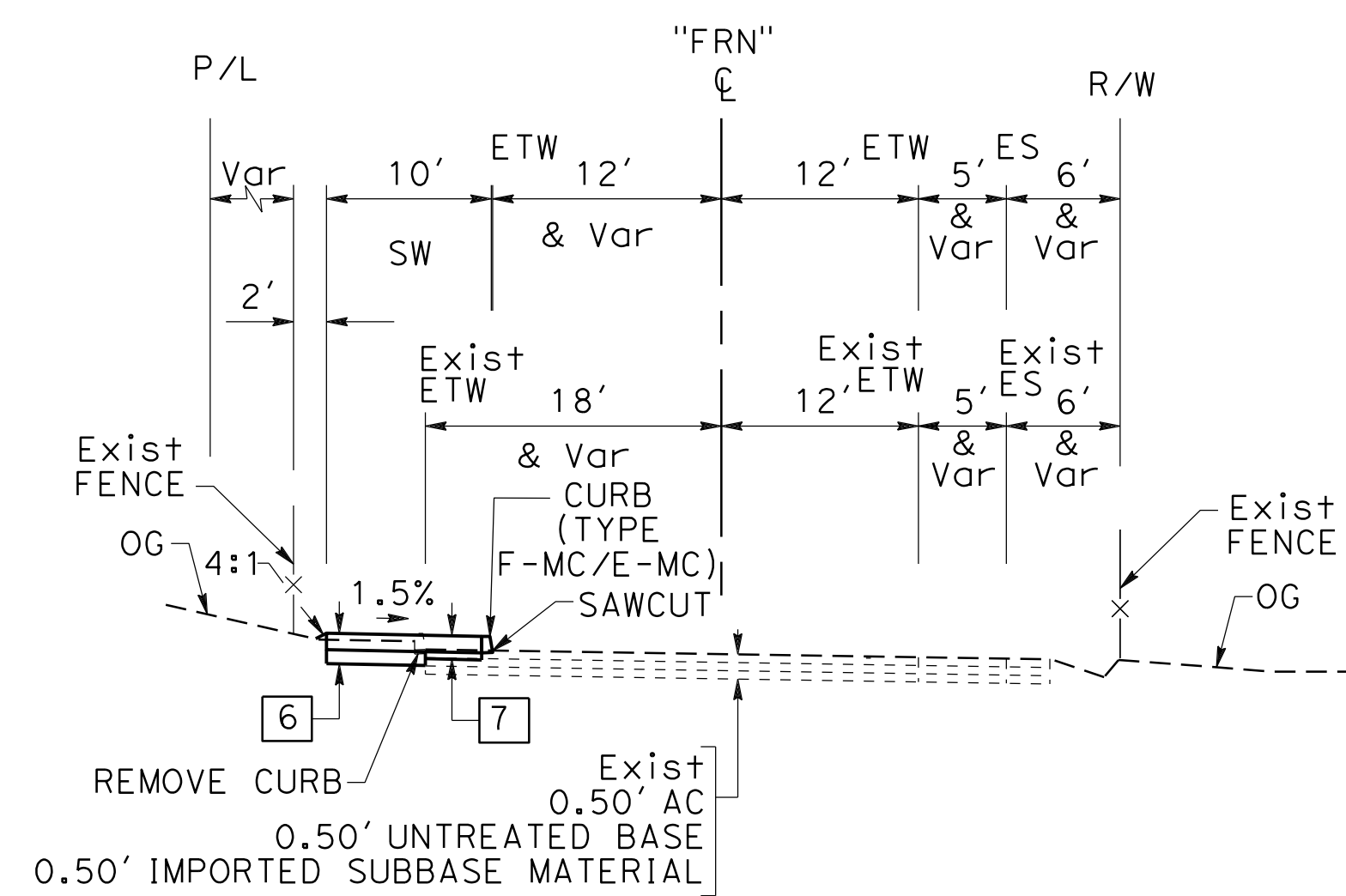
LOCATION	DEPTH
"MAIN03" 245+65 TO "MRN" 249+16	2.0'



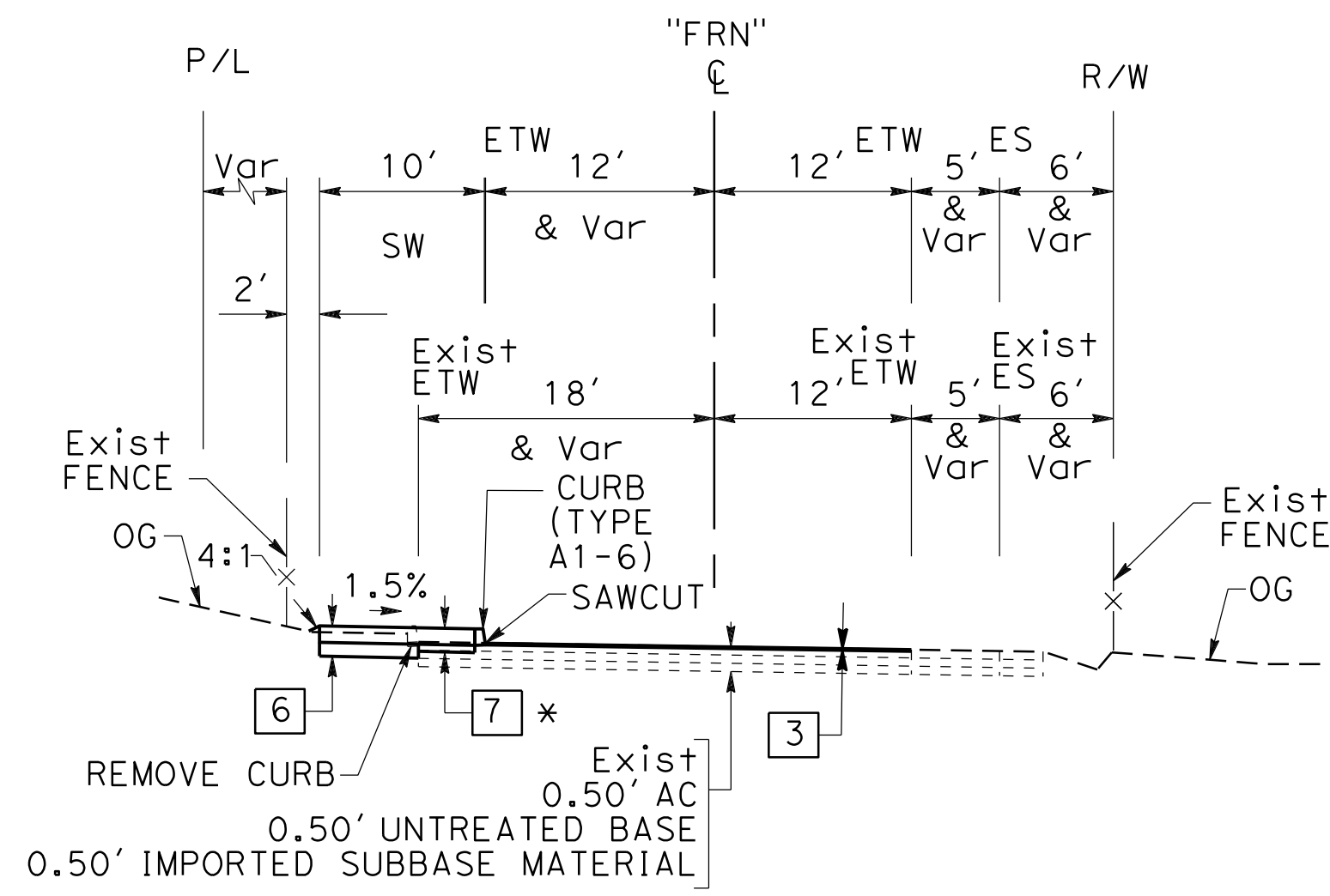
"MAIN03" 241+04 TO 245+46  
\* BY OTHERS



"MAIN03" 245+46 TO 248+19  
\* BY OTHERS  
\*\* FROM "MRN" 245+63 TO "MRN" 249+60



"FRN" 237+59 TO 238+38

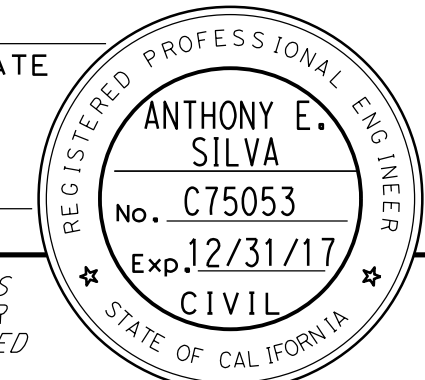


"FRN" 239+38 TO 241+33  
\* ENDS AT "FRN" 241+21

**TYPICAL CROSS SECTIONS**


NO SCALE

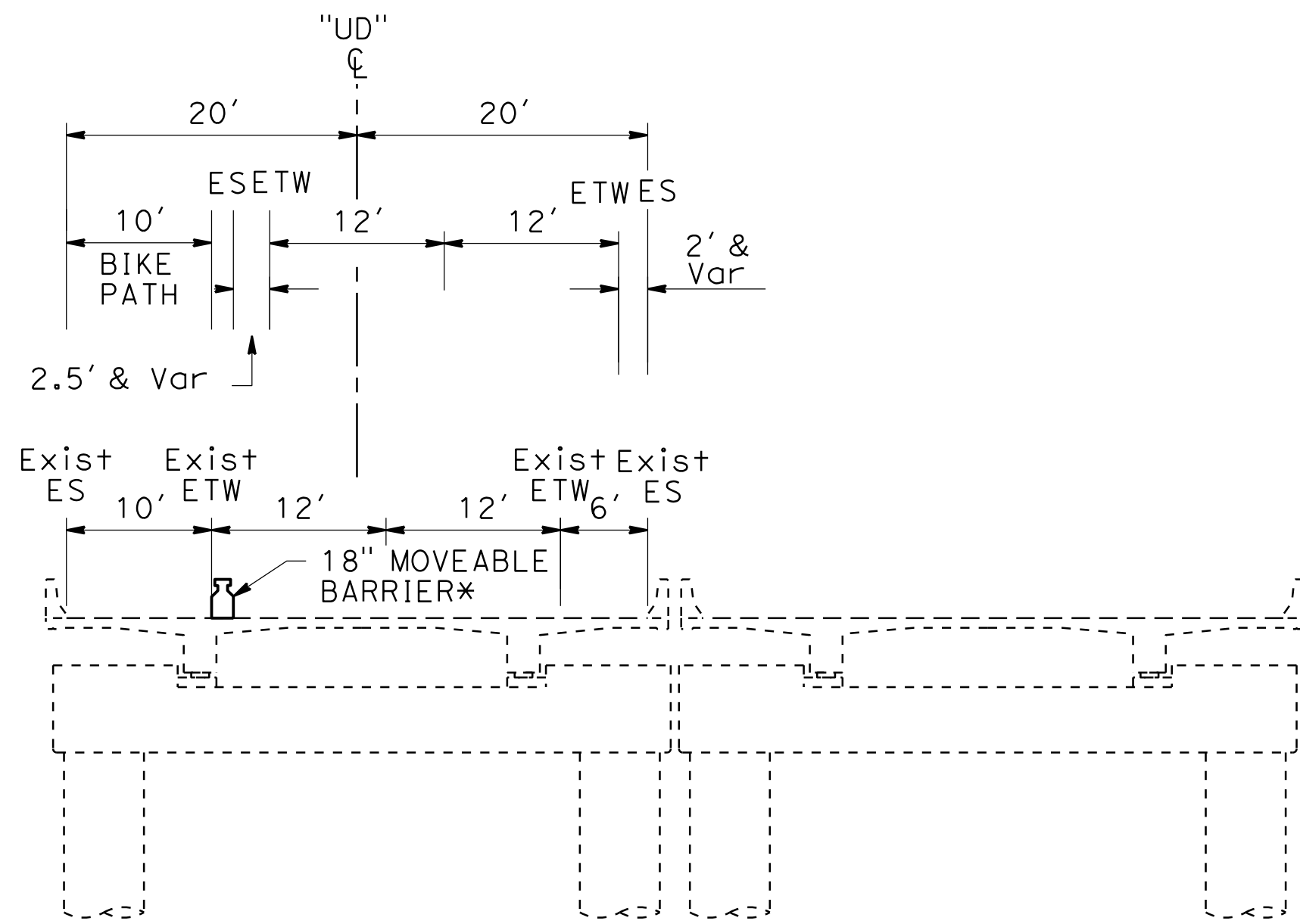
X-2

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		
REGISTERED CIVIL ENGINEER DATE					
PLANS APPROVAL DATE					
					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		

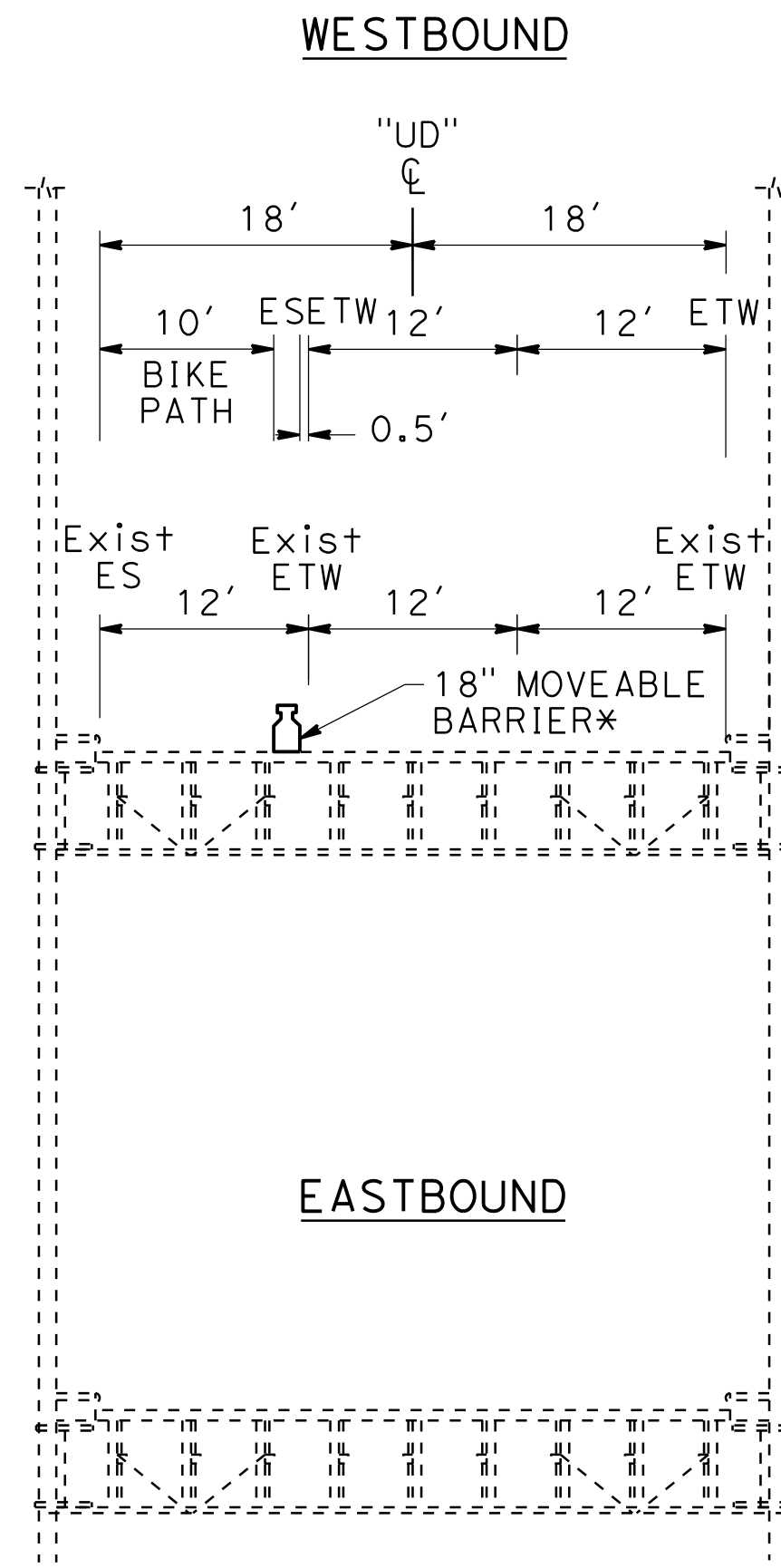
**NOTE:**

DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.

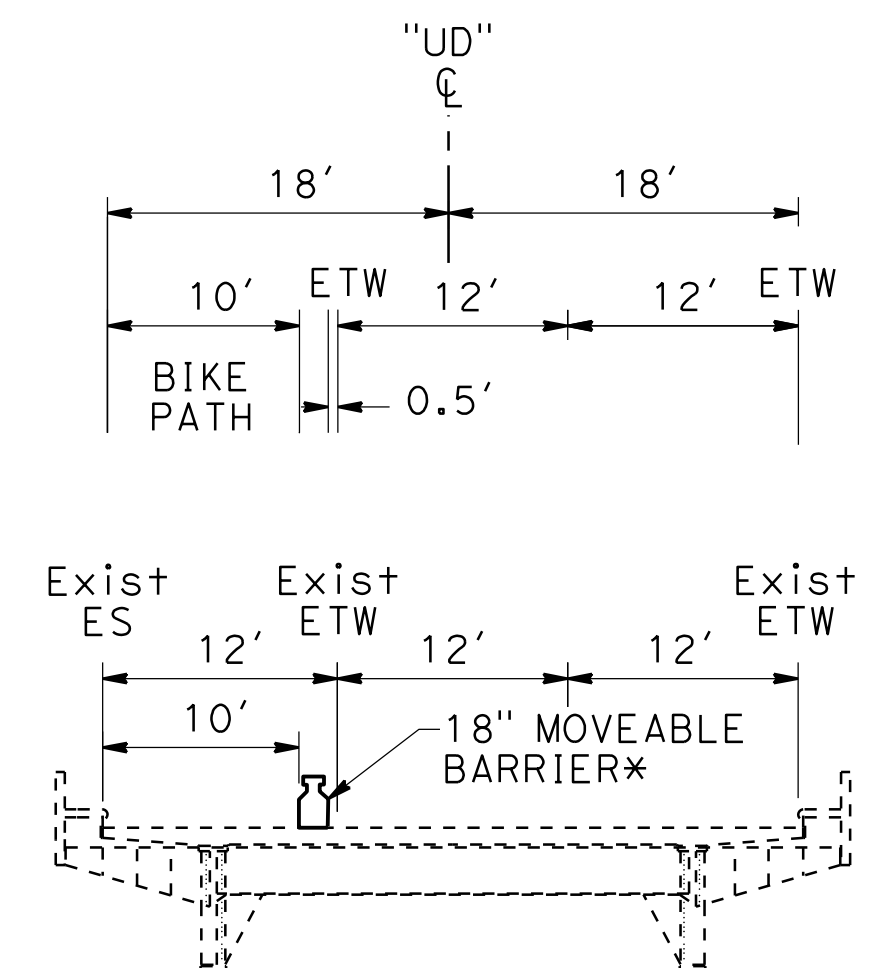
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT - FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR BY
	JAMES PUN	RYAN LITTELL	JAMES PUN
		CHECKED BY	DATE REVISED



**ROUTE 580**  
WESTBOUND EASTBOUND  
"UD" 249+90 TO 278+33  
\* BY OTHERS



**ROUTE 580**  
WESTBOUND EASTBOUND  
"UD" 278+33 TO 446+34  
\* BY OTHERS



**ROUTE 580**  
WESTBOUND  
"UD" 446+34 TO 463+35  
\* BY OTHERS

**TYPICAL CROSS SECTIONS**

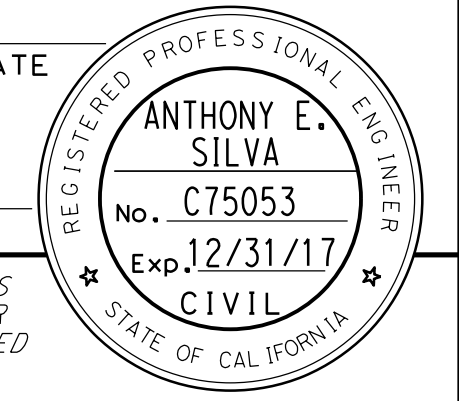
NO SCALE

**X-3**



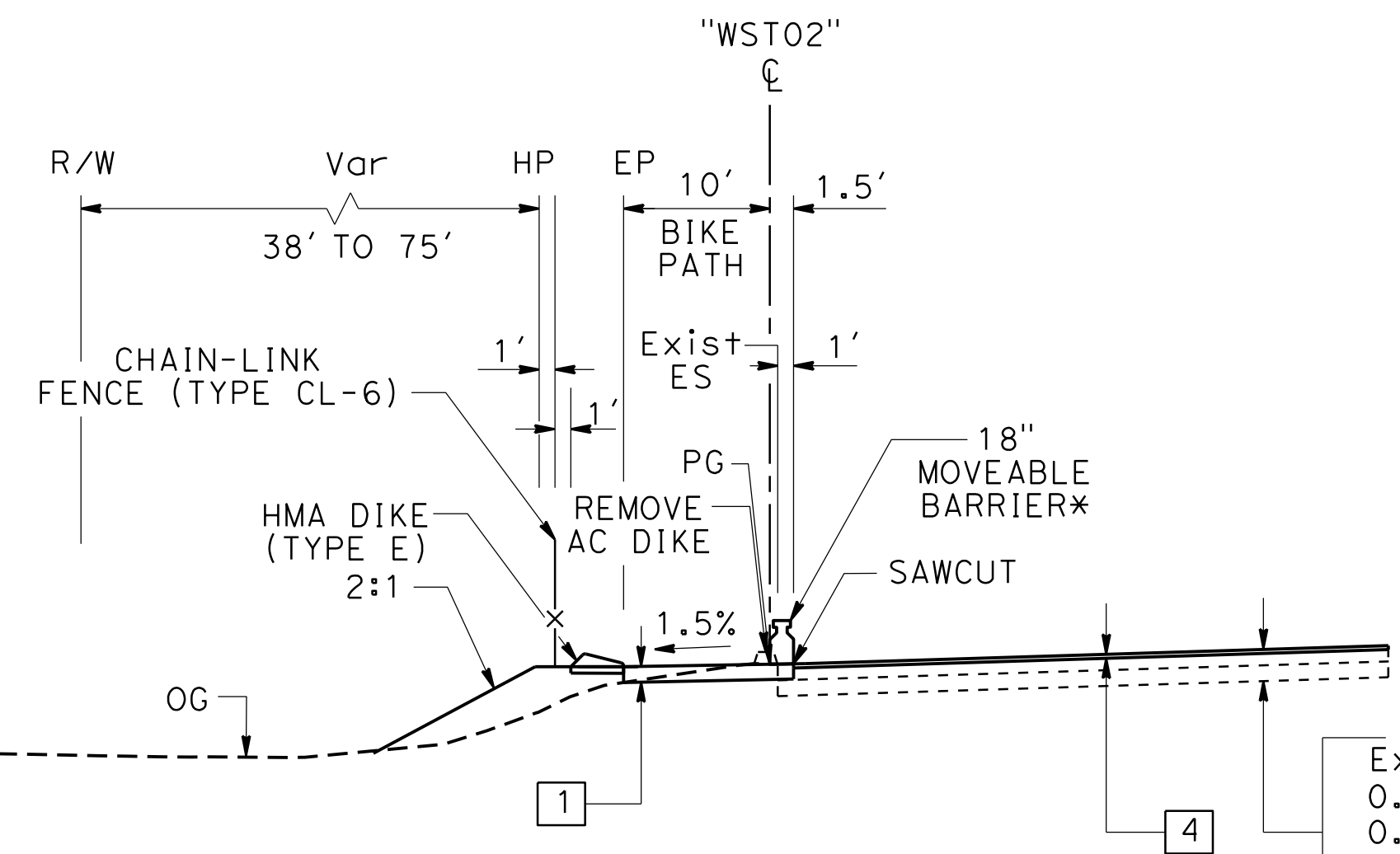


Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		
REGISTERED CIVIL ENGINEER DATE					
PLANS APPROVAL DATE					
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		

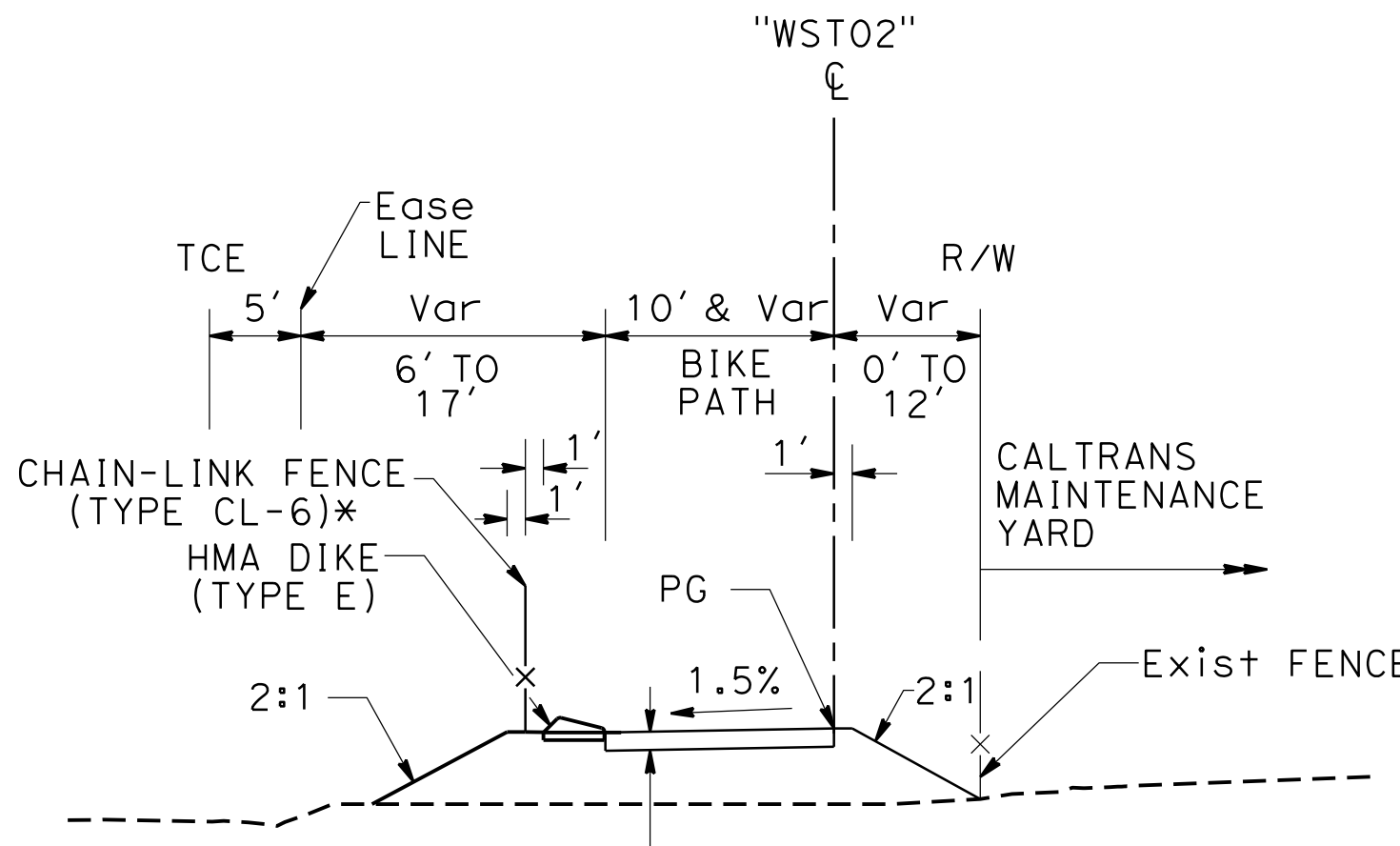


**NOTE:**

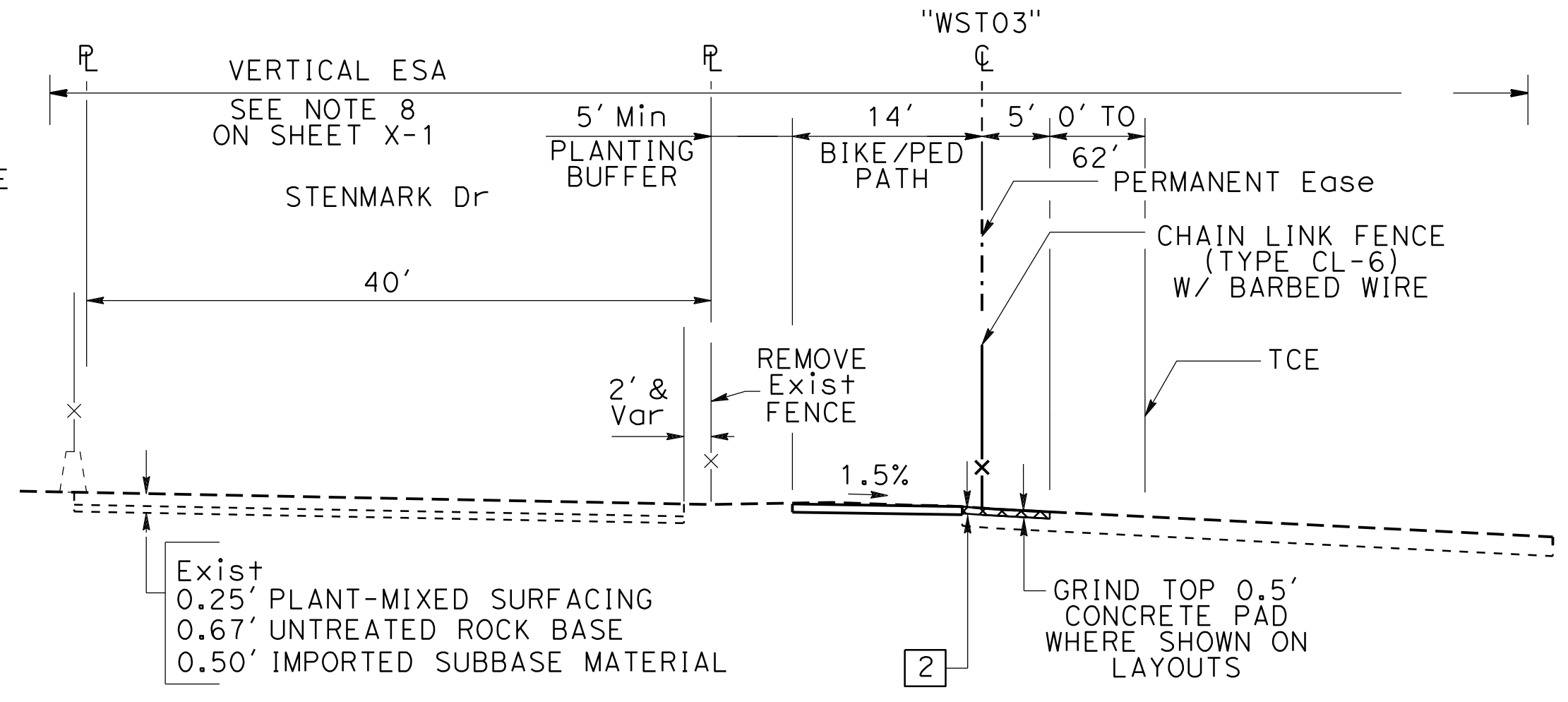
DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.



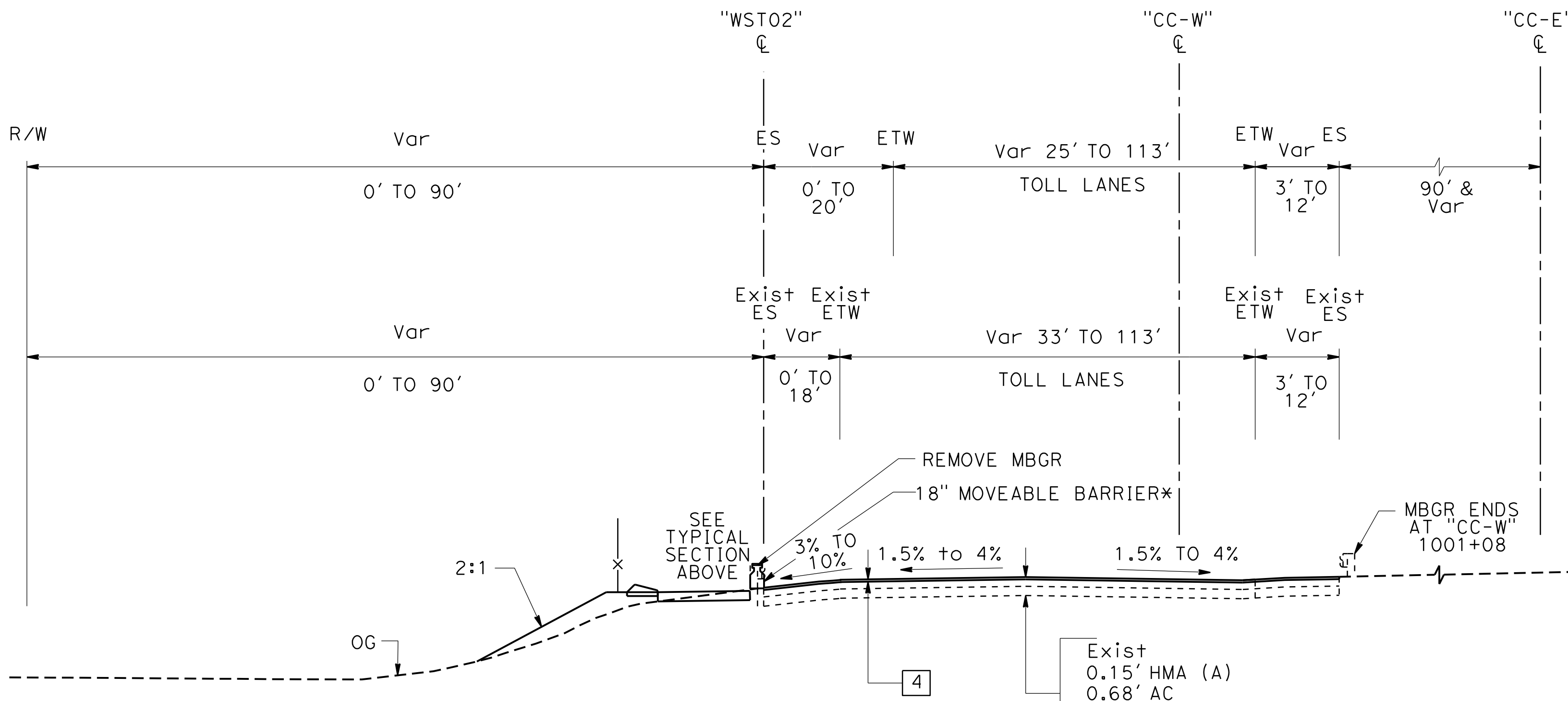
"WST02" 1000+02 TO 1004+00  
\* BY OTHERS



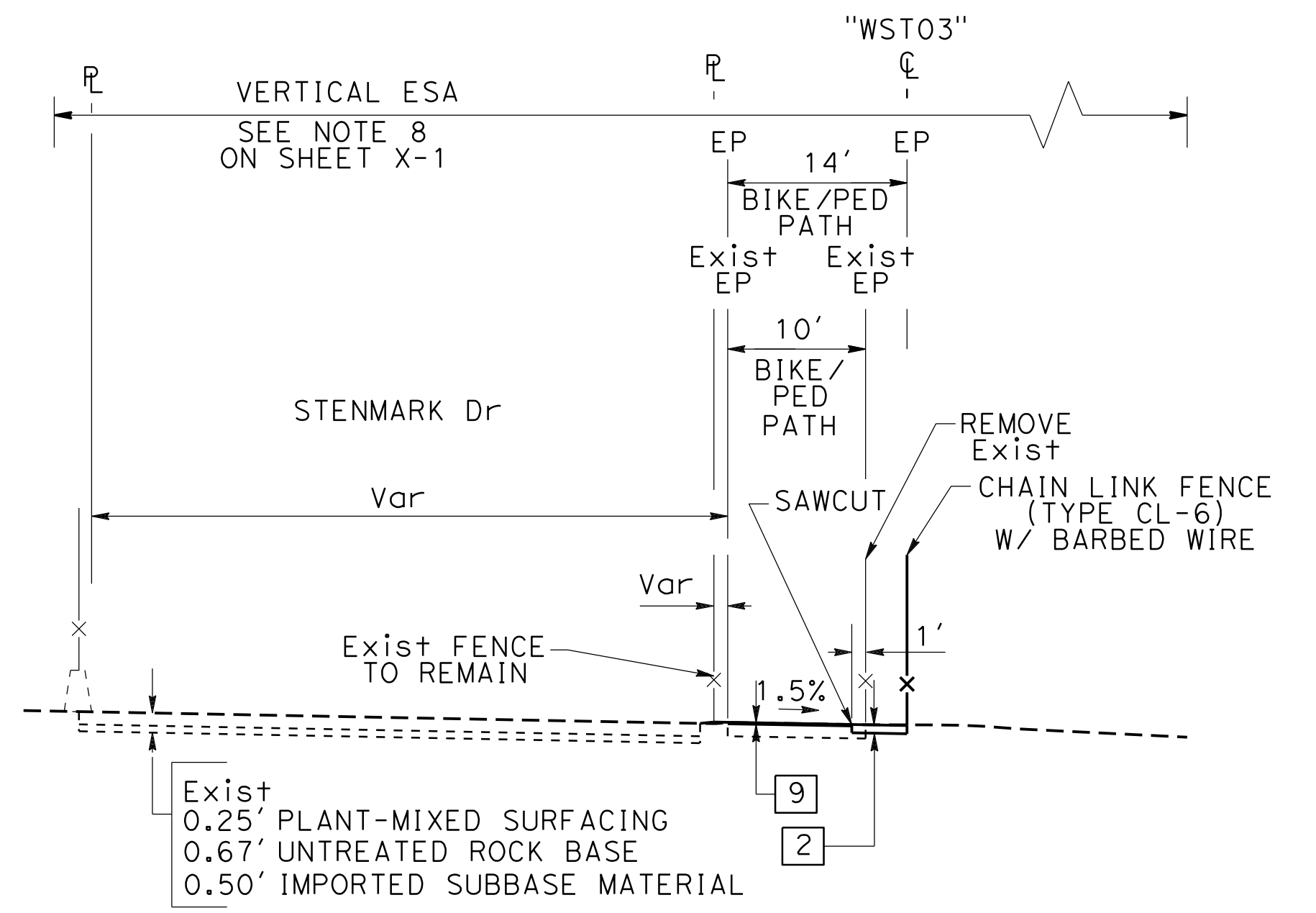
"WST02" 1004+00 TO 1007+39  
\* Beg CHAIN-LINK FENCE (TYPE CL-6) W/ BARBED WIRE AT "WSR02" 1004+56



STENMARK Dr  
"WST03" 1000+69 TO "WST03" 1005+13



**ROUTE 580**  
WESTBOUND  
"CC-W" 999+86 TO "CC-W" 1005+23  
\* BY OTHERS



STENMARK Dr  
"WST03" 999+30 TO "WST03" 1000+69  
\* CHAIN LINK FENCE W/ BARBED WIRE ENDS AT "WST03" 1000+16

**TYPICAL CROSS SECTIONS**

NO SCALE

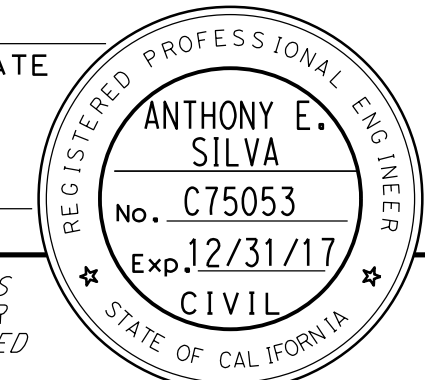
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
Caltrans®

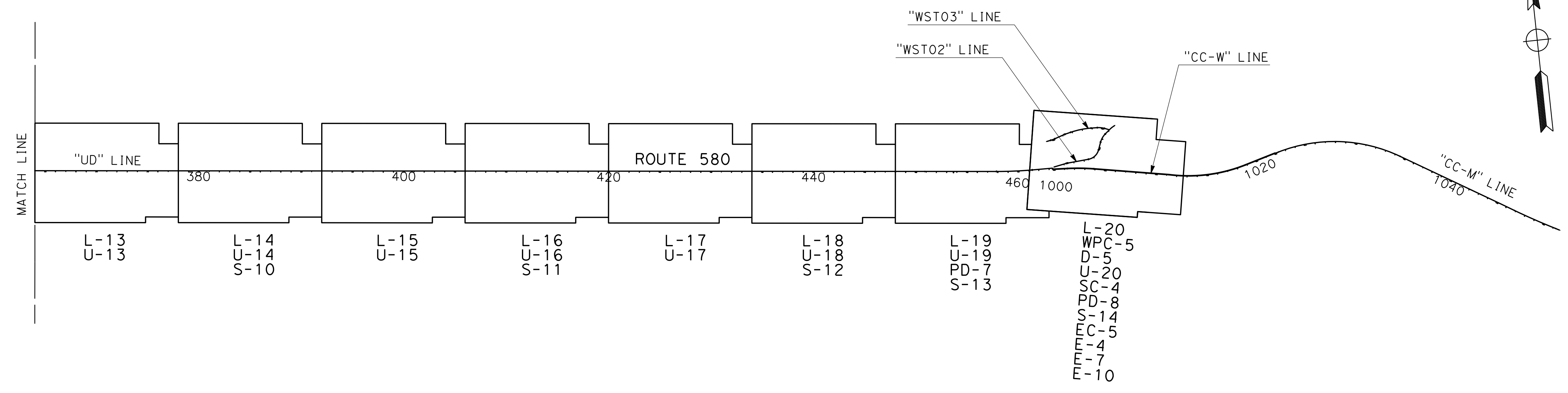
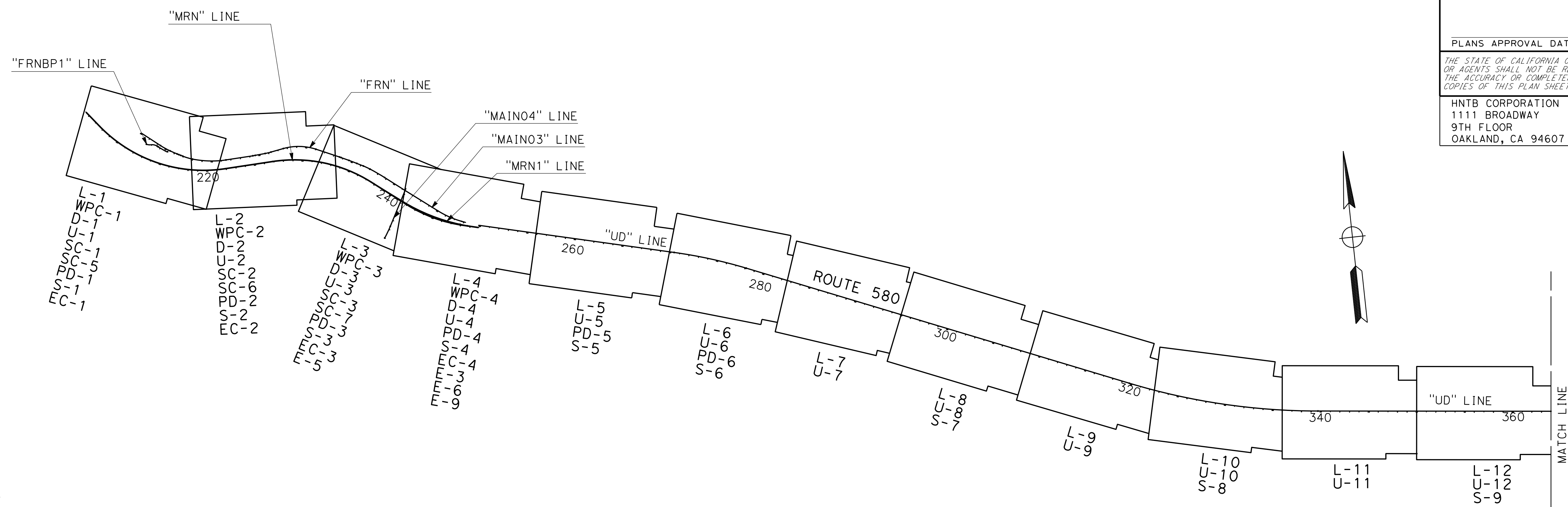
REVISOR BY DATE  
RYAN LITTELL  
JAMES PUN

CALCULATED/DESIGNED BY CHECKED BY  
JAMES PUN

CONSULTANT FUNCTIONAL SUPERVISOR  
JAMES PUN

DATE PLOTTED => 6/13/2016  
TIME PLOTTED => 2:56:26 PM


Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		
REGISTERED CIVIL ENGINEER DATE					
PLANS APPROVAL DATE					
					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**KEY MAP AND LINE INDEX**

NO SCALE

**K-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT	FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR	DATE
	JAMES PUN		ROD DE LEON ANTHONY SILVA		

USERNAME => rdeleon  
DGN FILE => 0415000402da001.dgn



UNIT 0000

PROJECT NUMBER & PHASE

04150004021

LAST REVISION: DATE PLOTTED => 6/13/2016  
00-00-00 TIME PLOTTED => 2:56:21 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION  
1111 BROADWAY  
OAKLAND, CA 94607

BAY AREA TOLL AUTHORITY  
375 BEALE STREET  
SUITE 800  
SAN FRANCISCO, CA 94105

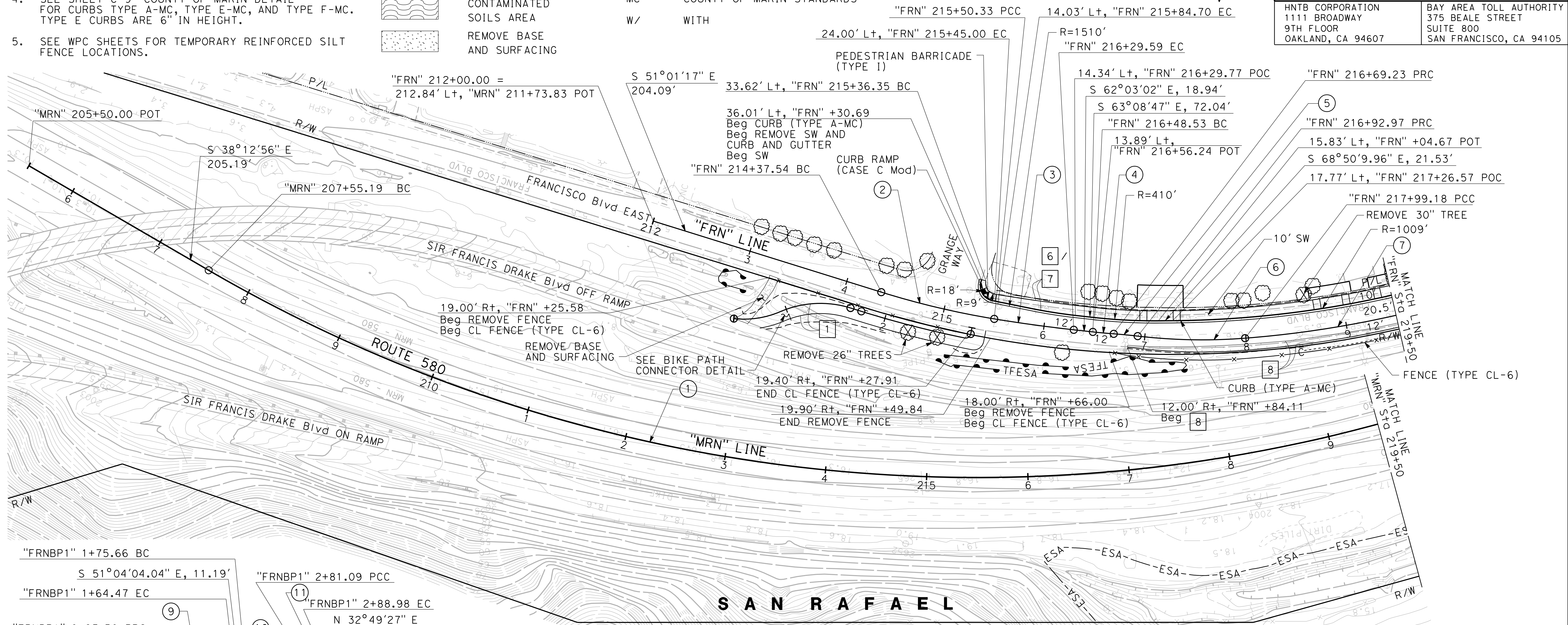
ANTHONY E. SILVA  
No. C75053  
Exp. 12/31/17  
CIVIL  
STATE OF CALIFORNIA

**NOTES:**

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- FOR HORIZONTAL DATUM INFORMATION, SEE SHEET PC-1.
- SEE SHEETS C-4 AND C-5 FOR FRANCISCO Blvd DRIVEWAY DETAILS.
- SEE SHEET C-9 "COUNTY OF MARIN DETAIL" FOR CURBS TYPE A-MC, TYPE E-MC, AND TYPE F-MC. TYPE E CURBS ARE 6" IN HEIGHT.
- SEE WPC SHEETS FOR TEMPORARY REINFORCED SILT FENCE LOCATIONS.

**LEGEND AND ABBREVIATIONS:**

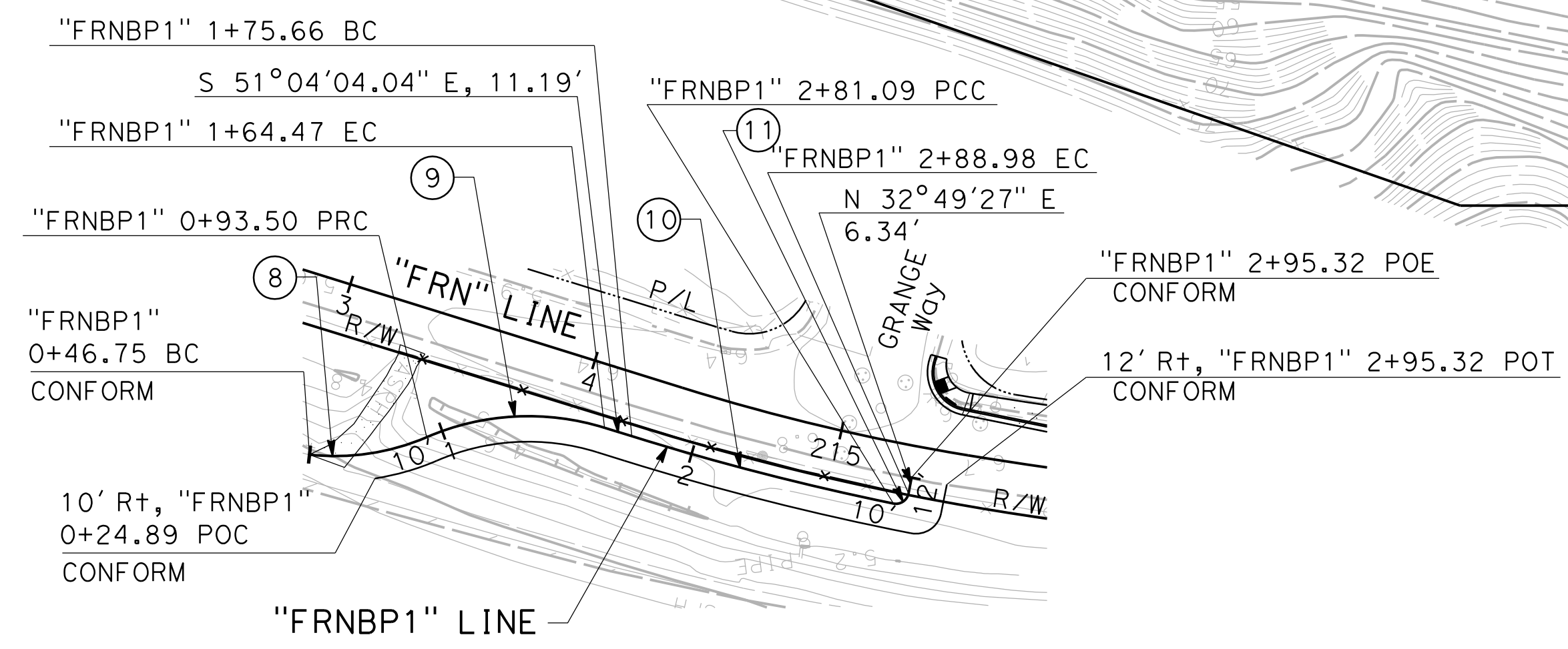
- |  |                           |  |  |  |               |
|--|---------------------------|--|--|--|---------------|
|  | COLD PLANE & OVERLAY      |  | TEMPORARY FENCE (TYPE ESA)                         |  | REMOVE TREE   |
|  | TEXTURED PAVING           |  | PAVEMENT STRUCTURAL SECTION NUMBER (SEE SHEET X-1) |  | LIMITS OF ESA |
|  | REMOVE CONCRETE           |  | COUNTY OF MARIN STANDARDS                          |  |               |
|  | CONTAMINATED SOILS AREA   |  | WITH   |  |               |
|  | REMOVE BASE AND SURFACING |  |  |  |               |



**SAN RAFAEL**

**CURVE DATA**

No.	R	Δ	T	L	N	E
1	1510'	54°28'57"	777.41'	1435.86'	2174083.936	5988776.395
2	820'	8°00'41"	57.42'	114.66'	2173522.896	5988714.549
3	1524'	2°58'47"	39.64'	79.26'	2174126.790	5989076.389
4	550'	2°09'22"	10.35'	20.70'	2173257.517	5988636.618
5	550'	2°28'25"	11.87'	23.74'	2172267.111	5988157.978
6	550'	11°03'52"	53.27'	106.21'	2173235.937	5988678.915
7	1030'	16°12'13"	146.62'	291.29'	2173694.465	5988820.874
8	90'	29°45'38"	23.91'	46.75'	2172993.920	5988096.600
9	100'	40°39'57"	37.06'	70.98'	2172804.010	5988102.350
10	1055'	5°43'34"	52.76'	105.44'	2173695.450	5988259.090
11	5'	90°22'55"	5.03'	7.89'	2172816.910	5988261.830



**BIKE PATH CONNECTOR DETAIL**

**LAYOUT**

SCALE: 1" = 50'

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

CONSULTANT: JAMES PUN

REVISOR: ROD DE LEON

DESIGNER: ANTHONY SILVA

DATE: 7/2/2010

USERNAME => rdeleon  
DGN FILE => 0415000402ea001.dgn

RELATIVE BORDER SCALE IS IN INCHES

0 1 2 3

UNIT 0000 PROJECT NUMBER & PHASE 04150004021

DATE PLOTTED => 6/13/2016  
TIME PLOTTED => 2:56:29 PM



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

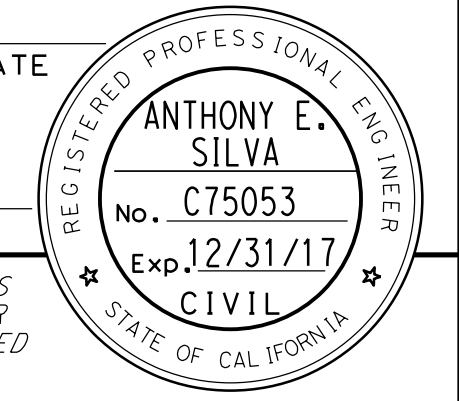
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

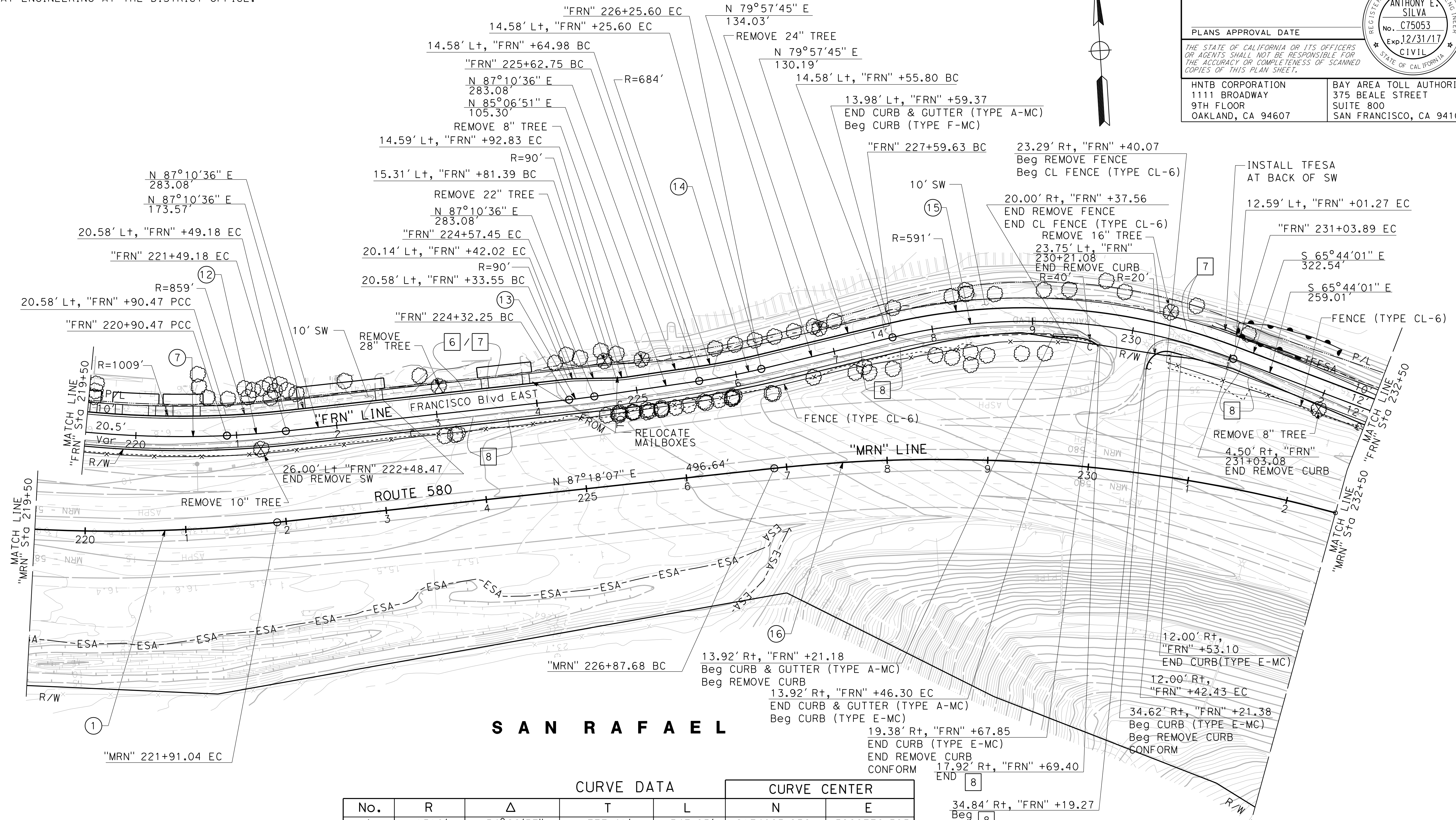
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION  
1111 BROADWAY  
9TH FLOOR  
OAKLAND, CA 94607

BAY AREA TOLL AUTHORITY  
375 BEALE STREET  
SUITE 800  
SAN FRANCISCO, CA 94105



**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



**S A N R A F A E L**

**CURVE DATA**

No.	R	Δ	T	L	N	E
1	1510'	54°28'57"	777.41'	347.85'	2174083.936	5988776.395
7	1030'	16°12'13"	146.62'	291.29'	2173694.465	5988820.874
8	880'	3°49'20"	29.36'	58.70'	2173544.488	5988818.260
9	700'	2°03'45"	12.60'	25.20'	2173378.650	5989109.860
10	699'	5°09'06"	31.45'	62.85'	2173386.622	5989214.864
11	575'	34°18'14"	117.46'	344.26'	2172155.482	5989568.891
16	1500'	40°54'49"	559.54'	1071.11'	2171100.650	5989414.165

FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

CONSULTANT SUPERVISOR: JAMES PUN

REVISOR: ROD DE LEON

DESIGNER: ANTHONY SILVA

DATE: 7/2/2016



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER	DATE
ANTHONY E. SILVA	
No. C75053	
Exp 12/31/17	
CIVIL	

PLANS APPROVAL DATE	
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.	
HNTB CORPORATION 1111 BROADWAY OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105

**NOTE:**

FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE. "FRN" +81.30 PRC

14.44' Lt, "FRN" +61.81 POT 33.58' Lt "FRN" +74.31 R=100'  
R=991' Beg REMOVE FENCE  
14.08' Lt, "FRN" +23.41 POT Beg CL FENCE (TYPE CL-6)

S 64°05'10.46" E, 87.31' "FRN" 234+67.47 BC  
"FRN" 233+80.16 EC "FRN" 235+54.93 EC

"FRN" 233+62.91 BC S 65°44'1.33" E 322.51'  
S 65°44'1.33" E 259.012

"FRN" 233+51.41 END "FRN" 233+51.41 END

14.54' Lt, "FRN" +40.54 BC END CURB (TYPE F-MC), Beg CURB (TYPE E-MC)

20.00' Rt, "FRN" +52.85 END REMOVE FENCE END CL FENCE (TYPE CL-6)

"FRN" 233+51.41 END "FRN" 233+51.41 END

14.54' Lt, "FRN" +40.54 BC END CURB (TYPE F-MC), Beg CURB (TYPE E-MC)

20.00' Rt, "FRN" +52.85 END REMOVE FENCE END CL FENCE (TYPE CL-6)

"FRN" 233+51.41 END "FRN" 233+51.41 END

14.54' Lt, "FRN" +40.54 BC END CURB (TYPE F-MC), Beg CURB (TYPE E-MC)

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"FRN" 233+51.41 END "FRN" 233+51.41 END

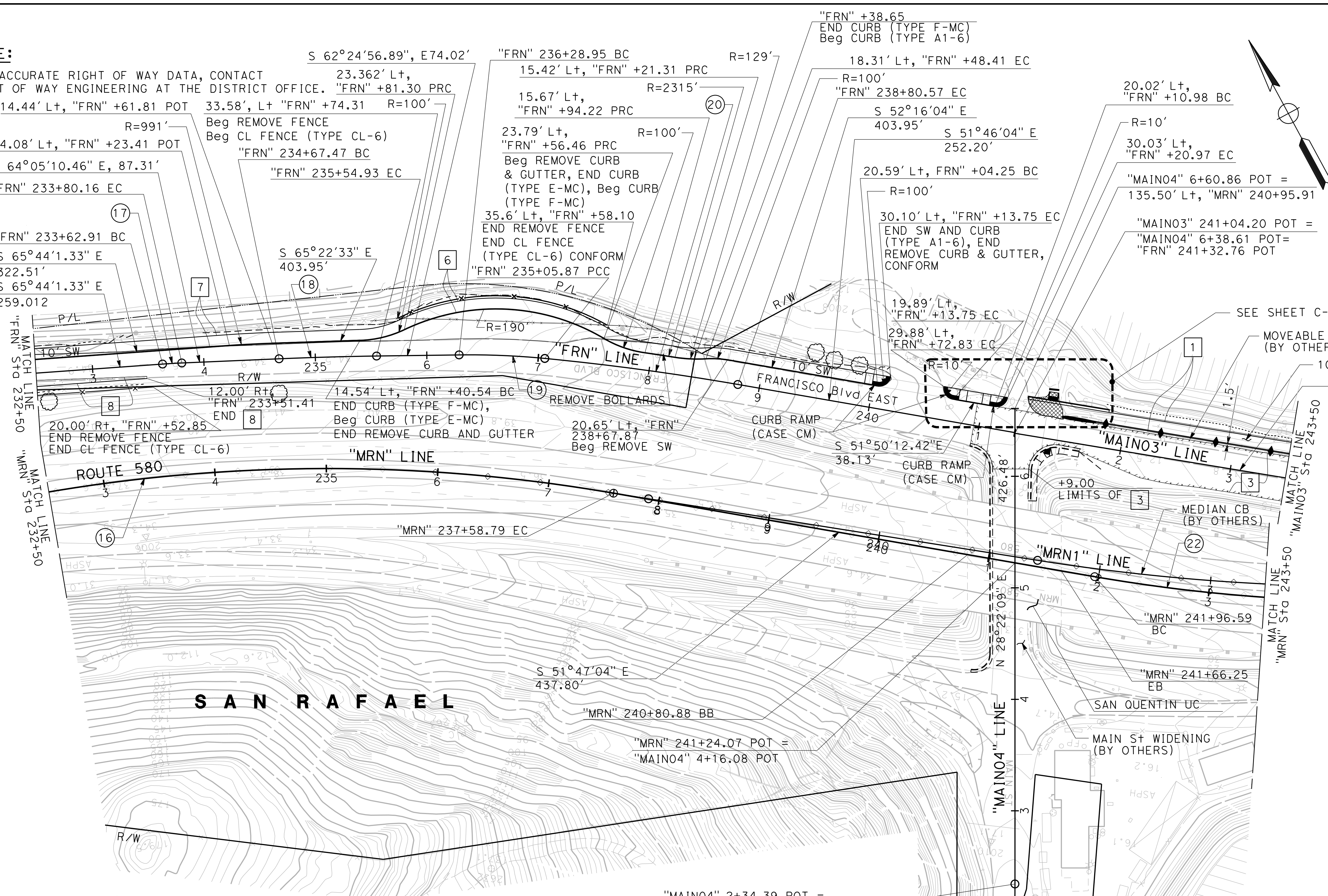
14.54' Lt, "FRN" +40.54 BC END CURB (TYPE F-MC), Beg CURB (TYPE E-MC)

20.00' Rt, "FRN" +52.85 END REMOVE FENCE END CL FENCE (TYPE CL-6)

"FRN" 233+51.41 END "FRN" 233+51.41 END

14.54' Lt, "FRN" +40.54 BC END CURB (TYPE F-MC), Beg CURB (TYPE E-MC)

20.00' Rt, "FRN" +52.85 END REMOVE FENCE END CL FENCE (TYPE CL-6)



**SAN RAFAEL**

**CURVE DATA**

No.	R	Δ	T	L	CURVE CENTER	
					N	E
16	1500'	40°54'49"	559.54'	1071.11'	2171100.650	5989414.165
17	600'	1°38'51"	8.63'	17.25'	2172026.243	5989794.743
18	3000'	1°40'14"	43.74'	87.46'	2169829.401	5988824.430
19	700'	6°17'46"	38.50'	76.92'	2171833.689	5989955.054
20	2300'	4°21'07"	87.39'	174.70'	2170505.360	5989063.121
21	1135'	6°47'06"	67.27'	134.39'	2172338.987	5989493.699
22	1500'	24°08'20"	320.73'	631.95'	2173186.884	5991614.005

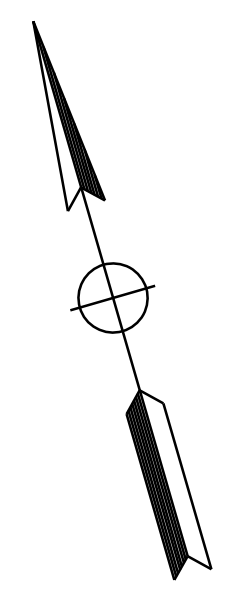
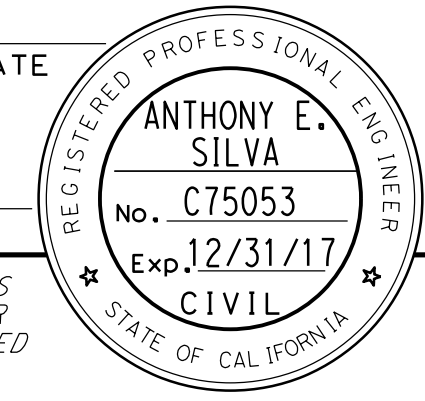
FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

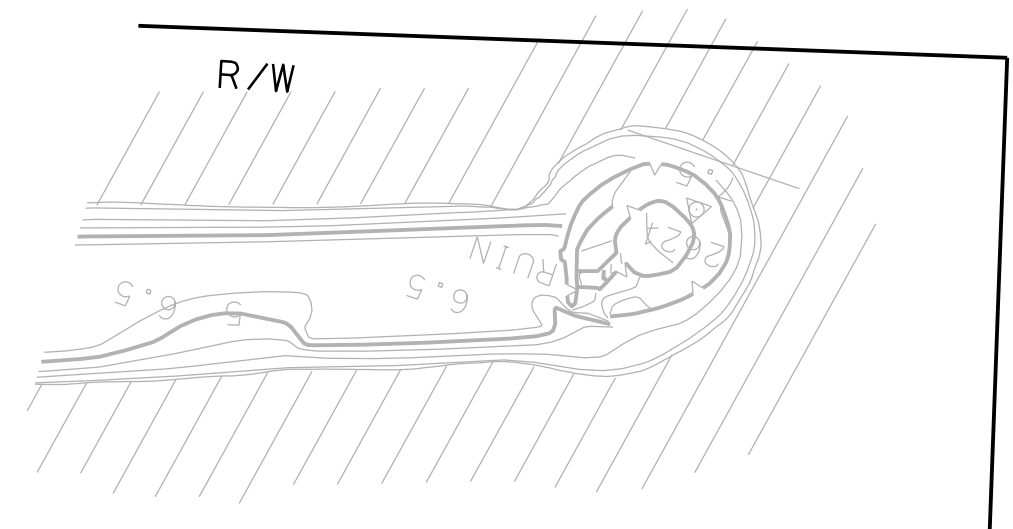
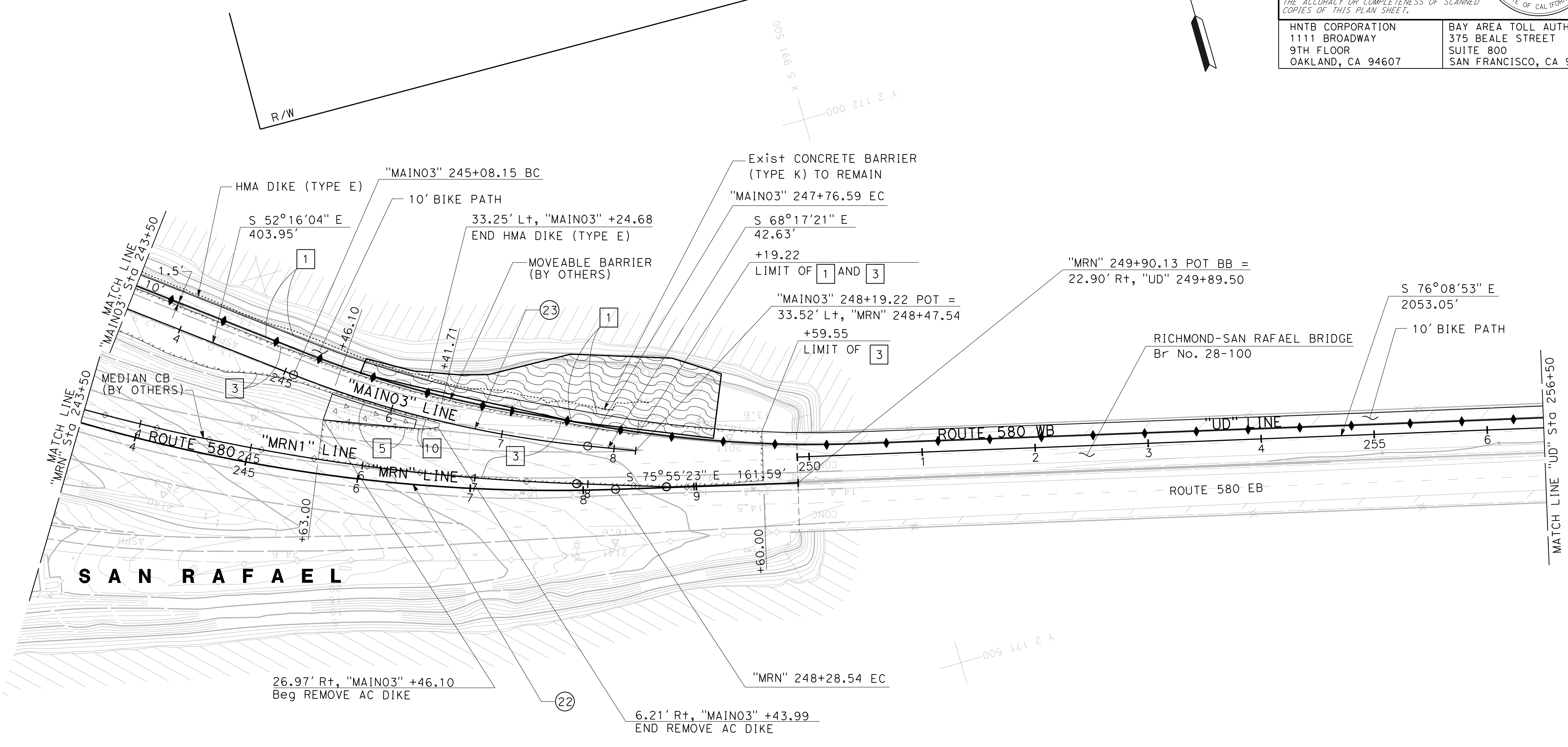
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 DESIGNED BY: ANTHONY SILVA  
 CHECKED BY: ANTHONY SILVA  
 REVISIONS: (None listed)

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		
REGISTERED CIVIL ENGINEER DATE					
PLANS APPROVAL DATE					
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR
James Pun	JAMES PUN	ROD DE LEON	ROD DE LEON
		ANTHONY SILVA	ANTHONY SILVA



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

No.	R	Δ	CURVE DATA		CURVE CENTER	
			T	L	N	E
22	1500'	24°08'20"	320.73'	631.95'	2173186.884	5991614.005
23	960'	16°01'17"	135.10'	268.44'	2172667.494	5991591.268

SAN FRANCISCO BAY

**LAYOUT**

SCALE: 1" = 50'



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 CHECKED BY: ANTHONY SILVA  
 DESIGNED BY: ROD DE LEON  
 REVISIONS: (Empty table)

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

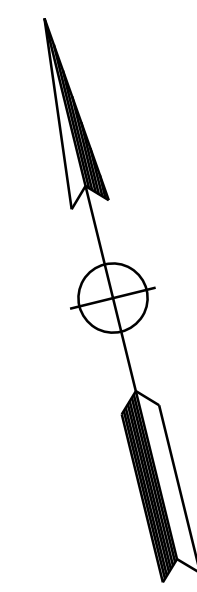
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

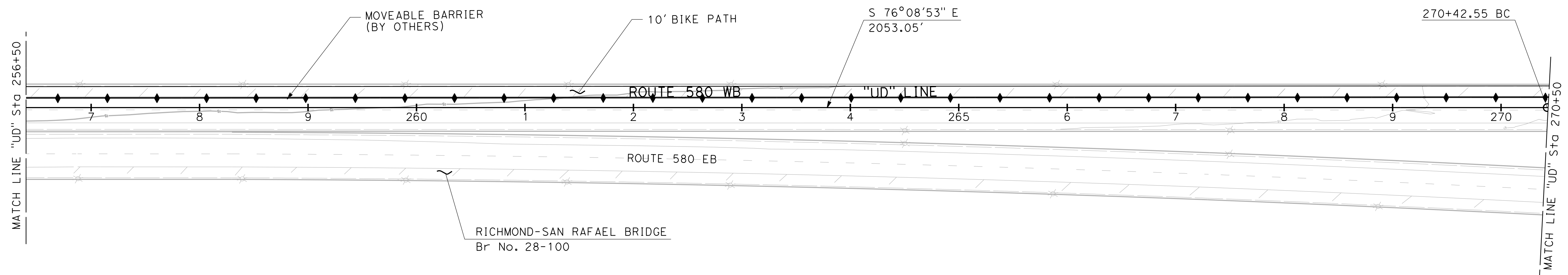
PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



SAN FRANCISCO BAY



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-5**

LAST REVISION: DATE PLOTTED => 6/13/2016 00-00-00 TIME PLOTTED => 2:56:37 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 CALCULATED/DESIGNED BY: ANTHONY SILVA  
 CHECKED BY: ANTHONY SILVA  
 REVISIONS: (Grid with 'x' marks)

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

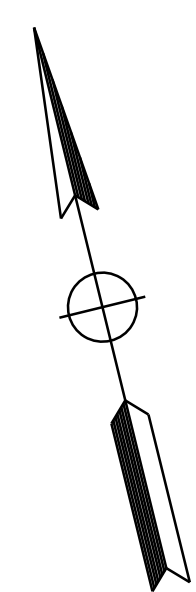
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

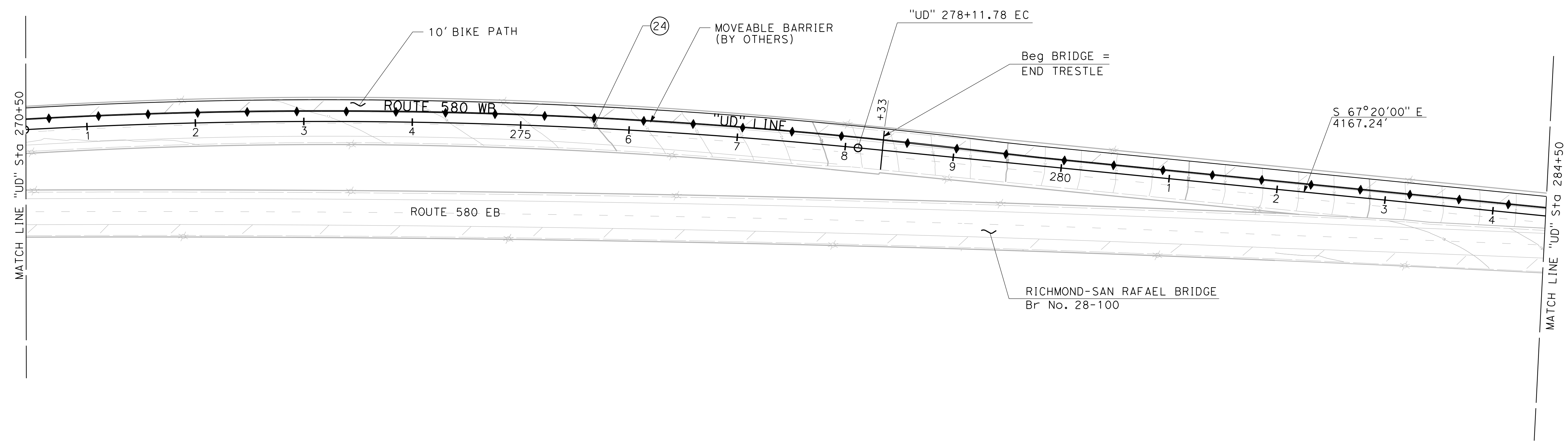
PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



SAN FRANCISCO BAY



No.	CURVE DATA				CURVE CENTER	
	R	$\Delta$	T	L	N	E
24	5000'	8°48'53"	385.38'	769.23'	2166368.719	5992207.760

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-6**

LAST REVISION: DATE PLOTTED => 6/13/2016 00-00-00 TIME PLOTTED => 2:56:38 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 CALCULATED/DESIGNED BY: ROD DE LEON  
 CHECKED BY: ANTHONY SILVA  
 REVISIONS: (Grid with 'x' marks)

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

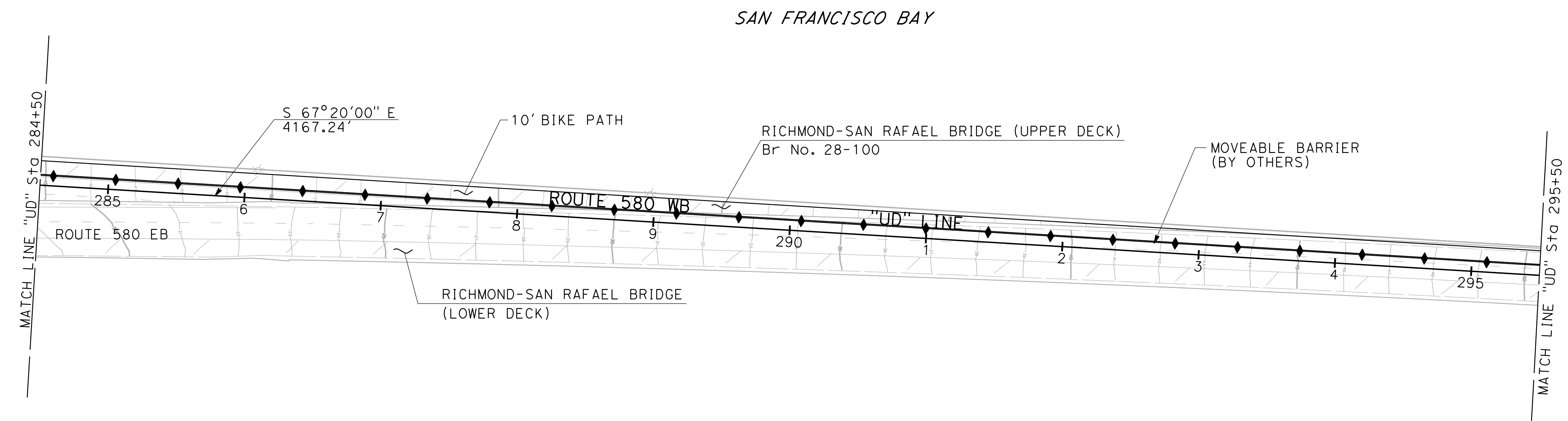
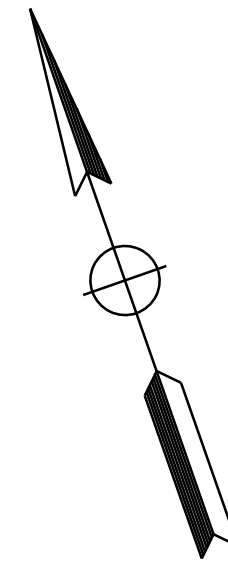
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**  
 SCALE: 1" = 50'

**L-7**

LAST REVISION: DATE PLOTTED => 6/13/2016 00:00:00 TIME PLOTTED => 2:56:39 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: ROD DE LEON  
 CHECKED BY: ANTHONY SILVA  
 DESIGNED BY: ANTHONY SILVA  
 REVISIONS: (Empty table)

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

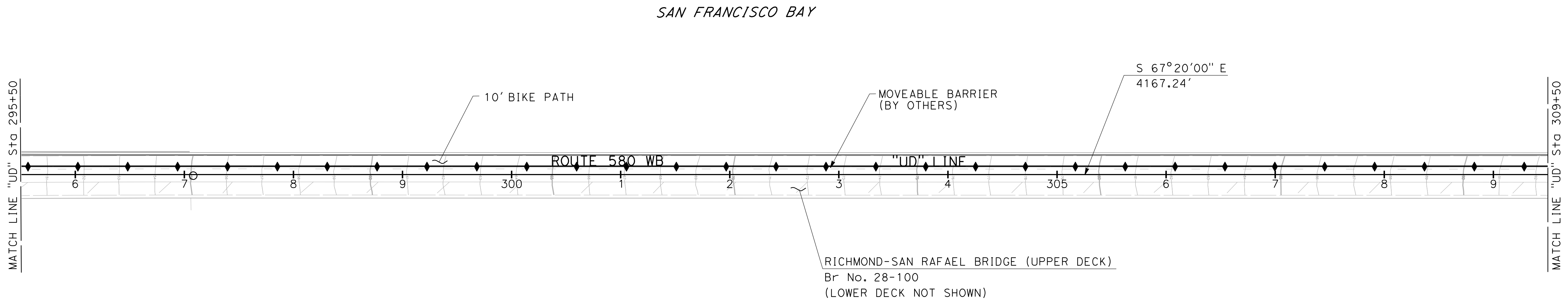
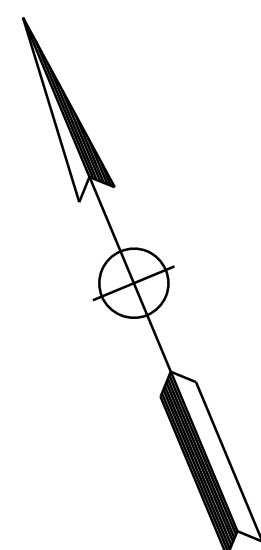
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: ROD DE LEON  
 CHECKED BY: ANTHONY SILVA  
 DESIGNED BY: ANTHONY SILVA  
 REVISIONS: (None listed)

**NOTE:**

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

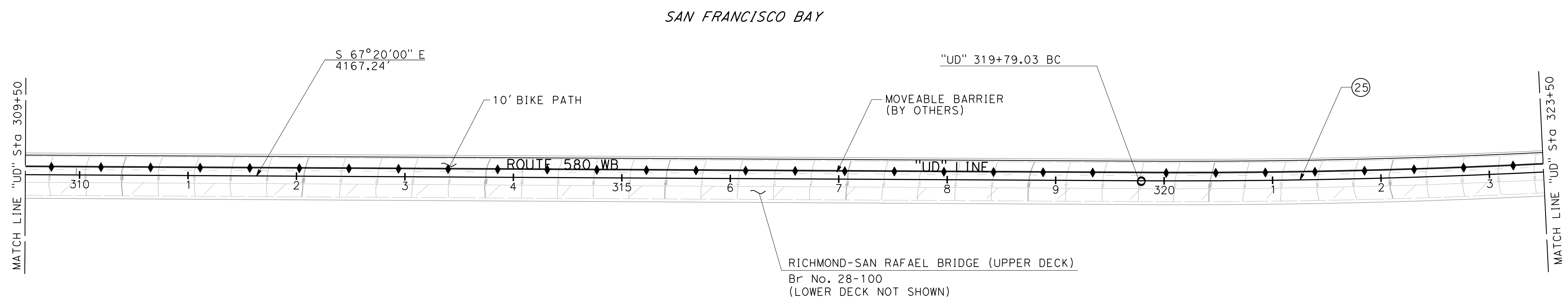
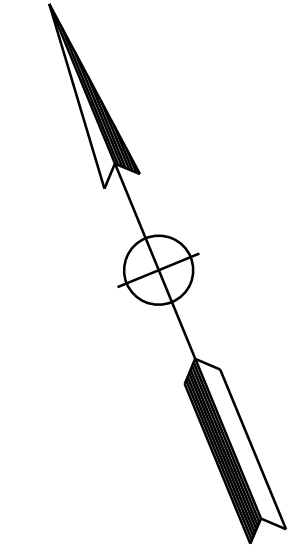
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



CURVE DATA					CURVE CENTER	
No.	R	Δ	T	L	N	E
25	6850'	16°40'00"	1003.38'	1992.58'	2175697.526	6000619.763

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-9**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 DESIGNED BY: ROD DE LEON  
 CHECKED BY: ANTHONY SILVA  
 REVISIONS: (None listed)

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

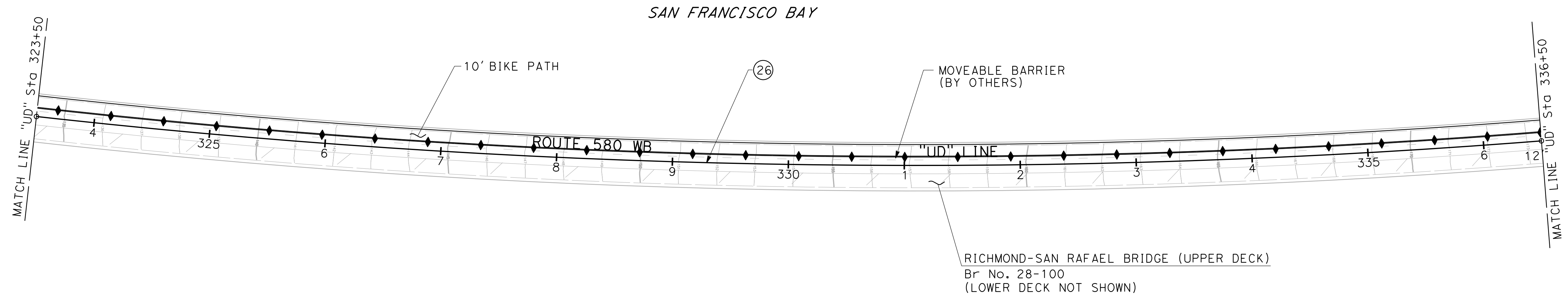
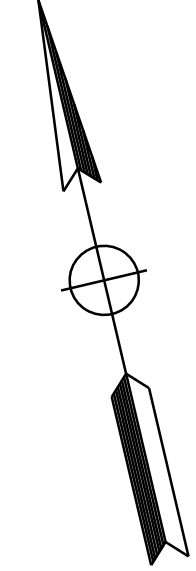
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



No.	R	Δ	CURVE DATA		CURVE CENTER	
			T	L	N	E
26	6850'	16°40'00"	1003.38'	1992.58'	2175697.523	6000619.763

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**  
 SCALE: 1" = 50'  
**L-10**

LAST REVISION: DATE PLOTTED => 6/13/2016      TIME PLOTTED => 2:56:42 PM  
 00-00-00



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 CALCULATED/DESIGNED BY: ROD DE LEON  
 CHECKED BY: ANTHONY SILVA  
 REVISED BY: [ ]  
 DATE REVISED: [ ]

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

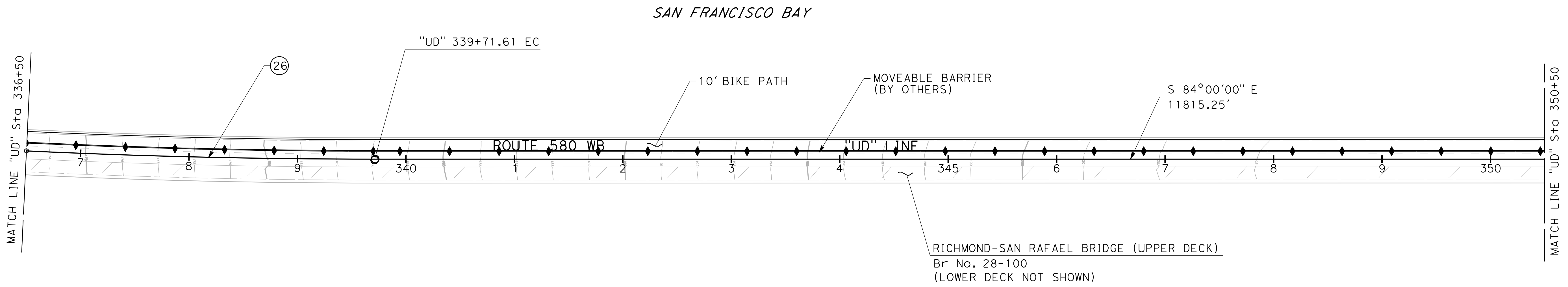
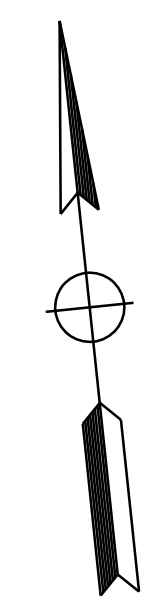
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



No.	R	Δ	CURVE DATA		CURVE CENTER	
			T	L	N	E
26	6850'	16°40'00"	1003.38'	1992.58'	2175697.526	6000619.763

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-11**

LAST REVISION: DATE PLOTTED => 6/13/2016 00-00-00 TIME PLOTTED => 2:56:43 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: ROD DE LEON  
 CHECKED BY: ANTHONY SILVA  
 DESIGNED BY: ANTHONY SILVA  
 REVISIONS: (Empty table)

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

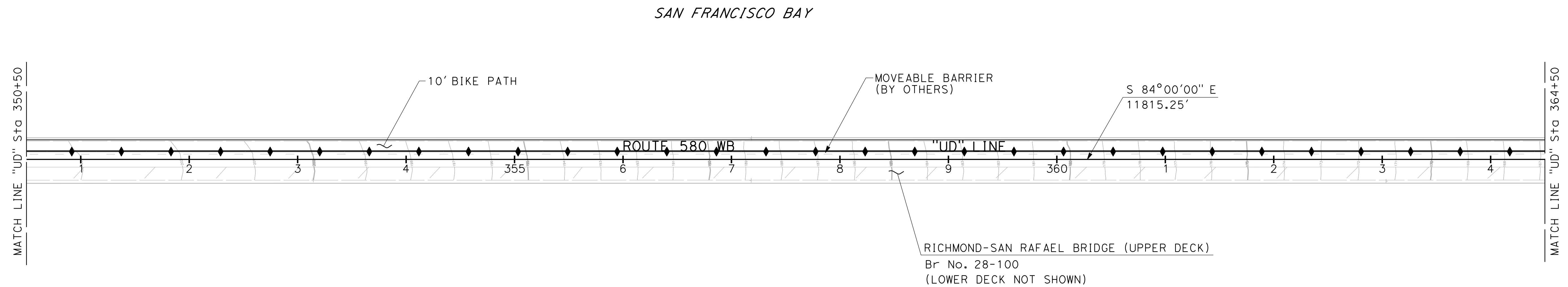
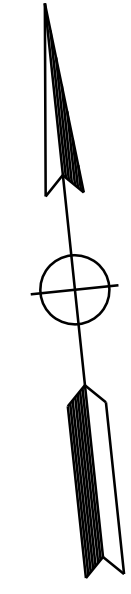
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-12**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: ROD DE LEON  
 CHECKED BY: ANTHONY SILVA  
 DESIGNED BY: ANTHONY SILVA  
 REVISIONS: (Empty table)

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

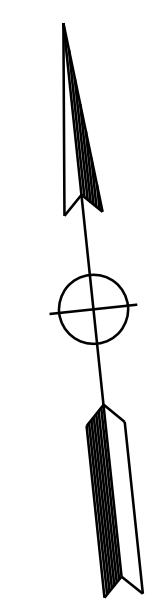
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

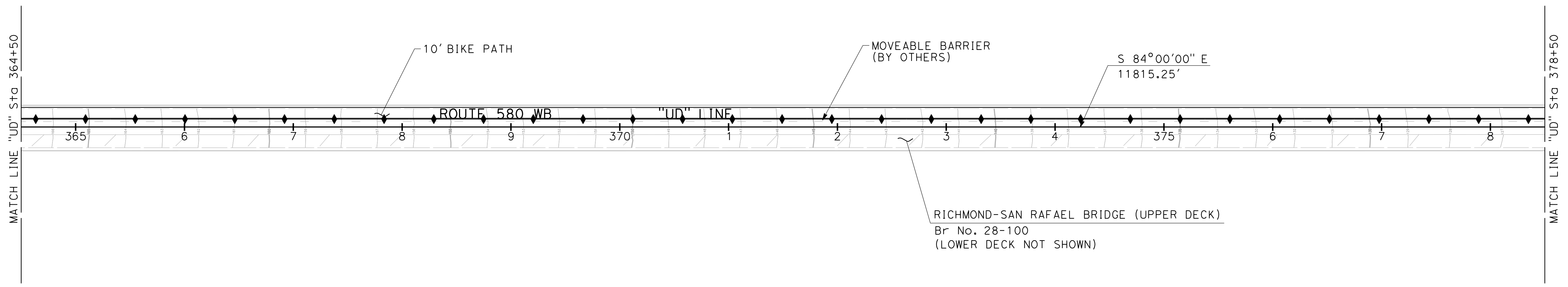
PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



SAN FRANCISCO BAY



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-13**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 DESIGNED BY: ROD DE LEON  
 CHECKED BY: ANTHONY SILVA  
 REVISIONS: (None listed)

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

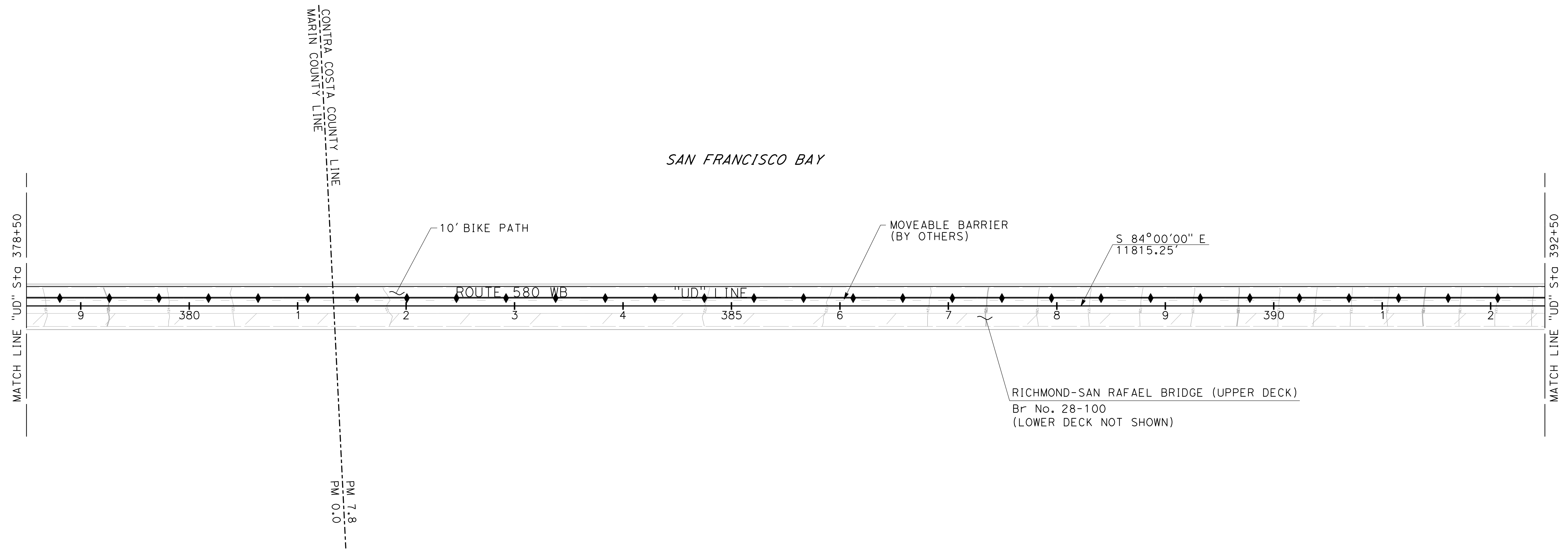
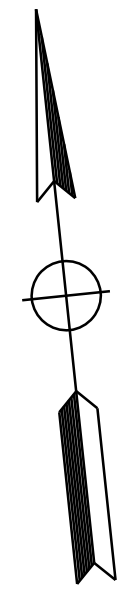
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-14**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: ROD DE LEON  
 CHECKED BY: ANTHONY SILVA

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

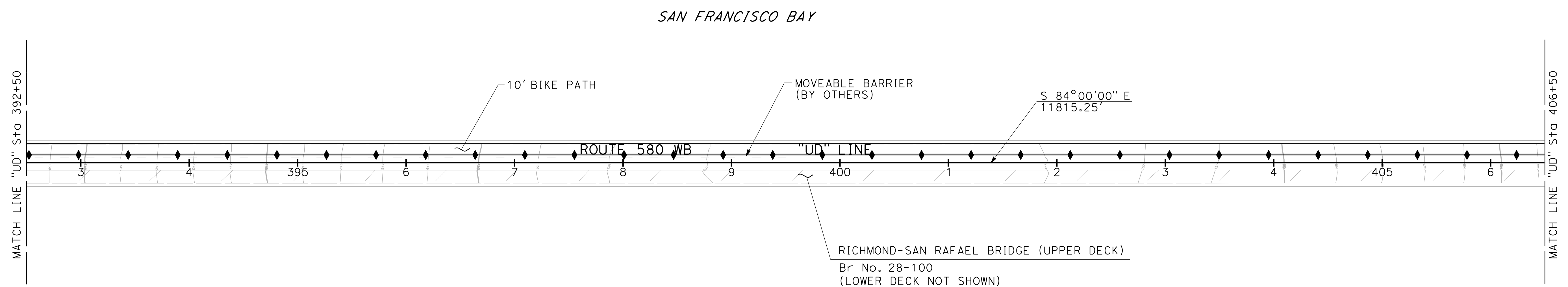
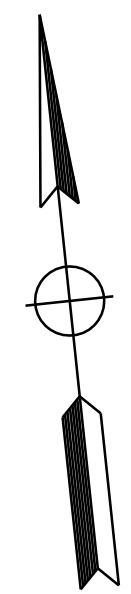
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-15**

LAST REVISION: 00-00-00 DATE PLOTTED => 6/13/2016 TIME PLOTTED => 2:56:48 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: FUNCTIONAL SUPERVISOR: JAMES PUN  
 CALCULATED/DESIGNED BY: ROD DE LEON  
 CHECKED BY: ANTHONY SILVA  
 REVISED BY: DATE REVISÉD

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

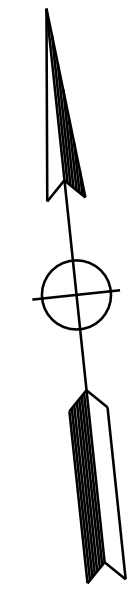
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

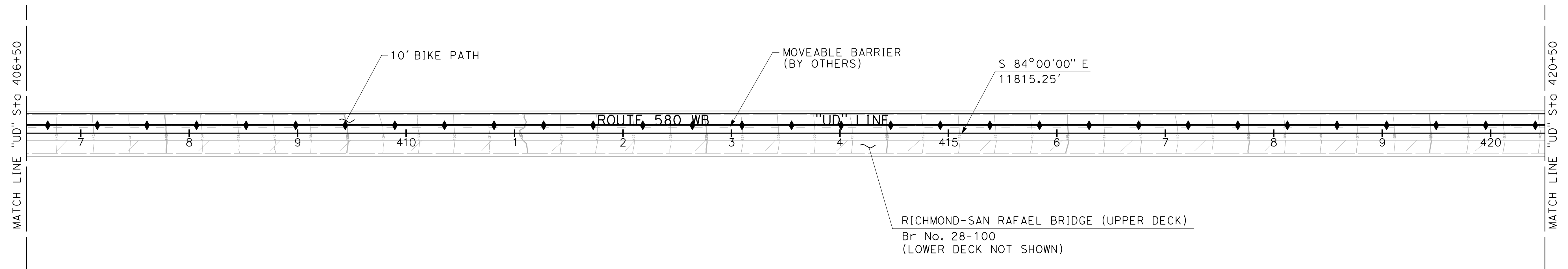
PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



SAN FRANCISCO BAY



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-16**

LAST REVISION: DATE PLOTTED => 6/13/2016 00-00-00 TIME PLOTTED => 2:56:49 PM



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 DESIGNED BY: ROD DE LEON  
 CHECKED BY: ANTHONY SILVA  
 REVISIONS: (None listed)

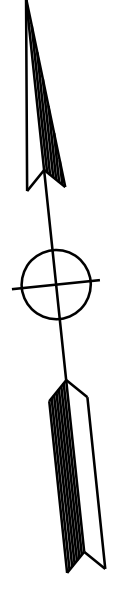
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

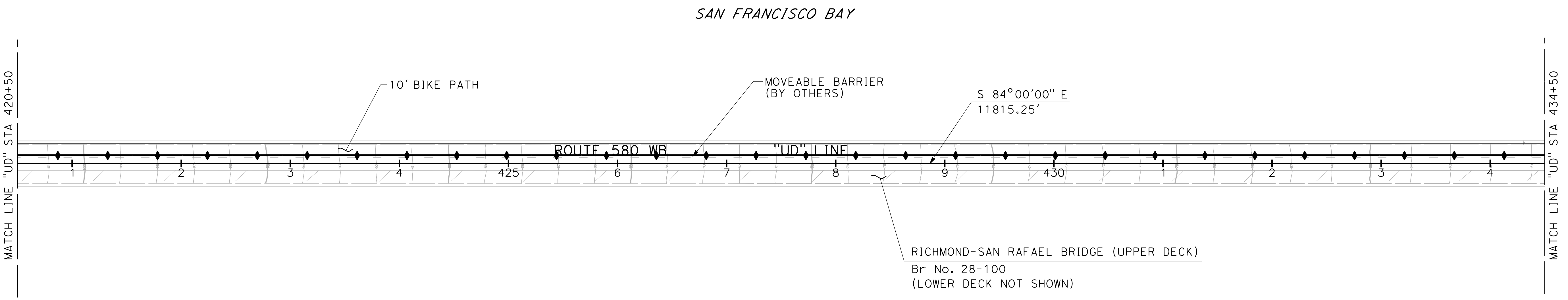
PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-17**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 DESIGNED BY: ROD DE LEON  
 CHECKED BY: ANTHONY SILVA  
 REVISIONS: (None listed)

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

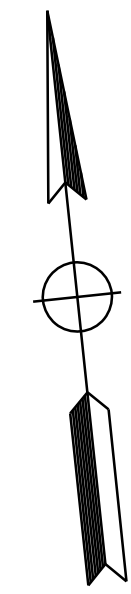
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE \_\_\_\_\_

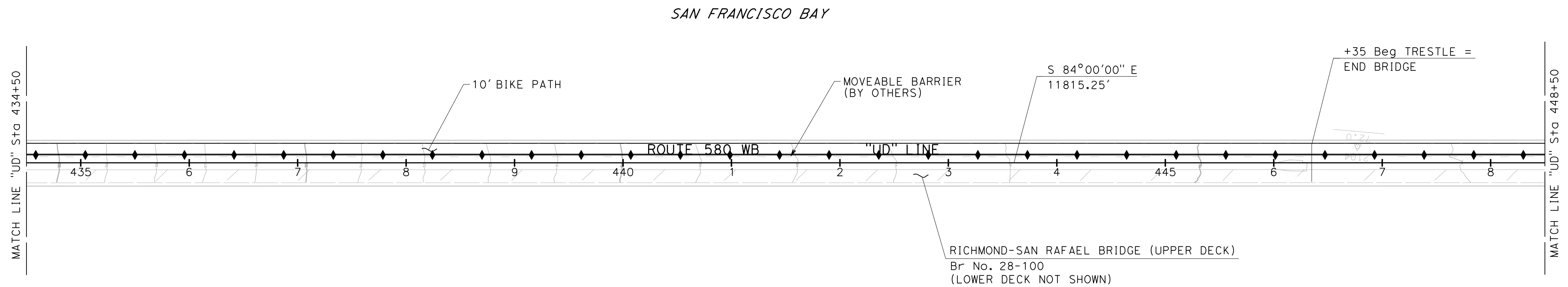
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



000 891 2 4

000 167 500  
 X 6 010 500



FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'

**L-18**

LAST REVISION: 00-00-00    DATE PLOTTED => 6/13/2016    TIME PLOTTED => 2:56:51 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 CONSULTANT: JAMES PUN  
 SUPERVISOR: JAMES PUN  
 DESIGNED BY: ROD DE LEON  
 CHECKED BY: ANTHONY SILVA  
 REVISIONS: (None listed)

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

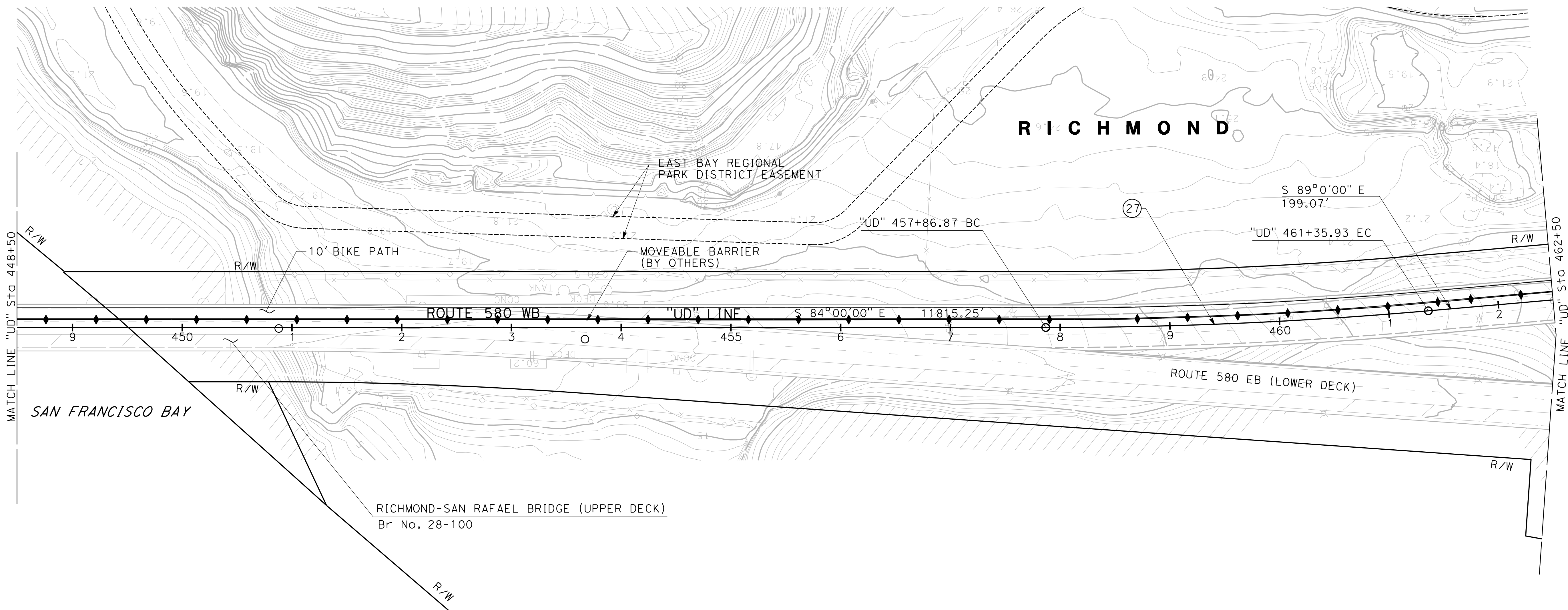
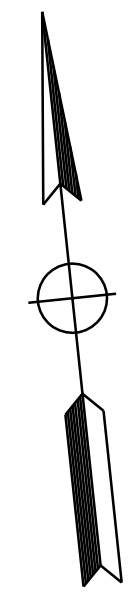
REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 ANTHONY E. SILVA  
 No. C75053  
 Exp. 12/31/17  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



No.	CURVE DATA				CURVE CENTER	
	R	Δ	T	L	N	E
27	4000'	5°00'00"	174.64'	349.07'	2171628.108	6012072.384

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

**LAYOUT**

SCALE: 1" = 50'



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

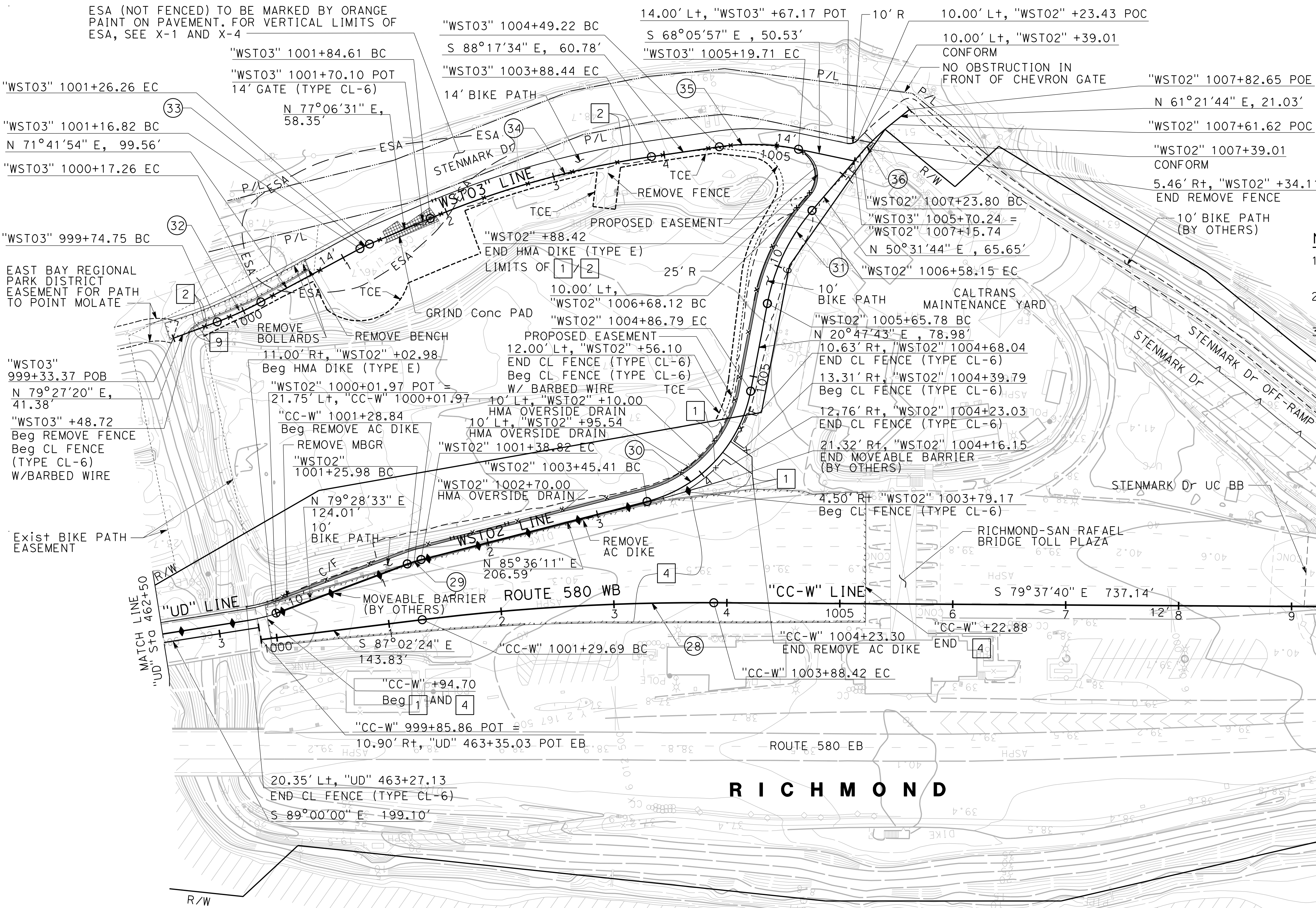
REGISTERED CIVIL ENGINEER	DATE
ANTHONY E. SILVA	
No. C75053	
Exp. 12/31/17	
CIVIL	

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---



- NOTES:**
- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
  - FOR VERTICAL LIMITS OF ESA, SEE SHEET X-4 "WST03" AND SPECIAL PROVISIONS.
  - SEE SHEET C-11 FOR ADDITIONAL DETAILS ON "WST03" LINE.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

CONSULTANT SUPERVISOR: JAMES PUN

FUNCTIONAL SUPERVISOR: JAMES PUN

DESIGNED BY: ROD DE LEON

CHECKED BY: ANTHONY SILVA

REVISIONS:

NO.	DATE	REVISION
1		
2		
3		
4		
5		
6		
7		
8		
9		

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

No.	CURVE DATA				CURVE CENTER	
	R	Δ	T	L	N	E
28	2000'	07°24'44"	129.55'	258.73'	2165609.562	6012242.080
29	120'	06°07'38"	6.42'	12.83'	2167539.885	6012362.776
30	125'	64°48'28"	79.34'	141.39'	2167800.002	6012549.972
31	178'	29°44'01"	47.25'	92.37'	2167766.268	6012861.275
32	314'	7°45'26"	21.30'	42.51'	2168206.768	60112154.895
33	100'	8°39'33"	7.57'	15.11'	2167829.985	6012313.937
34	800'	14°35'54"	102.47'	203.83'	2167175.634	6012592.470
35	200'	20°11'37"	35.61'	70.49'	2167773.557	6012671.101
36	200'	10°50'01"	18.96'	37.82'	2167791.017	6012925.937

**LAYOUT**

SCALE: 1" = 50'

**L-20**

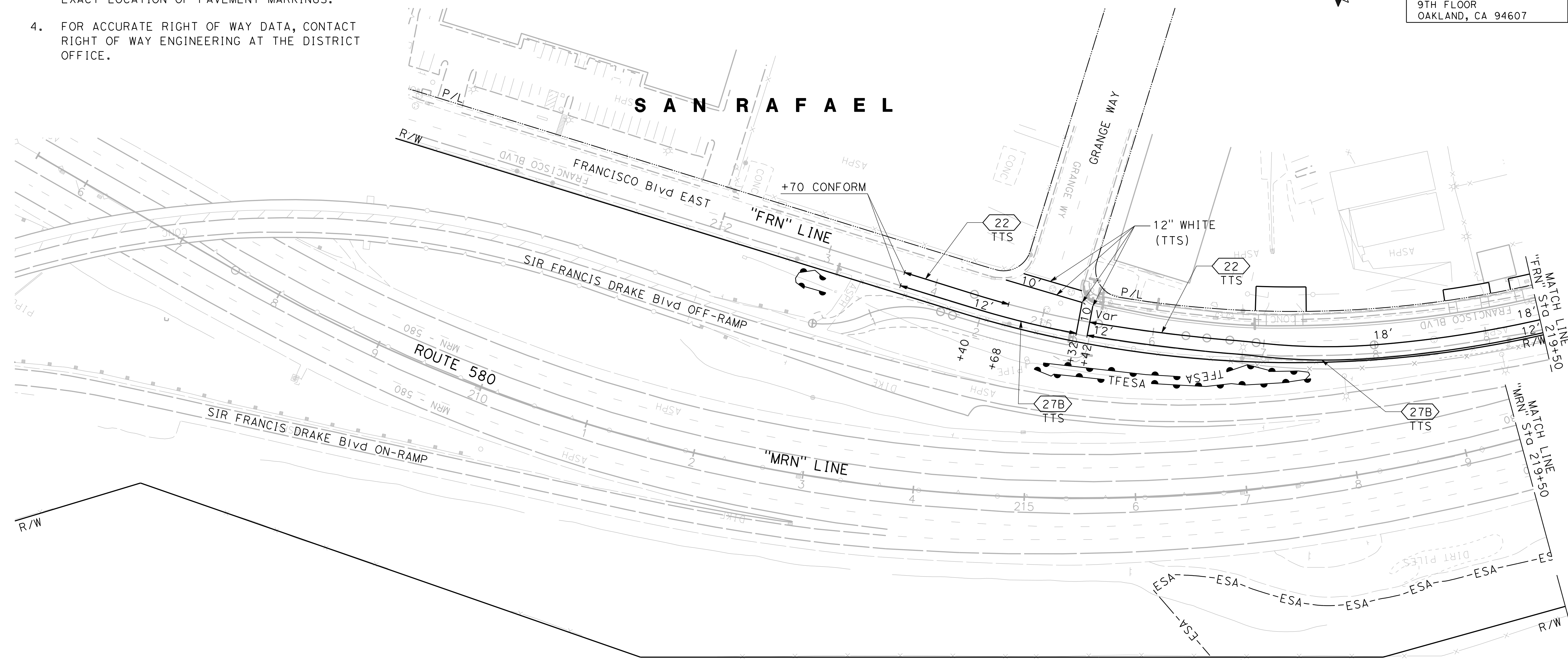
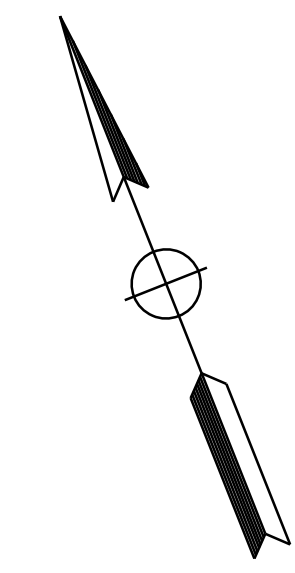
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		
REGISTERED CIVIL ENGINEER DATE					
PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
HNTB CORPORATION 1111 BROADWAY OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		

**NOTES:**

- ALL PAVEMENT STRIPES AND MARKINGS SHALL BE ENHANCED WET NIGHT VISIBILITY THERMOPLASTIC UNLESS OTHERWISE NOTED ON THE PLANS.
- CONFLICTING STRIPING AND PAVEMENT MARKINGS SHALL BE REMOVED PRIOR TO THE INSTALLATION OF NEW STRIPING AND PAVEMENT MARKINGS.
- SEE PAVEMENT DELINEATION QUANTITIES FOR EXACT LOCATION OF PAVEMENT MARKINGS.
- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

**LEGEND:**

- BEGIN/END OF TRAFFIC STRIPE DETAIL
- CHANGE OF TRAFFIC STRIPE DETAIL
- BEGIN OR END TRANSITION
- TTS THERMOPLASTIC TRAFFIC STRIPE OR PAVEMENT MARKING
- (P) PAINT (1 COAT OR 2 COAT)
- ESA — LIMITS OF ESA
- TFESA — TEMPORARY FENCE (TYPE ESA) - SEE LAYOUT PLANS



**PAVEMENT DELINEATION PLAN**

SCALE: 1" = 50'

**PD-1**

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	EDWIN XIE	REVISOR
	JAMES PUN	DATE REVISED
CONSULTANT FUNCTIONAL SUPERVISOR	JAMES PUN	CHECKED BY
DESIGNED BY	JAMES PUN	CHECKED BY

USERNAME => rdeleon  
DGN FILE => 0415000402na001.dgn



UNIT 0000

PROJECT NUMBER & PHASE

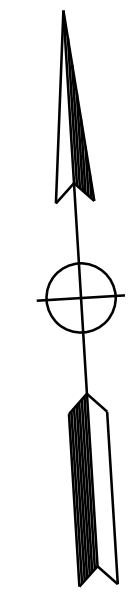
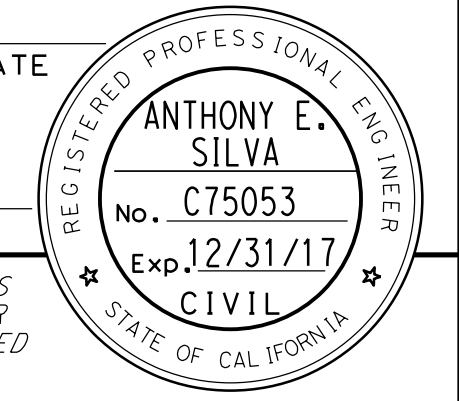
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BORDER LAST REVISED 7/2/2010

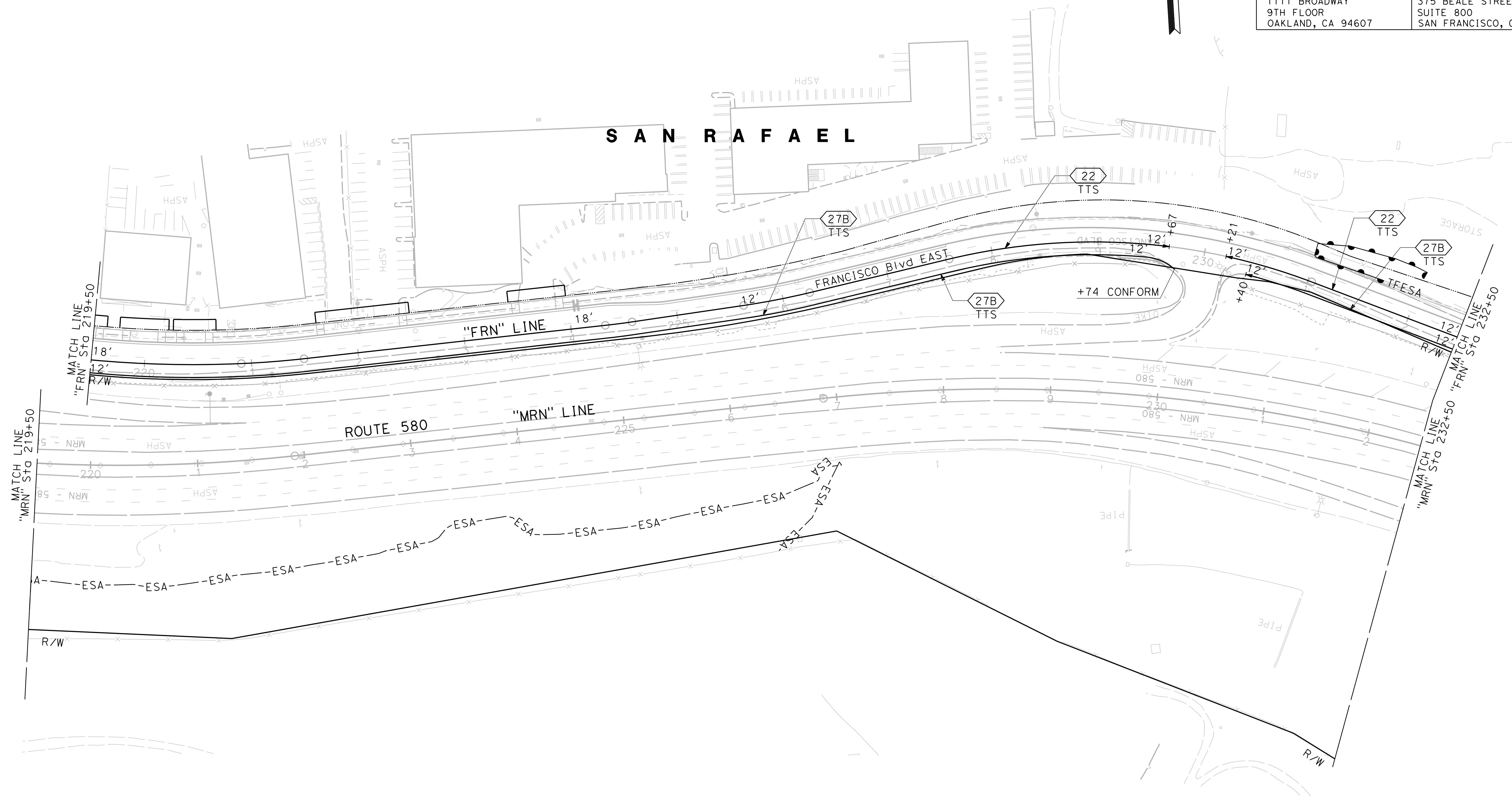
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00-00-00 TIME PLOTTED => 2:37:51 PM



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		
REGISTERED CIVIL ENGINEER DATE					
PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET PD-1

**PAVEMENT DELINEATION PLAN**

SCALE: 1" = 50'

**PD-2**

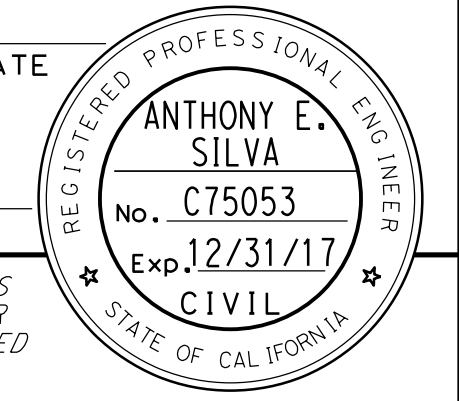
APPROVED FOR PAVEMENT DELINEATION WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR
<b>Caltrans</b>	JAMES PUN	EDWIN XIE	EDWIN XIE
	JAMES PUN	JAMES PUN	JAMES PUN

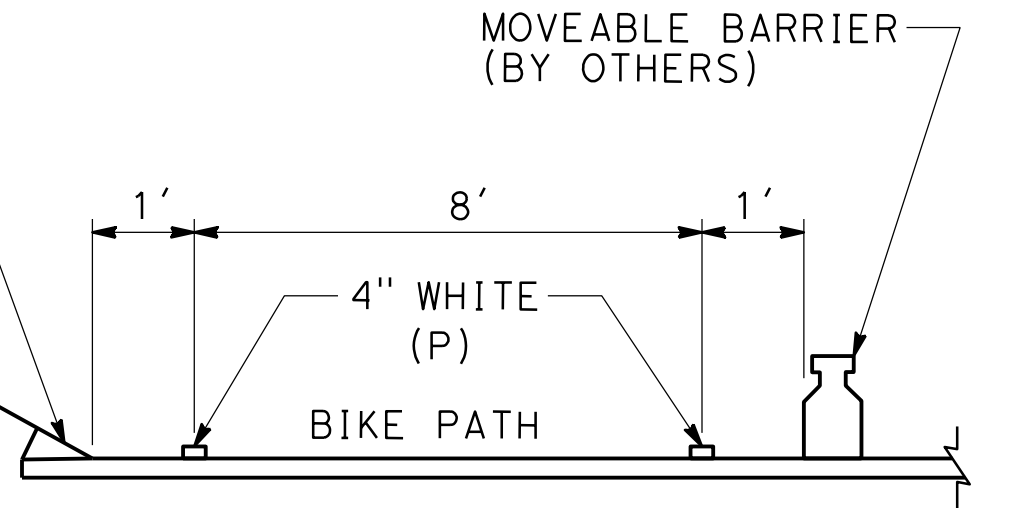
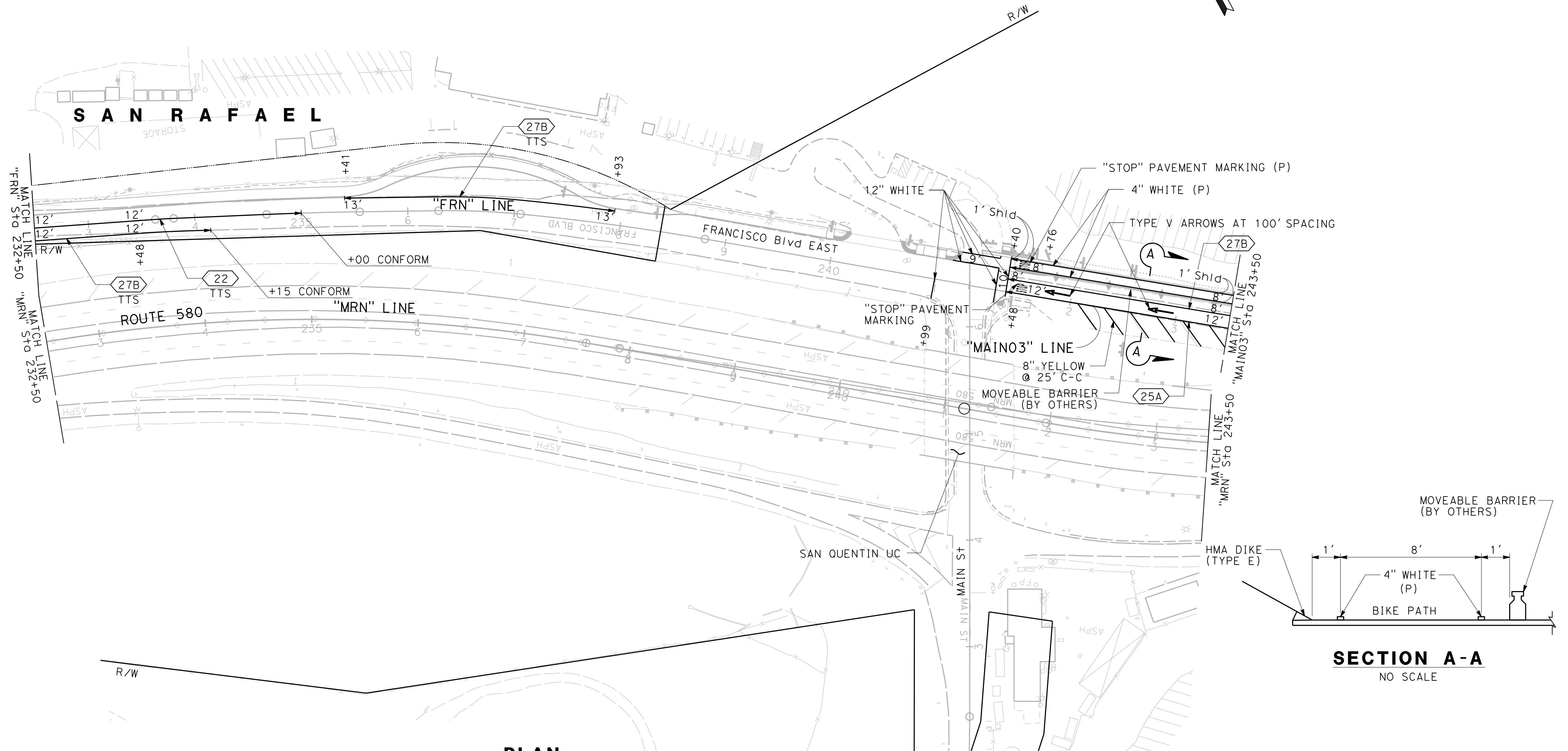
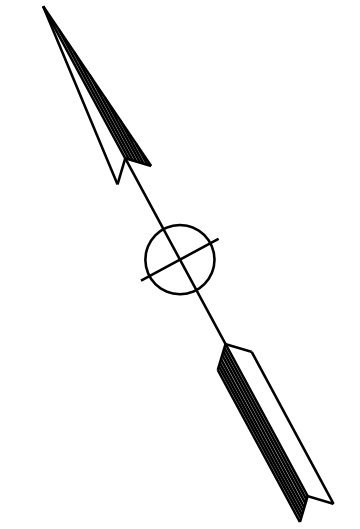
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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		
REGISTERED CIVIL ENGINEER DATE					
PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



**PLAN**  
 SCALE: 1"=50'

**PAVEMENT DELINEATION PLAN**  
 SCALE AS SHOWN

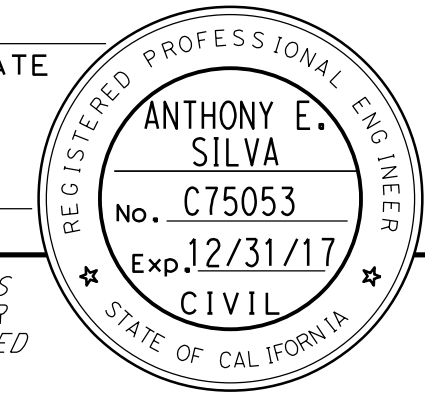
APPROVED FOR PAVEMENT DELINEATION WORK ONLY

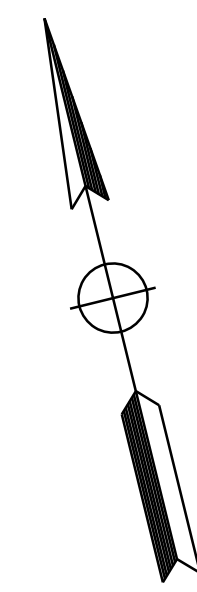
**PD-3**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	EDWIN XIE	REVISOR
Caltrans	JAMES PUN	DATE
	JAMES PUN	REVISOR
	JAMES PUN	DATE
	JAMES PUN	REVISOR
	JAMES PUN	DATE


LAST REVISION DATE PLOTTED => 6/13/2016 00-00-00 TIME PLOTTED => 2:57:54 PM

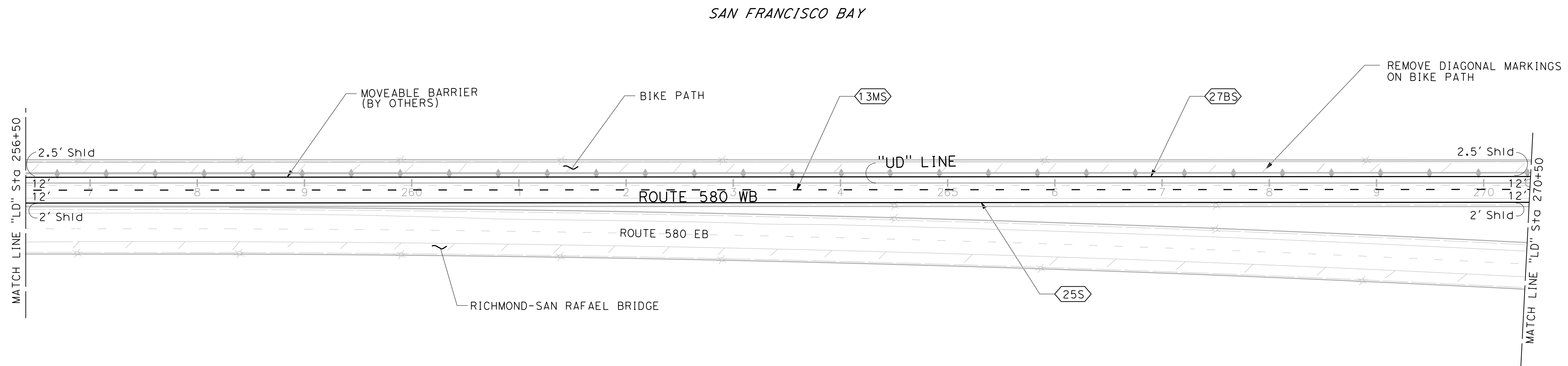


Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		
REGISTERED CIVIL ENGINEER DATE					
PLANS APPROVAL DATE					
					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	EDWIN XIE	REVISOR
	JAMES PUN	DATE
CONSULTANT FUNCTIONAL SUPERVISOR	JAMES PUN	REVISOR
CALCULATED/DESIGNED BY	JAMES PUN	DATE
CHECKED BY	JAMES PUN	DATE



FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET PD-1

# PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

**PD-5**

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

LAST REVISION: 00-00-00    DATE PLOTTED => 6/13/2016    TIME PLOTTED => 2:57:58 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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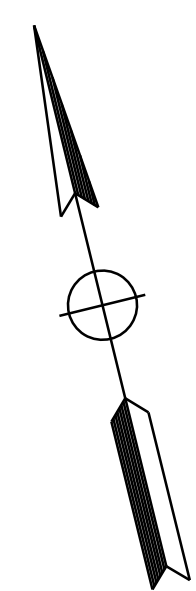
REGISTERED CIVIL ENGINEER	DATE
ANTHONY E. SILVA	
No. C75053	
Exp. 12/31/17	
CIVIL	

PLANS APPROVAL DATE

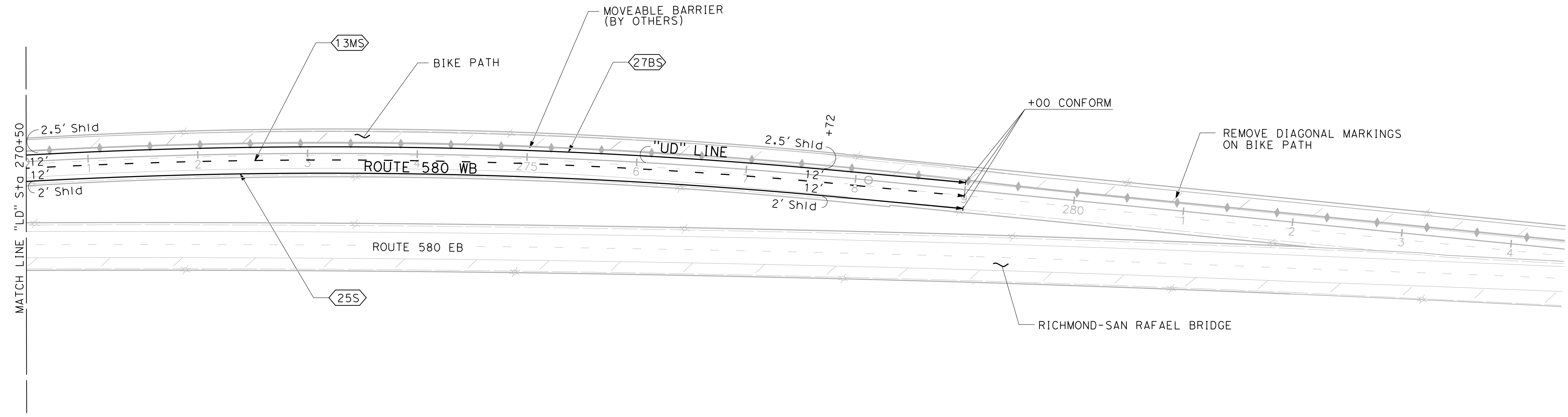
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
---	---

**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



SAN FRANCISCO BAY



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	EDWIN XIE	REVISOR	DATE
Caltrans	JAMES PUN	CHECKED BY	DATE
CONSULTANT FUNCTIONAL SUPERVISOR	JAMES PUN	CALCULATED-DESIGNED BY	

FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET PD-1

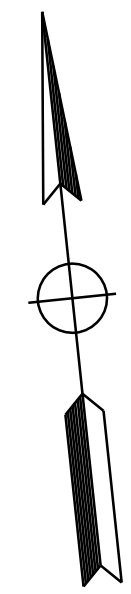
**PAVEMENT DELINEATION PLAN**

SCALE: 1" = 50'

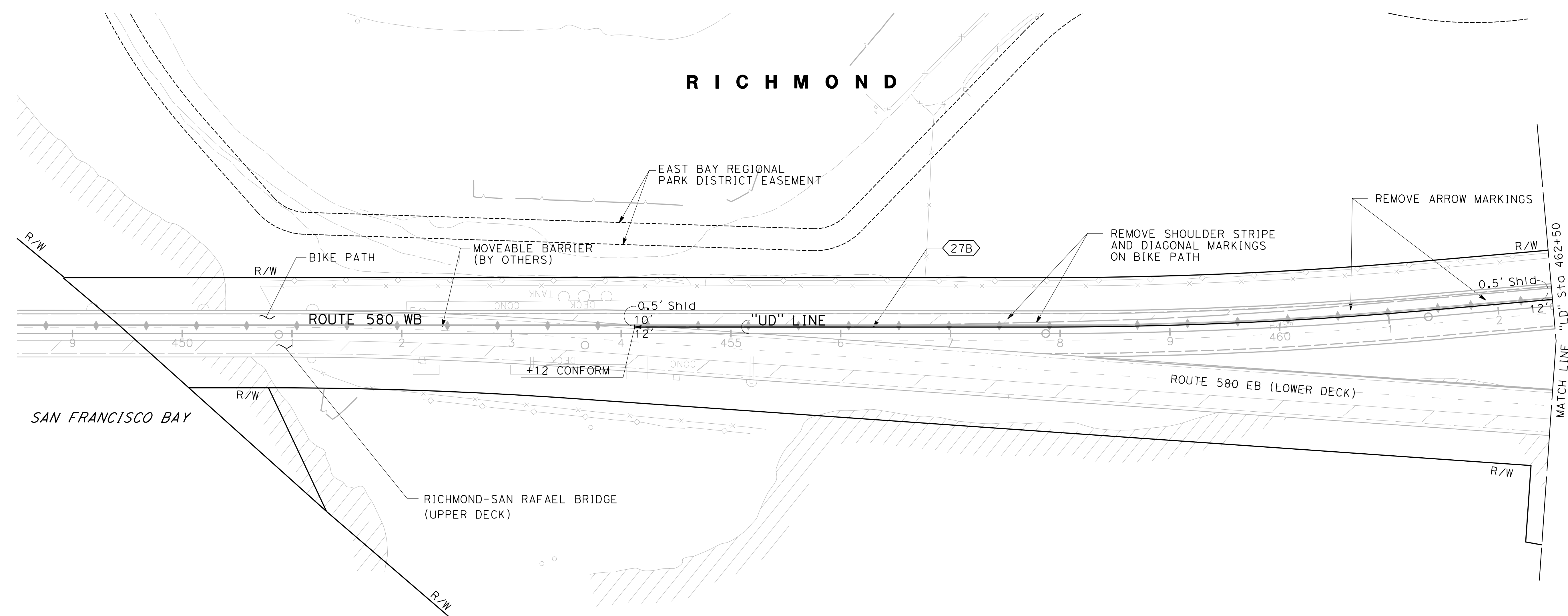
**PD-6**

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		
REGISTERED CIVIL ENGINEER DATE					
PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607			BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105		



**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	EDWIN XIE	REVISOR
	JAMES PUN	DATE
CONSULTANT - FUNCTIONAL SUPERVISOR	JAMES PUN	DESIGNED BY
	JAMES PUN	CHECKED BY

FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET PD-1

**PAVEMENT DELINEATION PLAN**

SCALE: 1" = 50'

**PD-7**

APPROVED FOR PAVEMENT DELINEATION WORK ONLY



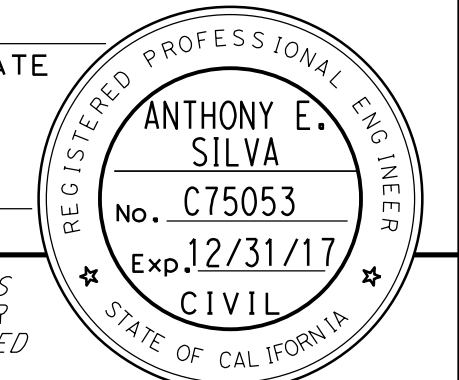
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Mrn	580	6.1/7.8, 0.0/3.2		

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

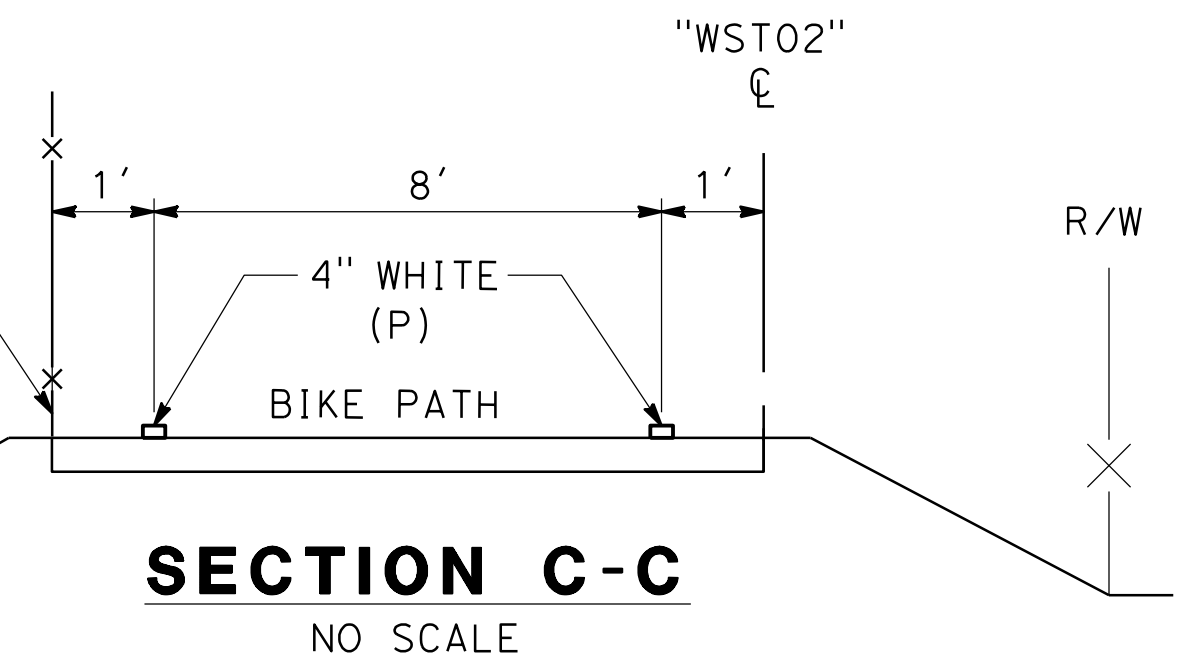
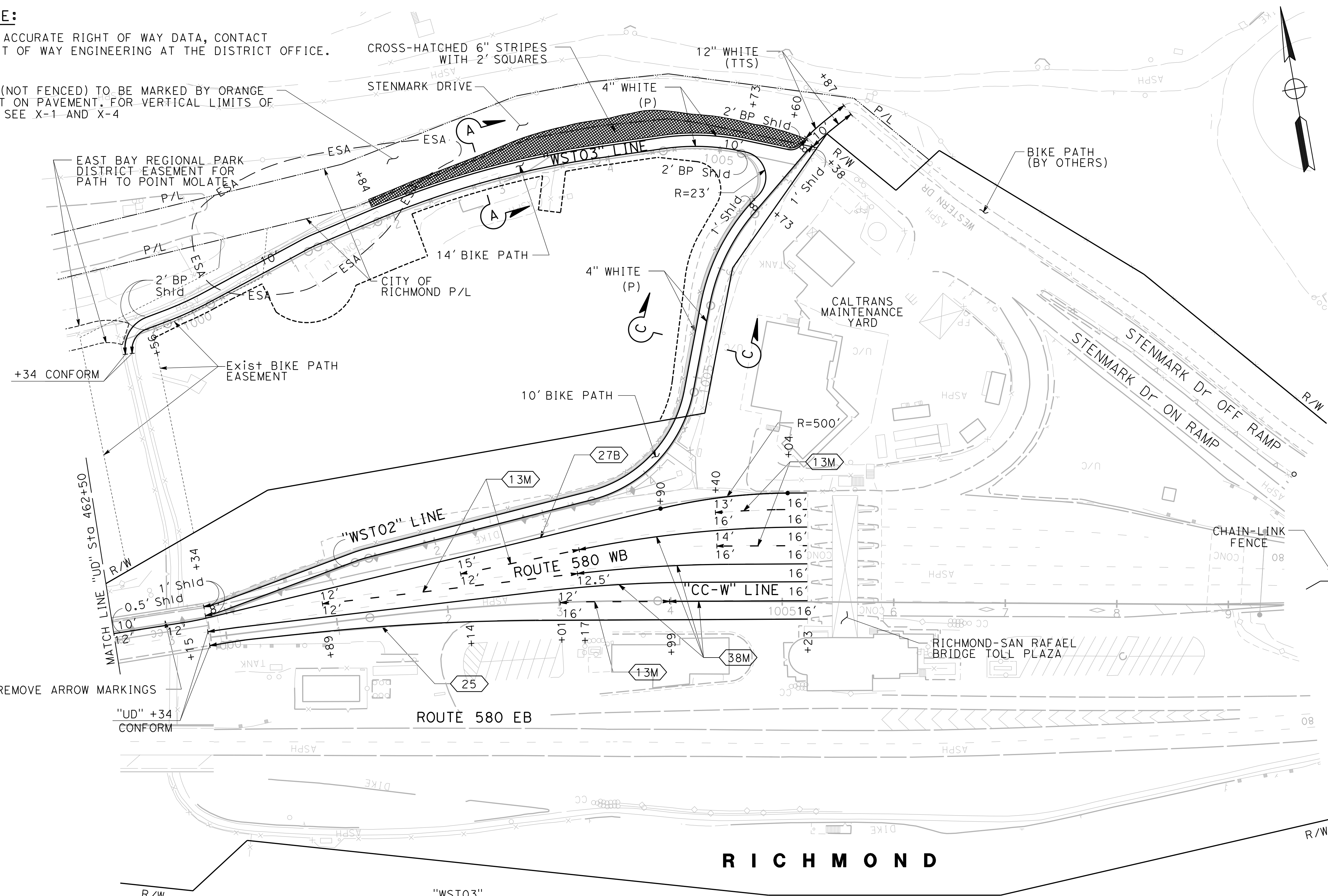
  

HNTB CORPORATION 1111 BROADWAY 9TH FLOOR OAKLAND, CA 94607	BAY AREA TOLL AUTHORITY 375 BEALE STREET SUITE 800 SAN FRANCISCO, CA 94105
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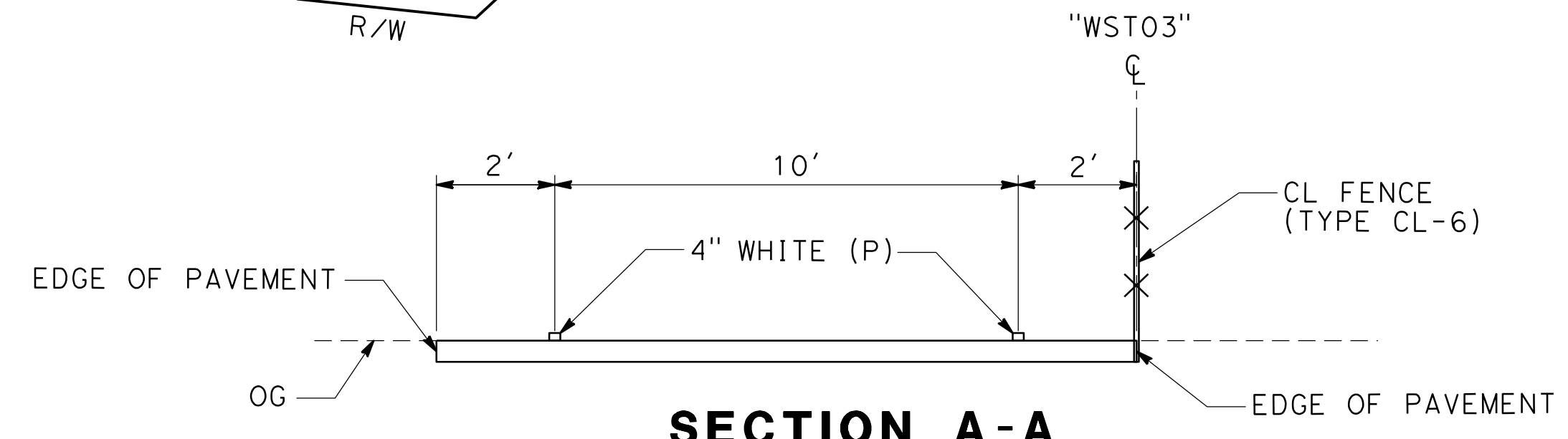


**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

ESA (NOT FENCED) TO BE MARKED BY ORANGE PAINT ON PAVEMENT. FOR VERTICAL LIMITS OF ESA, SEE X-1 AND X-4



**SECTION C-C**  
NO SCALE



**SECTION A-A**  
NO SCALE

**PLAN**

SCALE: 1"=50'

**PAVEMENT DELINEATION PLAN**

SCALE AS SHOWN

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

**PD-8**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	REVISOR	DATE
Ed Caltrans	EDWIN XIE	
	JAMES PUN	
	CHECKED BY	
	JAMES PUN	
	CALCULATED/DESIGNED BY	
	JAMES PUN	
	CONSULTANT FUNCTIONAL SUPERVISOR	
	JAMES PUN	
	REVISOR	
	EDWIN XIE	
	JAMES PUN	
	DATE	
	REVISOR	
	EDWIN XIE	
	JAMES PUN	
	DATE	

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET PD-1



## **Appendix C. Capital Outlay Project Estimate**

PRELIMINARY  
PROJECT COST ESTIMATE

*Project Initiation Cost Estimate*

**Project ID: EA 04-2J6801**

Type of Estimate : PROJECT REPORT  
 Program Code :  
 Project Limits : CC / MRN - 580 - 4.98/7.79, 0.0/3.29  
 Description: Third Eastbound Lane (PPUL) and Two-Way Bike Path on Richmond-San Rafael Bridge  
 Scope : Convert shoulder to travel lane; barrier-separated bike path  
 Project Element: Element 1 - Third Eastbound Lane (PPUL)

	Current Cost	Escalated Cost
ROADWAY ITEMS	\$ 18,116,440	\$ 19,796,323
STRUCTURE ITEMS	\$ 7,024,854	\$ 7,676,247
<b>SUBTOTAL CONSTRUCTION COST</b>	<b>\$ 25,141,294</b>	<b>\$ 27,472,570</b>
RIGHT OF WAY	\$ 1,143,125	\$ 1,257,438
<b>TOTAL CAPITAL OUTLAY COST</b>	<b>\$ 26,285,000</b>	<b>\$ 28,731,000</b>
PR/ED SUPPORT	\$ 2,153,500	\$ 2,153,500
PS&E SUPPORT	\$ 2,345,600	\$ 2,345,600
RIGHT OF WAY SUPPORT	\$ 30,000	\$ 30,000
PROJECT OVERSIGHT	\$ 2,514,100	\$ 2,514,100
CONSTRUCTION SUPPORT	\$ 3,143,700	\$ 3,143,700
<b>TOTAL CAPITAL OUTLAY SUPPORT COST*</b>	<b>\$ 10,186,900</b>	<b>\$ 10,186,900</b>
<b>TOTAL PROJECT COST</b>	<b>\$ 36,500,000</b>	<b>\$ 38,950,000</b>

If Project has been programmed enter Programmed Amount \$ -  
 Date of Estimate (Month/Year) Month / Year  
 7 / 2016  
 Estimated Date of Construction Start (Month/Year) 11 / 2016  
 Number of Working Days 370 Working Days  
 Estimated Mid-Point of Construction (Month/Year) Month / Year  
 July 2017  
 Number of Plant Establishment Days 360 Days

*Estimated Project Schedule*

PID Approval	November	2015
PAVED Approval	July	2016
PS&E	July	2016
RTL	N/A	
Begin Construction	November	2016

Approved by Project  
Manager



Project Manager

7/27/2016

Date

510.587.8629

Phone

## I. ROADWAY ITEMS SUMMARY

Section	Cost
1 Earthwork	\$ 703,900
2 Pavement Structural Section	\$ 1,713,100
3 Drainage	\$ 515,800
4 Specialty Items	\$ 1,197,000
5 Environmental	\$ 581,000
6 Traffic Items	\$ 5,388,600
7 Detours	\$ -
8 Minor Items	\$ 1,010,000
9 Roadway Mobilization	\$ 1,110,940
10 Supplemental Work	\$ 1,255,000
11 Agency Furnished	\$ 598,000
12 Contingencies	\$ 2,363,100
13 Overhead	\$ 1,680,000
<b>TOTAL ROADWAY ITEMS</b>	
	<b>\$ 18,116,440</b>

Estimate Prepared By James Pun 6/27/2016  
Name and Title Date Phone

Estimate Reviewed By Chadi Chazbek 6/27/2016  
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.**

PRELIMINARY  
PROJECT COST ESTIMATE

**SECTION 1: EARTHWORK**

---

Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
160102 Clearing & Grubbing	LS	1	x 65,000.00	= \$ 65,000
170101 Develop Water Supply	LS	1	x 11,000.00	= \$ 11,000
190101 Roadway Excavation	CY	2,850	x 20.00	= \$ 57,000
190105 Roadway Excavation (Type Z-2) ADL	CY	1,400	x 385.00	= \$ 539,000
193119 Lean Concrete Backfill	CY	118	x 264.00	= \$ 31,152
198050 Embankment	CY	24	x 30.00	= \$ 720

<b>TOTAL EARTHWORK SECTION ITEMS</b>	<b>\$ 703,900</b>
--------------------------------------	-------------------

**SECTION 2: PAVEMENT STRUCTURAL SECTION**

---

Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
150860 Remove Base and Surfacing	CY	120	x 50.00	= \$ 6,000
153103 Cold Plane Asphalt Concrete Pavement	SQYD	57,058	x 3.00	= \$ 171,174
250201 Class 2 Aggregate Subbase	CY	2,000	x 60.00	= \$ 120,000
260303 Class 3 Aggregate Base	CY	700	x 45.00	= \$ 31,500
290201 Asphalt Treated Permeable Base	CY	100	x 415.00	= \$ 41,500
280000 Lean Concrete Base	CY	760	x 180.00	= \$ 136,800
390132 Hot Mix Asphalt (Type A)	TON	5,750	x 115.00	= \$ 661,250
390401 Hot Mix Asphalt (Open Graded)	TON	1,450	x 200.00	= \$ 290,000
394071 Place Hot Mix Asphalt Dike	LF	109	x 5.00	= \$ 545
394090 Place Hot Mix Asphalt (Misc. Area)	SQYD	1,500	x 50.00	= \$ 75,000
731502 Minor Concrete (Misc. Const)	CY	4	x 625.00	= \$ 2,500
731530 Minor Concrete (Textured Paving)	CY	50	x 500.00	= \$ 25,000
731627 Minor Concrete (Curb, Sidewalk, and Curb Ramp)	CY	230	x 660.00	= \$ 151,800

<b>TOTAL STRUCTURAL SECTION ITEMS</b>	<b>\$ 1,713,100</b>
---------------------------------------	---------------------

PRELIMINARY  
PROJECT COST ESTIMATE

**SECTION 3: DRAINAGE**

Item code	Unit	Quantity		Unit Price (\$)		Cost
150206 Abandon Culvert	LF	300	x	200.00	= \$	60,000
150805 Remove Culvert	LF	735	x	100.00	= \$	73,500
150820 Remove Inlet	EA	14	x	1,200.00	= \$	16,800
152609 Modify Inlet to Manhole	EA	2	x	3,250.00	= \$	6,500
152430 Adjust Inlet	EA	2	x	2,100.00	= \$	4,200
155003 Cap Inlet	EA	3	x	1,500.00	= \$	4,500
510502 Minor Concrete (Minor Structure)	CY	44	x	1,650.00	= \$	72,600
620080 15" APC Pipe	LF	55	x	155.00	= \$	8,525
620100 18" APC Pipe	LF	702	x	162.00	= \$	113,724
620140 24" APC Pipe	LF	446	x	200.00	= \$	89,200
620715 18" Alternative Slotted Pipe	LF	150	x	110.00	= \$	16,500
208740 12" Plastic Pipe	LF	57	x	70.00	= \$	3,990
681103 3" Plastic Pipe (Edge Drain)	LF	400	x	35.00	= \$	14,000
700617 Drainage Inlet Marker	EA	15	x	67.00	= \$	1,005
750001 Miscellaneous Iron and Steel	LB	10,225	x	3.00	= \$	30,675

<b>TOTAL DRAINAGE ITEMS</b>	<b>\$ 515,800</b>
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**SECTION 4: SPECIALTY ITEMS**

Item code	Unit	Quantity		Unit Price (\$)		Cost
070030 Lead Compliance Plan	LS	1	x	5,000.00	= \$	5,000
080030 Progress Schedule (Critical Path Method)	LS	1	x	3,000.00	= \$	3,000
150605 Remove Fence	LF	485	x	6.00	= \$	2,910
150662 Remove Metal Beam Guard Railing	LF	570	x	12.00	= \$	6,840
153230 Remove Concrete Barrier (Type 50)	LF	1,820	x	50.00	= \$	91,000
51XXXX Utility Culvert Extension	LS	1	x	118,227.00	= \$	118,227
800360 Chain Link Fence (Type CL-6)	LF	80	x	35.00	= \$	2,800
832007 Midwest Guardrail System	LF	970	x	30.00	= \$	29,100
839543 Transition Railing (Type WB-31)	EA	3	x	4,300.00	= \$	12,900
839584 Alternative In-Line Terminal System	EA	1	x	3,500.00	= \$	3,500
839585 Alternative Flared Terminal System	EA	4	x	2,750.00	= \$	11,000
839581 End Anchor Assembly ( <i>Insert Type</i> )	EA	1	x	800.00	= \$	800
839603A Crash Cushion ( <i>ABSORB 350</i> )	EA	2	x	5,000.00	= \$	10,000
839701 Concrete Barrier (Type 60XX)	LF	3,000	x	130.00	= \$	390,000
839723A Concrete Barrier (Type 732B Mod)	LF	1,415	x	225.00	= \$	318,375
833033A Bicycle Railing	LF	1,415	x	100.00	= \$	141,500
100000A Shuttle Service	LS	1	x	50,000.00	= \$	50,000

<b>TOTAL SPECIALTY ITEMS</b>	<b>\$ 1,197,000</b>
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**SECTION 5: ENVIRONMENTAL**

**5A - ENVIRONMENTAL MITIGATION**

Item code	Unit	Quantity		Unit Price (\$)		Cost
071325 Temporary Fence (Type ESA)	LF	3,680	x	5.00	= \$	18,400
141120 Treated Wood Waste	LB	19,200	x	0.50	= \$	9,600
<i>Subtotal Environmental</i>						<b>\$ 28,000</b>

**5B - LANDSCAPE AND IRRIGATION**

Item code	Unit	Quantity		Unit Price (\$)		Cost
200002 ROADSIDE CLEARING	LS	1	x	1,000.00	= \$	1,000
200122 WEED GERMINATION	SQYD	700	x	3.00	= \$	2,100
200123 CULTIVATION	SQYD	700	x	5.00	= \$	3,500
202006 SOIL AMENDMENT	CY	40	x	50.00	= \$	2,000
202039 SLOW-RELEASE FERTILIZER	LB	60	x	5.00	= \$	300
204008A PLANT (GROUP G)	EA	2,500	x	3.00	= \$	7,500
204099 PLANT ESTABLISHMENT WORK	LS	1	x	5,000.00	= \$	5,000
205035 WOOD MULCH	CY	70	x	50.00	= \$	3,500
206400 CHECK AND TEST EXISTING IRRIGATION FACILITIES	LS	1	x	1,000.00	= \$	1,000
206559 CONTROL AND NEUTRAL CONDUCTORS (ARMOR-CLAD)	LS	1	x	200.00	= \$	200
206564 1 1/2" REMOTE CONTROL VALVE	EA	1	x	350.00	= \$	350
206633 1 1/2" WYE STRAINER ASSEMBLY	EA	1	x	400.00	= \$	400
208416 CERTIFY EXISTING BACKFLOW PREVENTERS	LS	1	x	500.00	= \$	500
208426 2" BACKFLOW PREVENTER ASSEMBLY	EA	1	x	6,000.00	= \$	6,000
208442A PLASTIC PIPE IRRIGATION	LF	2,500	x	3.00	= \$	7,500
208575 2" GATE VALVE	EA	1	x	350.00	= \$	350
208588 3" GATE VALVE	EA	1	x	500.00	= \$	500
208595 1" PLASTIC PIPE (SCHEDULE 40) (SUPPLY LINE)	LF	30	x	4.00	= \$	120
208598 2" PLASTIC PIPE (SCHEDULE 40) (SUPPLY LINE)	LF	130	x	7.00	= \$	910
208649 QUICK COUPLING VALVE	EA	1	x	300.00	= \$	300
208683 BALL VALVE	EA	1	x	350.00	= \$	350
208738 8" CORRUGATED HIGH DENSITY POLYETHYLENE PIPE CONDUIT	LF	500	x	70.00	= \$	35,000
<i>Subtotal Landscape and Irrigation</i>						<b>\$ 78,380</b>

**5C - NPDES**

Item code	Unit	Quantity		Unit Price (\$)		Cost
130100 Construction Site Management	LS	1	x	17,000.00	= \$	17,000
210300 HYDROMULCH	SQFT	79,859	x	1.00	= \$	79,859
210420 STRAW	SQFT	79,859	x	1.00	= \$	79,859
210430 HYDROSEED	SQFT	79,859	x	1.00	= \$	79,859
210600 COMPOST	SQFT	79,859	x	1.00	= \$	79,859
210630 INCORPORATE MATERIALS	SQFT	79,859	x	1.00	= \$	79,859
074019 Prepare SWPPP	LS	1	x	5,000.00	= \$	5,000
074028 Temporary Fiber Roll	LF	622	x	4.00	= \$	2,488
074032 Temporary Concrete Washout Facility	EA	4	x	3,500.00	= \$	14,000
074033 Temporary Construction Entrance	EA	3	x	4,000.00	= \$	12,000
074035 Temporary Check Dam	LF	80	x	28.00	= \$	2,240
074038 Temp. Drainage Inlet Protection	EA	100	x	225.00	= \$	22,500

**Supplemental Work for NPDES**

(These costs are not accounted in total here but under Supplemental Work on sheet 7 of 11).

066595 Water Pollution Control Maintenance Sharing*	LS	1	x	35,000.00	= \$	35,000
066596 Additional Water Pollution Control**	LS	1	x	6,000.00	= \$	6,000
066597 Storm Water Sampling and Analysis***	LS	1	x	6,000.00	= \$	6,000

*Subtotal NPDES (Without Supplemental Work)* **\$ 474,523**

\*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.

<b>TOTAL ENVIRONMENTAL</b>	<b>\$ 581,000</b>
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**SECTION 6: TRAFFIC ITEMS**

**6A - Traffic Electrical**

Item code	Unit	Quantity	Unit Price (\$)	Cost
550203 Furnish Structural Steel (Bridge)(LUS)	LB	16,950 x	4.10 = \$	69,495
550204 Erect Structural Steel (Bridge)(LUS)	LB	16,950 x	7.60 = \$	128,820
5602XX Furnish Sign Structure (CMS)	LS	1 x	57,200.00 = \$	57,200
5602XX Install Sign Structure (CMS)	LS	1 x	14,300.00 = \$	14,300
56XXXX 60" CIDHC Pile (Sign Foundation)	LF	23 x	1,600.00 = \$	36,800
860090 Maintain Existing Traffic Management System Elements During Construction	LS	1 x	20,000.00 = \$	20,000
86055X Lighting & Sign Illumination	LS	1 x	107,000.00 = \$	107,000
8609XX Traffic Monitoring Stations	EA	7 x	40,000.00 = \$	280,000
860XXX Modify Signals & Lighting (3 Locations)	LS	1 x	230,000.00 = \$	230,000
8611XX Ramp Metering System (Location 1)	LS	1 x	80,000.00 = \$	80,000
8611XX Ramp Metering System (Location 2)	LS	1 x	80,000.00 = \$	80,000
86XXXX Fiber Optic Conduit System	LS	1 x	800,000.00 = \$	800,000
86XXXX CCTV System	EA	37 x	35,000.00 = \$	1,295,000
86XXXX Changeable Message Sign System	EA	1 x	15,000.00 = \$	15,000
86XXXX Variable Message Sign System	EA	1 x	50,000.00 = \$	50,000
86XXXX Lane Use Sign	EA	60 x	18,000.00 = \$	1,080,000
<i>Subtotal Traffic Electrical</i>				<b>\$ 4,343,615</b>

**6B - Traffic Signing and Striping**

Item code	Unit	Quantity	Unit Price (\$)	Cost
120090 Construction Area Signs	LS	1 x	43,000.00 = \$	43,000
150714 Remove Thermoplastic Traffic Stripe	LF	44,210 x	1.00 = \$	44,210
150715 Remove Thermoplastic Pavement Marking	SQFT	2,000 x	4.00 = \$	8,000
150722 Remove Pavement Marker	EA	2,000 x	2.00 = \$	4,000
150744 Remove Roadside Sign (Wood Post)	EA	14 x	165.00 = \$	2,310
150747 Remove Roadside Sign (SSBM)	EA	15 x	77.00 = \$	1,155
152390 Relocate Roadside Sign	EA	30 x	382.00 = \$	11,460
820134 OBJECT MARKER (TYPE P)	EA	5	130.00 = \$	650
820151 OBJECT MARKER (TYPE L-1)	EA	2	130.00 = \$	260
566011 Roadside Sign (One Post)	EA	25 x	225.00 = \$	5,625
560XXX Furnish Sign Panels	SQFT	500 x	24.00 = \$	12,000
XXXXXX Roadside Sign (SSBM)	EA	28 x	115.00 = \$	3,220
8405XX Thermoplastic Traffic Stripe	LF	100,000 x	1.20 = \$	120,000
8405XX Pavement Marking	SQFT	3,500 x	7.50 = \$	26,250
8501xx Pavement Marker	EA	7,000 x	4.50 = \$	31,500
XXXXXX Overhead Sign Structure	EA	1 x	75,000.00 = \$	75,000
<i>Subtotal Traffic Signing and Striping</i>				<b>\$ 388,640</b>

**6C - Stage Construction and Traffic Handling**

Item code	Unit	Quantity	Unit Price (\$)	Cost
120100 Traffic Control System	LS	1 x	200,000.00 = \$	200,000
120119 Traffic Cone	EA	4	50.00 = \$	200
120120 Type III Barricade	EA	8 x	110.00 = \$	880
120143 Temporary Pavement Delineation	LF	30,000 x	1.00 = \$	30,000
12016X Channelizer	EA	80 x	40.00 = \$	3,200
128650 Portable Changeable Message Signs	EA	3 x	5,000.00 = \$	15,000
129000 Temporary Railing (Type K)	LF	12,000 x	18.00 = \$	216,000
129100 Temp. Crash Cushion Module	EA	120 x	250.00 = \$	30,000
128660 Temporary Flashing Beacon	EA	2 x	8,000.00 = \$	16,000
129100A Temporary Crash Cushion (Type ABSORD 350)	EA	10 x	4,000.00 = \$	40,000
129150A Temporary Curb Ramp	EA	1 x	6,000.00 = \$	6,000
860297A Signal and Lighting (Stage Construction)	LS	1 x	10,000.00 = \$	10,000
860468A Lighting and Sign Illumination (Stage Construction)	LS	1 x	56,000.00 = \$	56,000
861547A Traffic Operations System (Stage Construction)	LS	1 x	33,000.00 = \$	33,000
<i>Subtotal Stage Construction and Traffic Handling</i>				<b>\$ 656,280</b>

<b>TOTAL TRAFFIC ITEMS</b>	<b>\$ 5,388,600</b>
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**SECTION 7: DETOURS**

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Item code	Unit	Quantity	Unit Price (\$)	Cost
				<b>TOTAL DETOURS</b> \$      -
				SUBTOTAL SECTIONS 1-7      \$    10,099,400

**SECTION 8: MINOR ITEMS**

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<b>8A - Americans with Disabilities Act Items</b>				
ADA Items			1.0%	\$    100,994
<b>8B - Bike Path Items</b>				
Bike Path Items			2.0%	\$    201,988
<b>8C - Other Minor Items</b>				
Other Minor Items			7.0%	\$    706,958
Total of Section 1-7	\$	10,099,400	x    10.0%	= \$    1,009,940
				<b>TOTAL MINOR ITEMS</b> \$    1,010,000

**SECTIONS 9: MOBILIZATION**

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Item code				
999990	Total Section 1-8	\$	11,109,400	x    10%      = \$    1,110,940
				<b>TOTAL MOBILIZATION</b> \$    1,110,940

**SECTION 10: SUPPLEMENTAL WORK**

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Item code	Unit	Quantity	Unit Price (\$)	Cost
066070	Maintain Traffic	LS	1	x 140,000.00 = \$    140,000
066074	Traffic Control	LS	1	x 75,000.00 = \$     75,000
066083A	Repair Damaged Temporary Crash Cushion Modules	LS	1	x 10,000.00 = \$     10,000
066511A	Bridge Deck Grind and Overlay	LS	1	x 500,000.00 = \$   500,000
066670	Payment Adjustments For Price Index Fluct	LS	1	x 35,500.00 = \$     35,500
066700	Partnering	LS	1	x 40,000.00 = \$     40,000
066510	Repair Bridge	LS	1	x 350,000.00 = \$   350,000
066866	Operation of Existing Traffic Management System Elements During Construction	LS	1	x 50,000.00 = \$     50,000
066919	Dispute Resolution Board	LS	1	x 7,500.00 = \$      7,500
<u>Cost of NPDES Supplemental Work specified in Section 5C</u>				≡ \$    47,000
Total Section 1-8		\$	11,109,400	x    0%      = \$           -
				<b>TOTAL SUPPLEMENTAL WORK</b> \$    1,255,000



## II. STRUCTURE ITEMS

	<b>Bridge 1</b>		<b>Bridge 2</b>		<b>Bridge 3</b>	
	RW 1 - On Main Street		RW 2 - Main St. Sidewalk		RW 3 - Main St. on-ramp	
DATE OF ESTIMATE	04/29/16		04/29/16		04/29/16	
Bridge Name	RW No. 1		RW No. 2		Type 7 RW	
Bridge Number	27E0068		27E0069		27E0070	
Structure Type	Type 7 RW		Type 7 RW		Type 7 RW	
Wall Height	11.70	LF (max)	11.00	LF (max)	9.20	LF (max)
Total Bridge Length (Feet)	170.50	LF	68.00	LF	132.90	LF
Total Area (Square Feet)	1558	SQFT	558	SQFT	953	SQFT
Structure Depth (Feet)	0.00	LF	0.00	LF	0.00	LF
Footing Type (pile or spread)	Spread		Spread		Spread	
Cost Per Square Foot	\$271.51		\$378.46		\$264.60	

<b>COST OF EACH STRUCTURE</b>	<b>\$423,012.58</b>		<b>\$211,180.68</b>		<b>\$252,163.80</b>
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	<b>Bridge 4</b>		<b>Bridge 5</b>		<b>Bridge 6</b>	
	RW 4 - East of Scofield UC		RW 6 - Main St. on-ramp		RW No. 7 - East of Scofield UC	
DATE OF ESTIMATE	04/29/16		04/29/16		04/29/16	
Bridge Name	RW No. 4		RW No. 6		RW No. 7	
Bridge Number	28E0215		27E0071		28E0217	
Structure Type	Soil Nail Wall		Type 7RW		Soil Nail Wall	
Wall Height	48.00	LF (max)	11.30	LF (max)	7.80	LF (max)
Total Bridge Length (Feet)	531.70	LF	327.40	LF	124.90	LF
Total Area (Square Feet)	18214	SQFT	2031.00	SQFT	2560.0	SQFT
Structure Depth (Feet)	0.00	LF	0.00	LF	0.00	LF
Footing Type (pile or spread)	soil nail wall		xxxxxxxxxxxxxxxxxxxxxx		soil nail wall	
Cost Per Square Foot	\$223.84		\$686.44		\$260.67	

<b>COST OF EACH STRUCTURE</b>	<b>\$4,077,021.76</b>		<b>\$1,394,159.64</b>		<b>\$667,315.20</b>
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<b>TOTAL COST OF BRIDGES</b>	<b>\$7,024,853.66</b>
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<b>TOTAL COST OF BUILDINGS</b>	<b>\$0.00</b>
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<b>TOTAL COST OF STRUCTURES<sup>1</sup></b>	<b>\$7,024,853.66</b>
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Estimate Prepared By: James Pun  
Division of Structures

6/27/2016  
Date

<sup>1</sup>Structure's Estimate includes Overhead and Mobilization.  
Add more sheets if needed. Call them 9a, 9b, 9c, ..., etc

PRELIMINARY  
PROJECT COST ESTIMATE

**Project Initiation Cost Estimate**

**Project ID: EA 04-2J6801**

Type of Estimate : PROJECT REPORT  
 Program Code :  
 Project Limits : CC / MRN - 580 - 4.98/7.79, 0.0/3.29  
 Description: Third Eastbound Lane (PPUL) and Two-Way Bike Path on Richmond-San Rafael Bridge  
 Scope : Convert shoulder to travel lane; barrier-separated bike path  
 Project Element : Element 2 - Bike Path in Contra Costa County

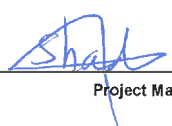
	Current Cost	Escalated Cost
ROADWAY ITEMS	\$ 4,313,810	\$ 4,713,817
STRUCTURE ITEMS	\$ 2,127,800	\$ 2,325,105
SUBTOTAL CONSTRUCTION COST	\$ 6,441,610	\$ 7,038,922
RIGHT OF WAY (included in Element 1)	\$ -	\$ -
<b>TOTAL CAPITAL OUTLAY COST</b>	<b>\$ 6,442,000</b>	<b>\$ 7,039,000</b>
PR/ED SUPPORT	\$ 289,000	\$ 289,000
PS&E SUPPORT	\$ 314,800	\$ 314,800
RIGHT OF WAY SUPPORT	\$ -	\$ -
PROJECT OVERSIGHT	\$ 644,100	\$ 644,100
CONSTRUCTION SUPPORT	\$ 805,200	\$ 805,200
<b>TOTAL CAPITAL OUTLAY SUPPORT COST*</b>	<b>\$ 2,053,100</b>	<b>\$ 2,053,100</b>
<b>TOTAL PROJECT COST</b>	<b>\$ 8,500,000</b>	<b>\$ 9,100,000</b>

If Project has been programmed enter Programmed Amount \$ -  
 Date of Estimate (Month/Year) Month / Year 7 / 2016  
 Estimated Date of Construction Start (Month/Year) 11 / 2016  
 Number of Working Days 370 Working Days  
 Estimated Mid-Point of Construction (Month/Year) Month / Year July 2017  
 Number of Plant Establishment Days 360 Days

**Estimated Project Schedule**

PID Approval November 2015  
 PAVED Approval July 2016  
 PS&E July 2016  
 RTL N/A  
 Begin Construction November 2016

Approved by Project Manager

 7/27/16 510-587-8629  
 Project Manager Date Phone

## I. ROADWAY ITEMS SUMMARY

Section	Cost
1 Earthwork	\$ 171,800
2 Pavement Structural Section	\$ 570,200
3 Drainage	\$ 152,000
4 Specialty Items	\$ 840,100
5 Environmental	\$ 120,700
6 Traffic Items	\$ 608,900
7 Detours	\$ -
8 Minor Items	\$ 246,400
9 Roadway Mobilization	\$ 271,010
10 Supplemental Work	\$ 228,000
11 Agency Furnished	\$ 150,000
12 Contingencies	\$ 562,700
13 Overhead	\$ 392,000
<b>TOTAL ROADWAY ITEMS</b>	
	<b>\$ 4,313,810</b>

Estimate Prepared By James Pun 6/27/2016  
Name and Title Date Phone

Estimate Reviewed By James Pun 6/27/2016  
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.**



PRELIMINARY  
PROJECT COST ESTIMATE

**SECTION 1: EARTHWORK**

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Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
160101 Clearing & Grubbing	LS	1	x 10,000.00	= \$ 10,000
170101 Develop Water Supply	LS	1	x 11,000.00	= \$ 11,000
190101 Roadway Excavation	CY	800	x 20.00	= \$ 16,000
190105 Roadway Excavation (Type Z-2) ADL	CY	350	x 385.00	= \$ 134,750

<b>TOTAL EARTHWORK SECTION ITEMS</b>	<b>\$ 171,800</b>
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**SECTION 2: PAVEMENT STRUCTURAL SECTION**

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Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
153103 Cold Plane Asphalt Concrete Pavement	SQYD	12,942	x 3.00	= \$ 38,826
250201 Class 2 Aggregate Subbase	CY	500	x 60.00	= \$ 30,000
260303 Class 3 Aggregate Base	CY	200	x 45.00	= \$ 9,000
390132 Hot Mix Asphalt (Type A)	TON	1,000	x 115.00	= \$ 115,000
390134A Hot Mix Asphalt (Cross Slope Correction)	TON	750	x 220.00	= \$ 165,000
390401 Hot Mix Asphalt (Open Graded)	TON	400	x 200.00	= \$ 80,000
394071 Place Hot Mix Asphalt Dike	LF	336	x 5.00	= \$ 1,680
394090 Place Hot Mix Asphalt (Misc. Area)	SQYD	2,600	x 50.00	= \$ 130,000
410096 Drill and Bond	EA		x 29.00	= \$ -
460300 Soil Nail	LF		x 109.00	= \$ -
731502 Minor Concrete (Misc. Const)	CY	1	x 625.00	= \$ 625
750501 MISCELLANEOUS METAL (BRIDGE)	LB		x 16.00	= \$ -

<b>TOTAL STRUCTURAL SECTION ITEMS</b>	<b>\$ 570,200</b>
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PRELIMINARY  
PROJECT COST ESTIMATE

**SECTION 3: DRAINAGE**

Item code	Unit	Quantity		Unit Price (\$)		Cost
150805 Remove Culvert	LF	5	x	100.00	= \$	500
150820 Remove Inlet	EA	2	x	1,200.00	= \$	2,400
152430 Adjust Inlet	EA	1	x	2,100.00	= \$	2,100
152440 Adjust Manhole to Grade	LF	4	x	1,150.00	= \$	4,600
510502 Minor Concrete (Minor Structure)	CY	26	x	1,650.00	= \$	42,900
620080 15" APC Pipe	LF	25	x	155.00	= \$	3,875
620100 18" APC Pipe	LF	508	x	162.00	= \$	82,296
620140 24" APC Pipe	LF	4	x	200.00	= \$	800
700617 Drainage Inlet Marker	EA	9	x	67.00	= \$	603
750001 Miscellaneous Iron and Steel	LB	3,955	x	3.00	= \$	11,865

<b>TOTAL DRAINAGE ITEMS</b>	<b>\$ 152,000</b>
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**SECTION 4: SPECIALTY ITEMS**

Item code	Unit	Quantity		Unit Price (\$)		Cost
080050 Progress Schedule (Critical Path Method)	LS	1	x	3,000.00	= \$	3,000
150662 Remove Metal Beam Guard Railing	LF	210	x	12.00	= \$	2,520
150605 Remove Fence	LF	495	x	6.00	= \$	2,970
511035 Architectural Treatment	SQFT		x	35.00	= \$	-
510053 Structural Concrete, Bridge	CY		x	2,986.00	= \$	-
153225 Prepare Concrete Bridge Deck Surface	SQFT		x	4.00	= \$	-
530200 STRUCTURAL SHOTCRETE	CY		x	735.00	= \$	-
750500A REMOVABLE STEEL BOLLARD	EA	2	x	800.00	= \$	1,600
800360 Chain Link Fence (Type CL-6)	LF	440	x	35.00	= \$	15,400
800400A Chain Link Railing (Type CL-8 Mod)	LF	465	x	130.00	= \$	60,450
839603A Crash Cushion (ABSORB 350)	EA	1	x	5,000.00	= \$	5,000
839723A Concrete Barrier (Type 732B Mod)	LF	2,305	x	225.00	= \$	518,625
833033A Bicycle Railing	LF	2,305	x	100.00	= \$	230,500

<b>TOTAL SPECIALTY ITEMS</b>	<b>\$ 840,100</b>
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**SECTION 5: ENVIRONMENTAL**

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**5A - ENVIRONMENTAL MITIGATION**

Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
141000 Temporary Fence (Type ESA)	LF	850 x	5.00 = \$	4,250
<u>Subtotal Environmental</u>				<u>\$ 4,250</u>

**5B - LANDSCAPE AND IRRIGATION**

Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
<u>Subtotal Landscape and Irrigation</u>				<u>\$ -</u>

**5C - NPDES**

Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
130100 Construction Site Management	LS	1 x	8,000.00 = \$	8,000
210300 HYDROMULCH	SQFT	17,851 x	1.00 = \$	17,851
210420 STRAW	SQFT	17,851 x	1.00 = \$	17,851
210430 HYDROSEED	SQFT	17,851 x	1.00 = \$	17,851
210600 COMPOST	SQFT	17,851 x	1.00 = \$	17,851
210630 INCORPORATE MATERIALS	SQFT	17,851 x	1.00 = \$	17,851
074019 Prepare SWPPP	LS	1 x	2,500.00 = \$	2,500
074028 Temporary Fiber Roll	LF	548 x	4.00 = \$	2,192
074033 Temporary Construction Entrance	EA	2 x	4,000.00 = \$	8,000
074035 Temporary Check Dam	LF	30 x	28.00 = \$	840
074038 Temp. Drainage Inlet Protection	EA	25 x	225.00 = \$	5,625

**Supplemental Work for NPDES**

(These costs are not accounted in total here but under Supplemental Work on sheet 7 of 11).

Subtotal NPDES (Without Supplemental Work)    \$ 116,412

\*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.

<b>TOTAL ENVIRONMENTAL</b>	<b>\$ 120,700</b>
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**SECTION 6: TRAFFIC ITEMS**

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**6A - Traffic Electrical**

Item code	Unit	Quantity	Unit Price (\$)	Cost
860401 Lighting	LS	1	x 200,000.00 = \$	200,000
860415 Lighting (Stage Construction)	LS	1	x 56,000.00 = \$	56,000
860522A Retangular Rapid Flashing Beacon	LS	1	x 32,000.00 = \$	32,000
860797 Electric Service (Irrigation)	LS	1	x 10,000.00 = \$	10,000
XXXXX Some Item				
<u>Subtotal Traffic Electrical</u>				<u>\$ 298,000</u>

**6B - Traffic Signing and Striping**

Item code	Unit	Quantity	Unit Price (\$)	Cost
120090 Construction Area Signs	LS	1	x 23,000.00 = \$	23,000
150714 Remove Thermoplastic Traffic Stripe	LF	10,000	x 1.00 = \$	10,000
150715 Remove Thermoplastic Pavement Marking	SQFT	340	x 4.00 = \$	1,360
150722 Remove Pavement Marker	EA	270	x 2.00 = \$	540
150742 Remove Roadside Sign (Wood Post)	EA	6	x 165.00 = \$	990
150747 Remove Roadside Sign (SSB Method)	EA	4	x 77.00 = \$	308
152390 Relocate Roadside Sign	EA	5	x 382.00 = \$	1,910
566011 Roadside Sign (One Post)	EA	3	x 225.00 = \$	675
568001 Roadside Sign (SSBM)	EA	7	x 115.00 = \$	805
820134 OBJECT MARKER (TYPE P)	EA	1	130.00 = \$	130
820151 OBJECT MARKER (TYPE L-1)	EA	2	130.00 = \$	260
560XXX Furnish Sign Panels	SQFT	170	x 24.00 = \$	4,080
8405XX Thermoplastic Traffic Stripe	LF	31,000	x 1.20 = \$	37,200
XXXXXX Pavement Marking	SQFT	1,410	x 7.50 = \$	10,575
8501XX Pavement Marker	EA	2,580	x 4.50 = \$	11,610
<u>Subtotal Traffic Signing and Striping</u>				<u>\$ 103,443</u>

**6C - Stage Construction and Traffic Handling**

Item code	Unit	Quantity	Unit Price (\$)	Cost
120100 Traffic Control System	LS	1	x 100,000.00 = \$	100,000
120120 Type III Barricade	EA	5	x 110.00 = \$	550
120143 Temporary Pavement Delineation	LF	9,000	x 1.00 = \$	9,000
12016X Channelizer	EA	40	x 40.00 = \$	1,600
128650 Portable Changeable Message Signs	EA	1	x 5,000.00 = \$	5,000
129000 Temporary Railing (Type K)	LF	3,600	x 18.00 = \$	64,800
129100 Temp. Crash Cushion Module	EA	50	x 210.00 = \$	10,500
129099A Traffic Plastic Drum	EA		x = \$	-
839603A Temporary Crash Cushion (Type ABSORB 350)	EA	4	x 4,000.00 = \$	16,000
<u>Subtotal Stage Construction and Traffic Handling</u>				<u>\$ 207,450</u>

<b>TOTAL TRAFFIC ITEMS</b>	<b>\$ 608,900</b>
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**SECTION 7: DETOURS**

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Include constructing, maintaining, and removal

Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
				<b>TOTAL DETOURS</b>
				<b>\$ -</b>
				SUBTOTAL SECTIONS 1-7
				\$ 2,463,700

**SECTION 8: MINOR ITEMS**

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**8A - Americans with Disabilities Act Items**

ADA Items 3.0%      \$ 73,911

**8B - Bike Path Items**

Bike Path Items (ADA Compliance) 6.0%      \$ 147,822

**8C - Other Minor Items**

Other Minor Items 1.0%      \$ 24,637

Total of Section 1-7      \$ 2,463,700    x    10.0%    =    \$ 246,370

<b>TOTAL MINOR ITEMS</b>	<b>\$ 246,400</b>
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**SECTIONS 9: MOBILIZATION**

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Item code					
999990	Total Section 1-8	\$ 2,710,100	x	10%	= \$ 271,010

<b>TOTAL MOBILIZATION</b>	<b>\$ 271,010</b>
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**SECTION 10: SUPPLEMENTAL WORK**

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Item code		<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
066023	Right of Way Obligations	LS	1	x 10,500.00	= \$ 10,500
066070	Maintain Traffic	LS	1	x 110,000.00	= \$ 110,000
066074	Traffic Control	LS	1	x 75,000.00	= \$ 75,000
066670	Payment Adjustments For Price Index Fluctuations	LS	1	x 10,000.00	= \$ 10,000
066700	Partnering	LS	1	x 15,000.00	= \$ 15,000
066919	Dispute Resolution Board	LS	1	x 7,500.00	= \$ 7,500

Cost of NPDES Supplemental Work specified in Section 5C = \$ -

Total Section 1-8      \$ 2,710,100      0%    =    \$ -

<b>TOTAL SUPPLEMENTAL WORK</b>	<b>\$ 228,000</b>
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PRELIMINARY  
PROJECT COST ESTIMATE

**SECTION 11: AGENCY FURNISHED MATERIALS AND EXPENSES**

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Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
066063 Public Information	LS	1	x 25,000.00 =	\$25,000
066065 TMP - Tow Truck Service Patrol	LS	1	x 75,000.00 =	\$75,000
066062A COZEEP Expenses	LS	1	x 50,000.00 =	\$50,000
Total Section 1-8	\$	2,710,100	0% = \$	-

<b>TOTAL STATE FURNISHED</b>	<b>\$150,000</b>
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**SECTION 12: TIME-RELATED OVERHEAD**

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

Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
090100 Time-Related Overhead	WD	70	X 5600 =	\$392,000

<b>TOTAL TIME-RELATED OVERHEAD</b>	<b>\$392,000</b>
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**SECTION 13: CONTINGENCY**

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

Total Section 1-11	\$	3,751,110	x 15%	=	\$562,667
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<b>TOTAL CONTINGENCY</b>	<b>\$562,700</b>
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## II. STRUCTURE ITEMS

Bridge

	<u>Bridge 1</u>		<u>Bridge 2</u>		
DATE OF ESTIMATE	04/29/16		03/14/16		00/00/00
Bridge Name	Scofield Av UC		San Quentin UC		XXXXXXXXXXXXXXXXXXXX
Bridge Number	28-0140 R		27-70		57-XXX
Structure Type	Steel Girder		Steel Girder		XXXXXXXXXXXXXXXXXXXX
Width (Feet) [out to out]	10.00	LF (bike path)	2.00	LF	0.00 LF
Total Bridge Length (Feet)	647.00	LF	85.00	LF	0.00 LF
Total Area (Square Feet)	6470	SQFT	171	SQFT	0 SQFT
Structure Depth (Feet)	5.00	LF	5.00	LF	0.00 LF
Footing Type (pile or spread)	Piles		spread		XXXXXXXXXXXXXXXXXXXX
Cost Per Square Foot	\$185.58		\$605.75		\$0.00

<b>COST OF EACH STRUCTURE</b>	<b>\$1,200,702.60</b>		<b>\$103,583.25</b>		<b>\$0.00</b>
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	<u>Bridge 3</u>			
	RW 5 - Western Dr. off-ramp			
DATE OF ESTIMATE	04/29/16		00/00/00	00/00/00
Bridge Name	RW No. 5		XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Bridge Number	28E0216		57-XXX	57-XXX
Structure Type	Soil Nail Wall		XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Width (Feet) [out to out]	15.00	LF (max)	0.00	LF
Total Bridge Length (Feet)	507.60	LF	0.00	LF
Total Area (Square Feet)	6686	SQFT	0.00	SQFT
Structure Depth (Feet)	0.00	LF	0.00	LF
Footing Type (pile or spread)	XXXXXXXXXXXXXXXXXXXX		XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Cost Per Square Foot	\$123.17		\$0.00	\$0.00

<b>COST OF EACH STRUCTURE</b>	<b>\$823,514.62</b>		<b>\$0.00</b>		<b>\$0.00</b>
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<b>TOTAL COST OF BRIDGES</b>	<b>\$2,127,800.47</b>
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<b>TOTAL COST OF BUILDINGS</b>	<b>\$0.00</b>
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<b>TOTAL COST OF STRUCTURES<sup>1</sup></b>	<b>\$2,127,800.47</b>
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Estimate Prepared By: James Pun  
Division of Structures

\_\_\_\_\_  
Date

<sup>1</sup>Structure's Estimate includes Overhead and Mobilization.  
Add more sheets if needed. Call them 9a, 9b, 9c, ..., etc

PRELIMINARY  
PROJECT COST ESTIMATE

*Project Initiation Cost Estimate*

Project ID: EA 04-2J6801

Type of Estimate : PROJECT REPORT  
 Program Code :  
 Project Limits : CC / MRN - 580 - 4.98/7.79, 0.0/3.29  
 Description: Third Eastbound Lane (PPUL) and Two-Way Bike Lane on Richmond-San Rafael Bridge  
 Scope : Convert shoulder to travel lane; barrier-separated bike path  
 Project Element : Element 3 - Bike Path on RSR Bridge

	Current Cost	Escalated Cost
ROADWAY ITEMS	\$ 13,818,860	\$ 15,100,241
STRUCTURE ITEMS	\$ 2,598,000	\$ 2,838,905
SUBTOTAL CONSTRUCTION COST	\$ 16,416,860	\$ 17,939,146
RIGHT OF WAY	\$ 737,100	\$ 810,810
<b>TOTAL CAPITAL OUTLAY COST</b>	<b>\$ 17,154,000</b>	<b>\$ 18,750,000</b>
PR/ED SUPPORT	\$ 98,800	\$ 98,800
PS&E SUPPORT	\$ 107,700	\$ 107,700
PROJECT OVERSIGHT	\$ 1,641,700	\$ 1,641,700
RIGHT OF WAY SUPPORT	\$ 70,000	\$ 70,000
CONSTRUCTION SUPPORT	\$ 2,052,100	\$ 2,052,100
<b>TOTAL CAPITAL OUTLAY SUPPORT COST*</b>	<b>\$ 3,970,300</b>	<b>\$ 3,970,300</b>
<b>TOTAL PROJECT COST</b>	<b>\$ 21,150,000</b>	<b>\$ 22,750,000</b>

If Project has been programmed enter Programmed Amount

\$

Month / Year

Date of Estimate (Month/Year) 7 / 2016

Estimated Date of Construction Start (Month/Year) 11 / 2016

Number of Working Days 320 Working Days

Month / Year


Estimated Mid-Point of Construction (Month/Year) June 2017

Number of Plant Establishment Days 360 Days

*Estimated Project Schedule*

PID Approval	November	2015
PAVED Approval	July	2016
PS&E	July	2016
RTL	N/A	
Begin Construction	November	2016

Approved by Project  
Manager

  
Project Manager

7/27/16  
Date

510.587.8629  
Phone

## I. ROADWAY ITEMS SUMMARY

Section	Cost
1 Earthwork	\$ 218,800
2 Pavement Structural Section	\$ 493,200
3 Drainage	\$ 228,300
4 Specialty Items	\$ 85,900
5 Environmental	\$ 204,000
6 Traffic Items	\$ 553,900
7 Detours	\$ -
8 Minor Items	\$ 178,500
9 Roadway Mobilization	\$ 196,260
10 Supplemental Work	\$ 636,500
11 Agency Furnished	\$ 7,829,000
12 Contingencies	\$ 1,802,500
13 Overhead	\$ 1,392,000
<b>TOTAL ROADWAY ITEMS</b>	
	<b>\$ 13,818,860</b>

Estimate Prepared By James Pun 6/27/2016  
Name and Title Date Phone

Estimate Reviewed By Chadi Chazbek 6/27/2016  
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.**

PRELIMINARY  
PROJECT COST ESTIMATE

**SECTION 1: EARTHWORK**

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Item code		<b>Unit</b>	<b>Quantity</b>		<b>Unit Price (\$)</b>		<b>Cost</b>
160102	Clearing & Grubbing	LS	1	x	40,000.00	= \$	40,000
170101	Develop Water Supply	LS	1	x	10,000.00	= \$	10,000
190101	Roadway Excavation	CY	2,280	x	20.00	= \$	45,600
190105	Roadway Excavation (Type Z-2) ADL	CY	320	x	385.00	= \$	123,200

<b>TOTAL EARTHWORK SECTION ITEMS</b>	<b>\$</b>	<b>218,800</b>
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**SECTION 2: PAVEMENT STRUCTURAL SECTION**

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Item code		<b>Unit</b>	<b>Quantity</b>		<b>Unit Price (\$)</b>		<b>Cost</b>
153103	Cold Plane Asphalt Concrete Pavement	SQYD	9,200	x	3.00	= \$	27,600
250201	Class 2 Aggregate Subbase	CY	470	x	65.00	= \$	30,550
260303	Class 3 Aggregate Base	CY	950	x	45.00	= \$	42,750
390132	Hot Mix Asphalt (Type A)	TON	1,650	x	120.00	= \$	198,000
390401	Minor Hot Mix Asphalt	TON	160	x	200.00	= \$	32,000
394076	Place Hot Mix Asphalt Dike	LF	1,200	x	9.00	= \$	10,800
394090	Place Hot Mix Asphalt (Misc. Area)	SQYD	4	x	50.00	= \$	200
731502	Minor Concrete (Misc. Const)	CY	2	x	650.00	= \$	1,300
731530	Minor Concrete (Textured Paving)	SQFT	300	x	500.00	= \$	150,000

<b>TOTAL STRUCTURAL SECTION ITEMS</b>	<b>\$</b>	<b>493,200</b>
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PRELIMINARY  
PROJECT COST ESTIMATE

**SECTION 3: DRAINAGE**

Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
150809 Remove Culvert	LF	5	x 100.00 = \$	500
153130 Remove Concrete curb	LF	1,770	x 10.00 = \$	17,700
153140 Remove concrete sidewalk	SQYD	480	x 25.00 = \$	12,000
152609 Modify Inlet	EA	5	x 3,250.00 = \$	16,250
155003 Cap Inlet	EA	3	x 1,500.00 = \$	4,500
510502 Minor Concrete (Minor Structure)	CY	16.4	x 1,650.00 = \$	26,400
731627 Minor Concrete (Curb, Sidewalk, Curb ramp)	CY	140	x 660.00 = \$	92,400
620060 12" Alternative Pipe Culvert	LF	210	x 115.00 = \$	24,150
620100 18" Alternative Pipe Culvert	LF	135	x 162.00 = \$	21,870
700617 Drainage Inlet Marker	EA	11	x 70.00 = \$	770
750001 Miscellaneous Iron and Steel	LB	3,890	x 3.00 = \$	11,670

<b>TOTAL DRAINAGE ITEMS</b>	<b>\$ 228,300</b>
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**SECTION 4: SPECIALTY ITEMS**

Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
070030 Lead Compliance Plan	LS	1	x 5,000.00 = \$	5,000
080050 Progress Schedule (Critical Path Method)	LS	1	x 3,000.00 = \$	3,000
150661 Remove Metal Beam Guard Railing	LF	130	x 9.00 = \$	1,170
150771 Remove Asphalt Concrete Dike	LF	370	x 6.00 = \$	2,220
150860 Remove Base and Surfacing	CY	220	x 6.00 = \$	1,320
150608 Remove Chain Link Fence	LF	1,170	x 11.00 = \$	12,870
800360 Fence (CL-6)	LF	2,010	x 30.00 = \$	60,300

<b>TOTAL SPECIALTY ITEMS</b>	<b>\$ 85,900</b>
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**SECTION 5: ENVIRONMENTAL**

**5A - ENVIRONMENTAL MITIGATION**

Item code	Unit	Quantity		Unit Price (\$)		Cost
130670 Temporary Reinforced Silt Fence	LF	735	x	9.00	= \$	6,615
141000 Temporary Fence (Type ESA)	LF	1,200	x	5.00	= \$	6,000
141120 Treated Wood Waste	LB	2,160	x	1.00	= \$	2,160
<i>Subtotal Environmental</i>						<b>\$ 14,775</b>

**5B - LANDSCAPE AND IRRIGATION**

Item code	Unit	Quantity		Unit Price (\$)		Cost
150685 Remove Irrigation Facility	LS	1	x	500.00	= \$	500
204036 Highway Planting	EA	50	x	25.00	= \$	1,250
200002 Roadside Clearing	LS	1	x	500.00	= \$	500
200122 Weed Germination	SQYD	70	x	3.00	= \$	210
200123 Cultivation	SQYD	70	x	5.00	= \$	350
202006 Soil Amendment	CY	40	x	50.00	= \$	2,000
202038 Packet Fertilizer	EA	100	x	2.00	= \$	200
202039 Slow-Release Fertilizer	LB	13	x	5.00	= \$	65
204099 Plant Establishment Work	LS	1	x	5,000.00	= \$	5,000
205035 Wood Mulch	CY	17	x	50.00	= \$	850
206400 Check and Test Existing Irrigation Facilities	LS	1	x	1,000.00	= \$	1,000
206559 Control and Neutral Conductors (Armor-Clad)	LS	1	x	200.00	= \$	200
206562 1" Remote Control Valve	EA	1	x	350.00	= \$	350
206631 1" WYE Strainer Assembly	EA	1	x	350.00	= \$	350
208416 Certify Existing backflow preventers	LS	1	x	500.00	= \$	500
208448A Riser sprinkler assembly (Type C-2)	EA	50	x	30.00	= \$	1,500
208594 3/4" Schedule 40 Plastic Pipe	LF	80	x	4.00	= \$	320
208595 1" Schedule 40 Plastic Pipe	LF	100	x	4.00	= \$	400
208596 1 1/4" Schedule 40 Plastic Pipe	LF	15	x	5.00	= \$	75
208598 2" Schedule 40 Plastic Pipe	LF	10	x	7.00	= \$	70
208602 6" Schedule 40 Plastic Pipe	LF	10	x	45.00	= \$	450
208649 Quick Coupling Valve	EA	1	x	300.00	= \$	300
208683 Ball Valve	EA	1	x	350.00	= \$	350
208738A 4" Corrugated HD Poleythele Conduit	LF	30	x	60.00	= \$	1,800
208738B 6" Corrugated HD Poleythele Conduit	LF	40	x	65.00	= \$	2,600
210300 Hydromulch	SQFT	20,740	x	1.00	= \$	20,740
210420 Straw	SQFT	20,740	x	1.00	= \$	20,740
210430 Hydroseed	SQFT	20,740	x	1.00	= \$	20,740
210600 Compost	SQFT	20,740	x	1.00	= \$	20,740
210630 Incorporated Materials	SQFT	20,740	x	1.00	= \$	20,740
<i>Subtotal Landscape and Irrigation</i>						<b>\$ 124,890</b>

**5C - NPDES**

Item code	Unit	Quantity		Unit Price (\$)		Cost
130100 Job Site Management	LS	1	x	10,000.00	= \$	10,000
130300 Prepare SWPPP	LS	1	x	4,500.00	= \$	4,500
130640 Temporary Fiber Roll	LF	2,210	x	5.00	= \$	11,050
130900 Temporary Concrete Washout Facility	EA	2	x	4,000.00	= \$	8,000
130710 Temporary Construction Entrance	EA	1	x	5,000.00	= \$	5,000
130320 Storm water sampling and analysis day	EA	1	x	3,250.00	= \$	3,250
130310 Rain Event Action Plan	EA	1	x	22,500.00	= \$	22,500
074035 Temporary Check Dam	LF		x		= \$	-
074038 Temp. Drainage Inlet Protection	EA		x		= \$	-
074041 Street Sweeping	LS		x		= \$	-
XXXXXX Water Pollution Control, Erosion Control	LS	1	x		= \$	-

**Supplemental Work for NPDES**

(These costs are not accounted in total here but under Supplemental Work on sheet 7 of 11).

066595 Water Pollution Control Maintenance Sharing	LS	1	x	10,000.00	= \$	10,000
066596 Additional Water Pollution Control**	LS	1	x	6,000.00	= \$	6,000
066597 Storm Water Sampling and Analysis***	LS	1	x	6,000.00	= \$	6,000
XXXXXX Some Item						

*Subtotal NPDES (Without Supplemental Work)* **\$ 64,300**

\*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.

<b>TOTAL ENVIRONMENTAL</b>	<b>\$ 204,000</b>
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**SECTION 6: TRAFFIC ITEMS**

**6A - Traffic Electrical**

Item code	Unit	Quantity		Unit Price (\$)		Cost
860090 Maintain Existing Traffic Management System Elements During Construction	LS	1	x	5,000.00	= \$	5,000
860402 Lighting (City Street)	LS	1	x	67,000.00	= \$	67,000
860505A Traffic Operation System	LS	1	x	24,000.00	= \$	24,000
860401 Lighting	LS	1	x	40,000.00	= \$	40,000
860522A Rectangular Rapid Flashing Beacon (City)	LS	1	x	23,000.00	= \$	23,000
860523A Call Box System	LS	1	x	19,000.00	= \$	19,000
<i>Subtotal Traffic Electrical</i>						<b>\$ 178,000</b>

**6B - Traffic Signing and Striping**

Item code	Unit	Quantity		Unit Price (\$)		Cost
120090 Construction Area Signs	LS	1	x	19,000.00	= \$	19,000
150714 Remove Traffic Stripe	LF	34,150	x	1.00	= \$	34,150
150715 Remove Pavement Marking	SQFT	2,000	x	4.00	= \$	8,000
150722 Remove Pavement Marker	EA	800	x	2.00	= \$	1,600
150744 Remove Roadside Sign (Wood Post)	EA	3	x	165.00	= \$	495
150745 Remove Roadside Sign (Metal Post)	EA	1	x	185.00	= \$	185
150747 Remove Sign (Strap and Saddle bracket method)	EA	12	x	77.00	= \$	924
150748 Remove Roadside Sign Panel	EA	2	x	60.00	= \$	120
152322 Reset Roadside Sign (Wood Post)	EA	2	x	175.00	= \$	350
152324 Reset Roadside Sign (Metal Post)	EA	7	x	340.00	= \$	2,380
566011 Roadside Sign (One Post)	EA	12	x	225.00	= \$	2,700
560248 Furnish Sign Panels	SQFT	160	x	24.00	= \$	3,840
568001 Install Sign (Strap and Saddle bracket method)	EA	5	x	115.00	= \$	575
840504A 4" Thermoplastic (White Solid)	LF	4,470	x	2.00	= \$	8,940
840504B 4" Thermoplastic (Yellow Solid)	LF	1,660	x	2.00	= \$	3,320
840515 Thermoplastic Pavement Marking	SQFT	360	x	8.00	= \$	2,880
840516 Thermoplastic Pavement Marking (Enhanced)	SQFT	370	x	7.00	= \$	2,590
840655 Paint Traffic Stripe (1-coat)	LF	3,050	x	1.00	= \$	3,050
840656 Paint Traffic Stripe (2-coat)	LF	8,820	x	1.00	= \$	8,820
840666 Paint Pavement Marking (2-coat)	SQFT	30	x	7.00	= \$	210
846001 4" Thermoplastic Pavement Marking (Enhanced)	LF	10,740	x	1.00	= \$	10,740
846004A 4" Thermoplastic Pavement Marking (Enhanced) Broken 34-14	LF	3,950	x	1.00	= \$	3,950
846009 8" Thermoplastic Pavement Marking (Enhanced)	LF	390	x	2.00	= \$	780
8501XX Pavement Marker	EA	850	x	4.50	= \$	3,825
<i>Subtotal Traffic Signing and Striping</i>						<b>\$ 123,424</b>

**6C - Stage Construction and Traffic Handling**

Item code	Unit	Quantity		Unit Price (\$)		Cost
120100 Traffic Control System	LS	1	x	75,000.00	= \$	75,000
120120 Type III Barricade	EA	6	x	110.00	= \$	660
120143 Temporary Pavement Delineation	LF	18,740	x	1.00	= \$	18,740
120165 Channelizer (Surface Mounted)	EA	100	x	40.00	= \$	4,000
128651 Portable Changeable Message Signs	EA	1	x	5,000.00	= \$	5,000
129000 Temporary Railing (Type K)	LF	6,800	x	18.00	= \$	122,400
129100 Temp. Crash Cushion Module	EA	60	x	210.00	= \$	12,600
129150A Temporary Curb Ramp	EA	1	x	6,000.00	= \$	6,000
129110A Temporary Crash Cushion (Type Absorb 350)	EA	2	x	4,000.00	= \$	8,000
<i>Subtotal Stage Construction and Traffic Handling</i>						<b>\$ 252,400</b>

<b>TOTAL TRAFFIC ITEMS</b>	<b>\$ 553,900</b>
----------------------------	-------------------

PRELIMINARY  
PROJECT COST ESTIMATE

**SECTION 7: DETOURS**

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Include constructing, maintaining, and removal

Item code	Unit	Quantity	Unit Price (\$)	Cost
				<b>TOTAL DETOURS</b>
				<b>\$ -</b>
				SUBTOTAL SECTIONS 1-7
				\$ 1,784,100

**SECTION 8: MINOR ITEMS**

---

**8A - Americans with Disabilities Act Items**

ADA Items 3.0%      \$ 53,523

**8B - Bike Path Items**

Bike Path Items 6.0%      \$ 107,046

**8C - Other Minor Items**

Other Minor Items 1.0%      \$ 17,841

Total of Section 1-7      \$ 1,784,100    x    10.0%    =    \$ 178,410

<b>TOTAL MINOR ITEMS</b>	<b>\$ 178,500</b>
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**SECTIONS 9: MOBILIZATION**

---

Item code	Description	Unit	Quantity	Unit Price (\$)	Cost
999990	Total Section 1-8				
				x 10%	= \$ 196,260

<b>TOTAL MOBILIZATION</b>	<b>\$ 196,260</b>
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**SECTION 10: SUPPLEMENTAL WORK**

---

Item code	Description	Unit	Quantity	Unit Price (\$)	Cost
66070	Maintain Traffic	LS	1	x 150,000.00	= \$ 150,000
66074	Traffic Control	LS	1	x 100,000.00	= \$ 100,000
66510	Repair Bridge	LS	1	x 250,000.00	= \$ 250,000
066540A	Additional ADA Compliance	LS	1	x 20,000.00	= \$ 20,000
66805	Reconstruct Fence	LS	1	x 5,000.00	= \$ 5,000
66670	Payment Adjustments For Price Index Fluctuations	LS	1	x 2,000.00	= \$ 2,000
66610	Partnering	LS	1	x 35,000.00	= \$ 35,000
66866	Operation of Existing Traffic Management System Elements During Construction	LS	1	x 35,000.00	= \$ 35,000
66919	Dispute Resolution Board	LS	1	x 7,500.00	= \$ 7,500
XXXXXX	Some Item	LS	1	x 10,000.00	= \$ 10,000

*Cost of **NPDES** Supplemental Work specified in Section 5C*    =    \$ 22,000

Total Section 1-8      \$ 1,962,600      0%    =    \$ -

<b>TOTAL SUPPLEMENTAL WORK</b>	<b>\$ 636,500</b>
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**SECTION 11: AGENCY FURNISHED MATERIALS AND EXPENSES**

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<b>Item code</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit Price (\$)</b>	<b>Cost</b>
066010A 18" Moveable Barrier (Separate Procurement)	LS	1	x 7,500,000.00 =	\$7,500,000
066105 RE Office	LS	1	x 100,000.00 =	\$100,000
066062A COZEEP Expenses	LS	1	x 75,000.00 =	\$75,000
066847A Model 2070 Controller Unit	LS	1	x 4,000.00 =	\$4,000
066063 Traffic Management Plan - Public Information	LS	1	x 50,000.00 =	\$ 50,000
066063 Traffic Management Plan - Tow Truck	LS	1	x 100,000.00 =	\$ 100,000
Total Section 1-8		\$	1,962,600	0% = \$ -

<b>TOTAL AGENCY FURNISHED</b>	<b>\$7,829,000</b>
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**SECTION 12: TIME-RELATED OVERHEAD**

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Estimated Time-Related Overhead (TRO) Percentage (0% to 10%) = 10%

<b>Item code</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit Price (\$)</b>	<b>Cost</b>
090100 Time-Related Overhead	WD	320	X 4350 =	\$1,392,000

<b>TOTAL TIME-RELATED OVERHEAD</b>	<b>\$1,392,000</b>
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**SECTION 13: CONTINGENCY**

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

Total Section 1-11                      \$    12,016,360    x    15%    =    \$1,802,454

<b>TOTAL CONTINGENCY</b>	<b>\$1,802,500</b>
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## II. STRUCTURE ITEMS

### Bridge 1

DATE OF ESTIMATE	04/29/16	00/00/00	00/00/00
Bridge Name	Richmond-San Rafael Bridge	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Bridge Number	28-010	57-XXX	57-XXX
Structure Type	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Width (Feet) [out to out]	0.00 LF	0.00 LF	0.00 LF
Total Bridge Length (Feet)	0.00 LF	0.00 LF	0.00 LF
Total Area (Square Feet)	2598 SQFT	0 SQFT	0 SQFT
Structure Depth (Feet)	0.00 LF	0.00 LF	0.00 LF
Footing Type (pile or spread)	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Cost Per Square Foot	\$1,000.00	\$0.00	\$0.00

<b>COST OF EACH STRUCTURE</b>	<b>\$2,598,000.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
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DATE OF ESTIMATE	00/00/00	00/00/00	00/00/00
Name	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Bridge Number	57-XXX	57-XXX	57-XXX
Structure Type	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Width (Feet) [out to out]	0.00 LF	0.00 LF	0.00 LF
Total Length (Feet)	0.00 LF	0.00 LF	0.00 LF
Total Area (Square Feet)	0 SQFT	0.00 SQFT	0.0 SQFT
Structure Depth (Feet)	0.00 LF	0.00 LF	0.00 LF
Footing Type (pile or spread)	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Cost Per Square Foot	\$0.00	\$0.00	\$0.00

<b>COST OF EACH STRUCTURE</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
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<b>TOTAL COST OF BRIDGES</b>	<b>\$2,598,000.00</b>
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<b>TOTAL COST OF BUILDINGS</b>	<b>\$0.00</b>
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<b>TOTAL COST OF STRUCTURES<sup>1</sup></b>	<b>\$2,598,000.00</b>
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Estimate Prepared By: James Pun  
Division of Structures

6/27/2016  
Date

<sup>1</sup>Structure's Estimate includes Overhead and Mobilization.  
Add more sheets if needed. Call them 9a, 9b, 9c, ..., etc

## **Appendix D. Transportation Management Plan**

## TRANSPORTATION MANAGEMENT PLAN DATA SHEET

For Consultant TMP Projects

PROJECT MANAGER: Mo Pazooki	Phone #:510-286-5118
PROJECT ENGINEER (Consultant): James Pun - HNTB	Phone #:510-587-8658
PROJECT ENGINEER (CALTRANS): David Wilkerson	Phone #:510-622-5737
DIST-EA/PROJ ID: 04-2J6801/0414000552	
PROGRAM (HB1, HE11, etc.): N/A	
CO-RTE-PM (KP): CC, Mrn – 580 – R5.0/7.8, 0.0/3.3	
<b>LEGAL DESCRIPTION:</b>	
In Contra Costa and Marin Counties, in and near Richmond and San Rafael, from Castro Street in Richmond to Sir Francis Drake Boulevard in San Rafael.	
<b>DETAILED WORK DESCRIPTION:</b>	
Conversions of EB shoulder to travel lane (lower deck of RSR Bridge). Realign EB Main Street on-ramp; Construct 8 retaining walls, including partial removal of 2 existing walls; Extend an utility culvert under EB I-580; Install Concrete Barrier separating bike path and travelled way; Reconfigure E. Standard Avenue from 1 EB lanes and 2 WB lanes to 2 EB lanes and 1 WB lanes; grind and overlay of existing pavement; install DMS signs on top of lower deck of RSR Bridge; install CCTV cameras and Traffic Monitoring Stations on RSR Bridge; and modify 3 signals.	
<b>CONSTRUCTION COST ESTIMATE:</b>	
\$30 Million	
<b>PROJECT PHASE:</b>	PSR <input type="checkbox"/> PR <input checked="" type="checkbox"/> PS&E <input checked="" type="checkbox"/> <u>100</u> %

### **Traffic Impact Descriptions**

A) Does the proposed project includes long term closures (> 24 hours)    Yes     No   
 [If "No", Continue to Item D (Preliminary TMP Elements and Costs.). If "Yes", Check Applicable Facilities.]

- Freeway Lanes
- Freeway Shoulder
- Freeway Connectors
- Freeway Off-ramps
- Freeway On-ramps
- Local Streets
- Full Freeway Closures

B) Are there any construction strategies that can restore existing number of lanes?  
 (Check Applicable Strategies)

- Temporary Roadway Widening Structure Involvement?      Yes     No   
     (If yes, notify Project Manager)
- Lane Restriping (Temporary Narrow Lane Widths)      Yes     No
- Roadway Realignment (Detour Around Work Area)



- Median and/or Right Shoulder Utilization
- Use of an HOV lane as a Temporary Mixed Flow Lane
- Staging Alternatives (Explain Below)

**Notes:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

C) Calculated Delays (To be performed if construction strategies in Item B do not mitigate congestion resulting from Item A)

- |  |               |               |
|--|---------------|---------------|
| 1. Estimated Maximum Individual Vehicle Delay              | _____         | Minutes       |
| 2. Existing or Acceptable Individual Vehicle Delay         | _____         | Minutes       |
| 3. Estimated Individual Vehicle Delay Requiring Mitigation |               |               |
|  | [ (1) - (2) ] | _____ Minutes |
| 4. Estimated Delay Cost (Most Applicable)                  |               |               |
| <input type="checkbox"/> Extended Weekend Closure          | \$ _____      |               |
| <input type="checkbox"/> Weekly (7 days)                   | \$ _____      |               |
| 5. Estimated Duration of Project Related Delays            | _____         |               |
| 6. Cost of Construction Related Delays [(4 x 5)]           | \$ _____      |               |

D) Preliminary TMP Elements and Cost

1. Public Information

- |   |                  |
|---|------------------|
| <input type="checkbox"/> a. Brochures and Mailers   | \$ _____         |
| <input checked="" type="checkbox"/> b. Press Release  | \$ <u>2,500</u>  |
| <input type="checkbox"/> c. Paid Advertising  | \$ _____         |
| <input type="checkbox"/> d. Public Information Center/Kiosk   | \$ _____         |
| <input type="checkbox"/> e. Public Meeting/Speakers Bureau  | \$ _____         |
| <input checked="" type="checkbox"/> f. Telephone Hotline  | \$ <u>7,500</u>  |
| <input checked="" type="checkbox"/> g. Internet   | \$ <u>10,000</u> |
| <input checked="" type="checkbox"/> h. Notification to impacted groups<br>(Bicycle users, Pedestrians with disability, others.) | \$ <u>5,000</u>  |
| <input checked="" type="checkbox"/> i. Others <u>including 511.org</u>  | \$ <u>25,000</u> |

SUB TOTAL \$ 50,000

2. Motorists Information strategies

- |  |                  |
|--|------------------|
| <input type="checkbox"/> a. Changeable Message Signs (Fixed)               | \$ _____         |
| <input checked="" type="checkbox"/> b. Changeable Message Signs (Portable) | \$ <u>30,000</u> |
| <input checked="" type="checkbox"/> c. Ground Mounted Signs                | \$ <u>76,000</u> |
| <input type="checkbox"/> d. Highway Advisory Radio                         | \$ _____         |
| <input type="checkbox"/> e. Caltrans Highway Information Network (CHIN)    | \$ _____         |
| <input type="checkbox"/> f. Revised Transit Schedules/Maps                 | \$ _____         |
| <input type="checkbox"/> g. Others _____                                   | \$ _____         |

SUB TOTAL \$ 106,000

3. Incident Management

- |   |                   |
|---|-------------------|
| <input checked="" type="checkbox"/> a. Construction or Maintenance Zone Enhanced Enforcement Program (COZEEP or MAZEEP) | \$ <u>250,000</u> |
| <input checked="" type="checkbox"/> b. Freeway Service Patrol (Tow Truck Service)                                       | \$ <u>200,000</u> |
| <input type="checkbox"/> c. Traffic Management Team   | \$ _____          |
| <input type="checkbox"/> d. New CCTVs and Detectors   | \$ _____          |
| <input type="checkbox"/> e. Others _____  | \$ _____          |

SUB TOTAL \$ 450,000

4. Construction Strategies (In Addition to Elements Identified on Item B)
- a.. Off Peak/Night/Weekend Work (Lane Closure Charts) \$ \_\_\_\_\_
  - b. Reversible Lanes – Main Street \$ 5,000
  - c. Total Facility Closure \$ \_\_\_\_\_
  - d. Extended Weekend Closure \$ \_\_\_\_\_
  - e. Truck Traffic Restrictions \$ \_\_\_\_\_
  - f. Reduced Speed Zone \$ \_\_\_\_\_
  - g. Connector and Ramp Closures \$ \_\_\_\_\_
  - h. Incentive and Disincentive \$ \_\_\_\_\_
  - i. Moveable Barrier \$ \_\_\_\_\_
  - j. Others \_\_\_\_\_ \$ \_\_\_\_\_

SUB TOTAL \$ 5,000

5. Demand Management
- a. HOV Lanes/Ramps (New or Convert) \$ \_\_\_\_\_
  - b. Park and Ride Lots \$ \_\_\_\_\_
  - c. Rideshare Incentives \$ \_\_\_\_\_
  - d. Variable Work Hours \$ \_\_\_\_\_
  - e. Telecommute \$ \_\_\_\_\_
  - f. Ramp Metering (New Installation) \$ \_\_\_\_\_
  - g. Ramp Metering (Maintain Existing) \$ \_\_\_\_\_
  - h. Others Bike Shuttle \$ 50,000

SUB TOTAL \$ 50,000

6. Alternate Route Strategies
- a. Add Capacity to Freeway Connector \$ \_\_\_\_\_
  - b. Street Improvement (widening, traffic signal, etc) \$ \_\_\_\_\_
  - c. Traffic Control Officers \$ \_\_\_\_\_
  - d. Parking Restrictions \$ \_\_\_\_\_
  - e. Others \_\_\_\_\_ \$ \_\_\_\_\_

SUB TOTAL \$ \_\_\_\_\_

7. Other Strategies
- a. Application of New Technology \$ \_\_\_\_\_
  - b. Others \_\_\_\_\_ \$ \_\_\_\_\_

SUB TOTAL \$ \_\_\_\_\_

**TOTAL ESTIMATED COST OF TMP ELEMENTS = \$ 661,000**

8. The Project includes the following: (Check applicable type of facility closures)

- a. Highway or Freeway Lanes
- b. Highway or Freeway Shoulders
- c. Full Freeway Closure
- d. Freeway On/Off-Ramps
- e. Freeway Connectors
- f. Local Streets
- g. Prolonged Ramp Closures

9. Major operations requiring traffic control and working days for each

<u>Operation</u>	<u># of Working Days</u>	<u># of Traffic Control Days</u>
<input checked="" type="checkbox"/> a. Clearing and Grubbing	<u>5</u>	<u>5</u>
<input checked="" type="checkbox"/> b. Existing Feature Removal	<u>60</u>	<u>25</u>
<input type="checkbox"/> c. Excavation of Embankments Construction	<u>          </u>	<u>          </u>
<input checked="" type="checkbox"/> d. Structural Section Construction	<u>40</u>	<u>20</u>
<input checked="" type="checkbox"/> e. Drainage Feature Construction	<u>25</u>	<u>5</u>
<input checked="" type="checkbox"/> f. Structures Construction	<u>180</u>	<u>10</u>
<input checked="" type="checkbox"/> g. MBGR/Barrier Construction	<u>75</u>	<u>5</u>
<input checked="" type="checkbox"/> h. Striping	<u>30</u>	<u>30</u>
<input checked="" type="checkbox"/> i. Electrical Component Construction	<u>60</u>	<u>20</u>
<input type="checkbox"/> j. Others _____	<u>          </u>	<u>          </u>
Total days	<u>475</u>	<u>120</u>

**Notes :** Extensive TMP may be required for the significant impacts.

PREPARED BY (Consultant): James Pun DATE: 6/01/2016  
HNTB Corporation

APPROVAL RECOMMENDED BY  
(Caltrans Oversight Engineer): David Wilkerson DATE: 6/01/2016

APPROVED BY (TMP Office): Ashween Shah DATE: 6/10/2016

## TRANSPORTATION MANAGEMENT PLAN DATA SHEET

For Consultant TMP Projects

PROJECT MANAGER: Mo Pazooki	Phone #:510-286-5118
PROJECT ENGINEER (Consultant): James Pun - HNTB	Phone #:510-587-8658
PROJECT ENGINEER (CALTRANS): David Wilkerson	Phone #:510-622-5737
DIST-EA/PROJ ID: 04-4J7104/0415000402	
PROGRAM (HB1, HE11, etc.): N/A	
CO-RTE-PM (KP): CC, Mrn – 580 – R6.1/7.8, 0.0/3.2	
<b>LEGAL DESCRIPTION:</b>	
In Contra Costa and Marin Counties, in and near Richmond and San Rafael, from Toll Plaza in Richmond to 0.1 mile east of Sir Francis Drake Boulevard in San Rafael.	
<b>DETAILED WORK DESCRIPTION:</b>	
Construct 10' Class I bike path on Stenmark Drive and Toll Plaza in Contra Costa County to Francisco Boulevard in Marin County, including conversion of the WB shoulder (upper deck of RSR Bridge). Bike path on Francisco Blvd. will be a Class II bikeway on sidewalk. Project include installation of moveable barrier separating the bike path from travelled way (separate procurement contract), and installation of call boxes on RSR Bridge upper deck (by others).	
<b>CONSTRUCTION COST ESTIMATE:</b>	
\$17 Million	
<b>PROJECT PHASE:</b>	PSR <input type="checkbox"/> PR <input checked="" type="checkbox"/> PS&E <input checked="" type="checkbox"/> <u>100</u> %

### **Traffic Impact Descriptions**

A) Does the proposed project includes long term closures (> 24 hours)    Yes     No   
 [If "No", Continue to Item D (Preliminary TMP Elements and Costs.). If "Yes", Check Applicable Facilities.]

- Freeway Lanes
- Freeway Shoulder
- Freeway Connectors
- Freeway Off-ramps
- Freeway On-ramps
- Local Streets
- Full Freeway Closures

B) Are there any construction strategies that can restore existing number of lanes?  
 (Check Applicable Strategies)

- Temporary Roadway Widening Structure Involvement?      Yes     No   
     (If yes, notify Project Manager)
- Lane Restriping (Temporary Narrow Lane Widths)      Yes     No
- Roadway Realignment (Detour Around Work Area)

- Median and/or Right Shoulder Utilization
- Use of an HOV lane as a Temporary Mixed Flow Lane
- Staging Alternatives (Explain Below)

**Notes:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



C) Calculated Delays (To be performed if construction strategies in Item B do not mitigate congestion resulting from Item A)

- |  |               |               |
|--|---------------|---------------|
| 1. Estimated Maximum Individual Vehicle Delay              | _____         | Minutes       |
| 2. Existing or Acceptable Individual Vehicle Delay         | _____         | Minutes       |
| 3. Estimated Individual Vehicle Delay Requiring Mitigation |               |               |
|  | [ (1) - (2) ] | _____ Minutes |
| 4. Estimated Delay Cost (Most Applicable)                  |               |               |
| <input type="checkbox"/> Extended Weekend Closure          | \$ _____      |               |
| <input type="checkbox"/> Weekly (7 days)                   | \$ _____      |               |
| 5. Estimated Duration of Project Related Delays            | _____         |               |
| 6. Cost of Construction Related Delays [(4 x 5)]           | \$ _____      |               |

D) Preliminary TMP Elements and Cost

1. Public Information

- |   |                  |
|---|------------------|
| <input type="checkbox"/> a. Brochures and Mailers   | \$ _____         |
| <input checked="" type="checkbox"/> b. Press Release  | \$ <u>2,500</u>  |
| <input type="checkbox"/> c. Paid Advertising  | \$ _____         |
| <input type="checkbox"/> d. Public Information Center/Kiosk   | \$ _____         |
| <input type="checkbox"/> e. Public Meeting/Speakers Bureau  | \$ _____         |
| <input checked="" type="checkbox"/> f. Telephone Hotline  | \$ <u>7,500</u>  |
| <input checked="" type="checkbox"/> g. Internet   | \$ <u>10,000</u> |
| <input checked="" type="checkbox"/> h. Notification to impacted groups<br>(Bicycle users, Pedestrians with disability, others.) | \$ <u>5,000</u>  |
| <input checked="" type="checkbox"/> i. Others <u>including 511.org</u>  | \$ <u>25,000</u> |

SUB TOTAL \$ 50,000

2. Motorists Information strategies

- |  |                  |
|--|------------------|
| <input type="checkbox"/> a. Changeable Message Signs (Fixed)               | \$ _____         |
| <input checked="" type="checkbox"/> b. Changeable Message Signs (Portable) | \$ <u>15,000</u> |
| <input checked="" type="checkbox"/> c. Ground Mounted Signs                | \$ <u>20,000</u> |
| <input type="checkbox"/> d. Highway Advisory Radio                         | \$ _____         |
| <input type="checkbox"/> e. Caltrans Highway Information Network (CHIN)    | \$ _____         |
| <input type="checkbox"/> f. Revised Transit Schedules/Maps                 | \$ _____         |
| <input type="checkbox"/> g. Others _____                                   | \$ _____         |

SUB TOTAL \$ 35,000

3. Incident Management

- |   |                   |
|---|-------------------|
| <input checked="" type="checkbox"/> a. Construction or Maintenance Zone Enhanced Enforcement Program (COZEEP or MAZEEP) | \$ <u>150,000</u> |
| <input checked="" type="checkbox"/> b. Freeway Service Patrol (Tow Truck Service)                                       | \$ <u>100,000</u> |
| <input type="checkbox"/> c. Traffic Management Team   | \$ _____          |
| <input type="checkbox"/> d. New CCTVs and Detectors   | \$ _____          |
| <input type="checkbox"/> e. Others _____  | \$ _____          |

SUB TOTAL \$ 250,000

4. Construction Strategies (In Addition to Elements Identified on Item B)
- a.. Off Peak/Night/Weekend Work (Lane Closure Charts) \$ \_\_\_\_\_
  - b. Reversible Lanes – Francisco Blvd. \$ 30,000
  - c. Total Facility Closure \$ \_\_\_\_\_
  - d. Extended Weekend Closure \$ \_\_\_\_\_
  - e. Truck Traffic Restrictions \$ \_\_\_\_\_
  - f. Reduced Speed Zone \$ \_\_\_\_\_
  - g. Connector and Ramp Closures \$ \_\_\_\_\_
  - h. Incentive and Disincentive \$ \_\_\_\_\_
  - i. Moveable Barrier \$ \_\_\_\_\_
  - j. Others \_\_\_\_\_ \$ \_\_\_\_\_

SUB TOTAL \$ 30,000

5. Demand Management
- a. HOV Lanes/Ramps (New or Convert) \$ \_\_\_\_\_
  - b. Park and Ride Lots \$ \_\_\_\_\_
  - c. Rideshare Incentives \$ \_\_\_\_\_
  - d. Variable Work Hours \$ \_\_\_\_\_
  - e. Telecommute \$ \_\_\_\_\_
  - f. Ramp Metering (New Installation) \$ \_\_\_\_\_
  - g. Ramp Metering (Maintain Existing) \$ \_\_\_\_\_
  - h. Others \_\_\_\_\_ \$ \_\_\_\_\_

SUB TOTAL \$ \_\_\_\_\_

6. Alternate Route Strategies
- a. Add Capacity to Freeway Connector \$ \_\_\_\_\_
  - b. Street Improvement (widening, traffic signal, etc) \$ \_\_\_\_\_
  - c. Traffic Control Officers \$ \_\_\_\_\_
  - d. Parking Restrictions \$ \_\_\_\_\_
  - e. Others \_\_\_\_\_ \$ \_\_\_\_\_

SUB TOTAL \$ \_\_\_\_\_

7. Other Strategies
- a. Application of New Technology \$ \_\_\_\_\_
  - b. Others \_\_\_\_\_ \$ \_\_\_\_\_

SUB TOTAL \$ \_\_\_\_\_

**TOTAL ESTIMATED COST OF TMP ELEMENTS = \$ 365,000**

8. The Project includes the following: (Check applicable type of facility closures)

- a. Highway or Freeway Lanes
- b. Highway or Freeway Shoulders
- c. Full Freeway Closure
- d. Freeway On/Off-Ramps
- e. Freeway Connectors
- f. Local Streets
- g. Prolonged Ramp Closures

9. Major operations requiring traffic control and working days for each

<u>Operation</u>	<u># of Working Days</u>	<u># of Traffic Control Days</u>
<input checked="" type="checkbox"/> a. Clearing and Grubbing	<u>3</u>	<u>2</u>
<input checked="" type="checkbox"/> b. Existing Feature Removal	<u>25</u>	<u>15</u>
<input type="checkbox"/> c. Excavation of Embankments Construction	<u>          </u>	<u>          </u>
<input checked="" type="checkbox"/> d. Structural Section Construction	<u>20</u>	<u>15</u>
<input checked="" type="checkbox"/> e. Drainage Feature Construction	<u>15</u>	<u>5</u>
<input checked="" type="checkbox"/> f. Structures Construction	<u>80</u>	<u>4</u>
<input checked="" type="checkbox"/> g. MBGR/Barrier Construction	<u>5</u>	<u>1</u>
<input checked="" type="checkbox"/> h. Striping	<u>5</u>	<u>5</u>
<input checked="" type="checkbox"/> i. Electrical Component Construction	<u>80</u>	<u>20</u>
<input checked="" type="checkbox"/> j. Others <u>Install Moveable Barrier</u>	<u>5</u>	<u>5</u>
Total days	<u>238</u>	<u>72</u>

**Notes :** Extensive TMP may be required for the significant impacts.

PREPARED BY (Consultant): James Pun DATE: 6/01/2016  
HNTB Corporation

APPROVAL RECOMMENDED BY  
(Caltrans Oversight Engineer): David Wilkerson DATE: 6/01/2016

APPROVED BY (TMP Office): Ashween Shah DATE: 6/10/2016

## **Appendix E. Right-of-Way Data Sheet**

**RIGHT OF WAY DATA SHEET FOR LOCAL PUBLIC AGENCY PROJECTS**

17-EX-21 (Rev 12/2014)

To: District Office Chief  
R/W Local Programs

Date: 8/2/2016

Attention: Kristin Schober, Senior Right of Way Agent  
Local Programs

Co. CC/MRN Rte I-580 PM. 4.98 /7.79, 0.0/3.29  
Expense Authorization: 04-2J6801  
Project ID: 0414000552

Subject: **RIGHT OF WAY DATA SHEET- LOCAL PROGRAMS**

Project Description: Richmond-San Rafael Bridge Access Improvements

Right of way necessary for the subject project will be the responsibility of Bay Area Toll Authority (BATA)

The information in this data sheet was developed by HNTB Corporation / Associated Right of Way Services, Inc.

I. **Right of Way Engineering**

What level of right of way engineering is required for this project?

Minimal (Requires Right of Way Retracement Narrative)

- No fee or easement acquisitions are required for the project; AND
- No excess lands will be created by the project; AND
- No Temporary Construction Easements (TCEs) are required for the project; AND
- No retaining walls, sound walls, footings, signs, traffic signals, or similar improvements will be constructed within ten feet of the existing right of way line.

Minor (Requires Land Net, and PS&E Project Control sheets)

- No fee or easement acquisitions are required for the project; AND
- No excess lands will be created by the project; AND one or both of the following:
- Temporary Construction Easements (TCEs) are required for the project;
- Improvements will be constructed within ten feet of the existing right of way line.

Moderate (Requires Land Net, PS&E Project Control sheets, Base Map, and Appraisal Map)

- At least one fee and/or easement (except TCEs) acquisition is required for the project; AND
- No excess lands will be created by the project; AND
- No parcels will be transferred to the State.

Major (Requires full compliance with Right of Way Manual and Local Public Agency Coordination (LPAC) Guidelines including, but not limited to, pre-design Record of Survey, Base Map, Appraisal Map, legal descriptions and deeds, property transfer documents, JUAs/CCUAs, Record Map, monuments, and one or more Record of Surveys)

- One or more fee and/or easement parcels will be transferred to the State; AND/OR
- Excess lands will be created by the project.

II. **Engineering Surveys**

Is any surveying or photogrammetric mapping required?

No (Provide explanation)

Yes (Complete the following)

**RIGHT OF WAY DATA SHEET FOR LOCAL PUBLIC AGENCY PROJECTS**Datum Requirements

1. The units for this project are

U. S. Survey Feet;

Metric (provide explanation).

2. The horizontal datum for this project is

California Coordinate System of 1983 (NAD 83 (1992), Epoch 2010);

California Coordinate System of 1983 (NAD 83 (\_\_\_\_\_), Epoch \_\_\_\_\_) (Provide Datum Tag and Epoch);

Other (Provide explanation).

3. The vertical datum for this project is

North American Vertical Datum of 1988 (NAVD 88);

National Geodetic Vertical Datum of 1927 (NGVD 27) (Provide explanation).

Other (Provide explanation).

III. **Parcel Information (Land and Improvements)**

Are there any property rights required within the proposed project limits?

No  Yes  (Complete the following)

Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.)

The parcel in the project area in Contra Costa County (City of Richmond) is owned by Chevron USA Inc. A permanent bicycle/pedestrian path easement is proposed to be acquired from APN 561-040-016-9. The site is part of Chevron's Richmond Refinery, a 2,900-acre petroleum refinery. This APN has a different zoning (Light Industrial) than the surrounding parcels (Heavy Industrial). The site also appears to be used as excess or buffer land, which could presumably be sold separately, and is separately physically from much of the refinery by Stenmark Drive. Fencing along the side yard in the vicinity of the proposed easement appears to be Caltrans fencing, securing a Caltrans facility. The site appears to be vacant land with naturally occurring vegetation. In the vicinity of the proposed easement area, the site is relatively level to gently sloping in topography.

Parcels in the project area in Marin County (City of San Rafael) include:

Permits to Enter and Construct for driveway landscaping and irrigation system work and driveway conform work done to benefit the property owner will be obtained for the following parcels:

- 1.) 009-161-50 – Baypark Real Estate LP
- 2.) 009-161-51 – Baypark Real Estate LP
- 3.) 009-161-56 – Paul F Descalso/Descalso Theresa & Paul F
- 4.) 009-161-59 – AVDG Properties LLC
- 5.) 009-161-19 – Pac Telephone & Telegraph
- 6.) 009-161-37 – Grange Fred
- 7.) 009-161-49 – Farnsworth Earl C & Lenore K



**RIGHT OF WAY DATA SHEET FOR LOCAL PUBLIC AGENCIES**

17-EX-21 (Rev 12/2014)

**Right of Way Cost Estimate:**

	Current Value	Escalation Rate	Escalated Value
A. Acquisition, including Excess Lands, Damages, and Goodwill (*This included \$765,000 for Chevron to Relocate Utility Services Lines on their property.)	<u>\$765,000 *</u>	<u>10 %</u>	<u>\$841,500</u>
Environmental Mitigation	<u>\$0</u>	<u>10 %</u>	<u>\$0</u>
Grantor's Appraisal Cost	<u>\$0</u>	<u>NA</u>	<u>\$0</u>
B. Utility Relocation - Project Liability (from Section VII)	<u>\$2,040,350</u>	<u>NA %</u>	<u>\$2,040,350</u>
C. Relocation Assistance	<u>\$0</u>	<u>NA</u>	<u>\$0</u>
D. Clearance Demolition	<u>\$0</u>	<u>NA %</u>	<u>\$0</u>
E. Title and Escrow Fees	<u>\$19,000</u>	<u>NA %</u>	<u>\$19,000</u>
<b>F. <u>TOTAL ESCALATED VALUE</u></b>			<b><u>\$2,891,850</u></b>
G. Railroad Construction Costs (flagger, track work etc)	<u>\$0</u>	(These are construction costs to be included in PS&E)	
H. Construction Contract Work	<u>\$50,000</u>	(These are construction costs to be included in PS&E)	
<b>I. <u>TOTAL PARCEL COUNT</u></b>	<b><u>8*</u></b>		

\*7 of these parcels are identified on the previous page under Section III as Permit to Enter and Construct parcels.

**RIGHT OF WAY DATA SHEET FOR LOCAL PUBLIC AGENCIES**

IV. **Dedications**

Are there any property rights that have been acquired, or anticipate will be acquired, through the "dedication" process for the Project?

No  X  Yes \_\_\_\_\_ (Complete the following)

Number of dedicated parcels:

Have the dedication parcel(s) been accepted by the municipality involved?  N/A

V. **Excess Lands / Relinquishments**

Are there Caltrans property rights which may become excess lands or potential relinquishment areas?

No  X  Yes \_\_\_\_\_ (Provide an explanation in Remarks Section XIII.)

VI. **Relocation Information**

Are there relocations anticipated? YES \_\_\_\_\_ NO  X   
(If yes, provide the following information)

No. of personal property relocations \_\_\_\_\_

No. of single family \_\_\_\_\_ No. of business/non profit \_\_\_\_\_

No. of multi-family \_\_\_\_\_ No. of farms \_\_\_\_\_

Based on Draft / Final Relocation Impact Statement / Study (circle one) – Dated \_\_\_\_\_, it is anticipated that sufficient replacement housing will / will not be available without Last Resort Housing.

VII. **Utility Relocation Information**

Anticipate any utility facilities or utility rights of way to be affected?

No \_\_\_\_\_ Yes  X  (Complete the following)



---

IX. **Clearance Information**

Are there improvements that require clearance?

No  Yes \_\_\_\_\_ (Complete the following)

- A. Number of Structures to be demolished \_\_\_\_\_  
B. Estimated Cost of Demolition \$ \_\_\_\_\_  
C. If there is demolition and clearance, will it be done prior to construction or as part of the construction contract?

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X. **Hazardous Materials/Waste**

Are there any sites and/or improvements in the Project Limits that are known to contain hazardous waste/materials?

None \_\_\_\_\_ Yes  (Explain in the Remarks Section XIII)

Are there any sites and/or improvements in the Project Limits that are suspected to contain hazardous waste/materials?

None  Yes \_\_\_\_\_ (Explain in the Remarks Section XIII)

XI. **Project Scheduling**

**Completion Dates**

Package A:

Proposed completion of Appraisal maps  
and legal descriptions, if needed 08/2016

Proposed Environmental Clearance 06/2016

Proposed R/W Certification 08/2016

Proposed Ready to List (RTL) N/A

Proposed Construction Award 10/2016

Package B:

Proposed completion of Appraisal maps  
and legal descriptions, if needed 11/2016

Proposed Environmental Clearance 06/2016

Proposed R/W Certification 05/2017

Proposed Ready to List (RTL) N/A

Proposed Construction Award 07/2017

**RIGHT OF WAY DATA SHEET FOR LOCAL PUBLIC AGENCIES**

17-EX-21 (Rev 12/2014)

\* In order to maintain consistency in the acquisition of real property, it is Caltrans' position that all agencies comply with Titles 23 and 49 of Code of Federal Regulations that mandate responsibility for compliance with the provision of the Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended, and the regulation for federally-assisted programs.

To assure proper recognition of, and adherence to those regulations, Caltrans has developed, with the approval of FHWA, Right of Way procedural manuals covering all aspects of appraisal and acquisition of real property for public right of way purposes.

Specifically, the scheduled right of way lead time does not appear to be sufficient. This Project Report is conditionally approved with the understanding that the right of way schedule will be adjusted, as necessary, and that Caltrans District 4, Right of Way concurrence will be obtained to address the adequacy of the revised schedule.

XII. **Proposed Funding**

	Local	State	Federal	OTHER
Acquisition	\$841,500	\$	\$	\$
Utilities	\$1,019,725	\$	\$	\$1,020,625
Relocation Assistance Program	\$0	\$	\$	\$
R/W Support Costs	\$100,000 *	\$	\$	\$

(\*Acquisition Appraisals (if needed), Review Appraiser (if needed), Acquisition and Project Management)

XIII. **Remarks**

Sampling data collected as part of this study indicates the presence of ADL (aerially deposited lead) in several project areas, and these locations are at San Quentin Terrace UC, EB Main Street on-ramp, WB Main Street off-ramp, and EB I-580 from Toll Plaza to Marine Street off-ramp. ADL-impacted soil is not intended to be reused within Caltrans right-of-way and therefore will be off-hauled.

Chevron has indicated their desire to donate a permanent easement for the project.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**RIGHT OF WAY DATA SHEET FOR LOCAL PUBLIC AGENCIES**

EXHIBIT  
17-EX-21 (Rev 12/2014)

Expenditure Authorization: 04-2J6801  
Project ID: 0414000552

**Project Sponsor Consultant**

Prepared by:

  
Chadi Chazbek  
HNTB Corporation


**Project Sponsor**

Reviewed and Approved by:

  
Chris Lillie  
Bay Area Toll Authority

**R/W Professional (ie: qualified consultant or agency)**

Reviewed and Approved by:

  
James B. Richards  
Associated Right of Way Services, Inc.

Project Manager

Title

08/02/2016  
Date

Project Manager

Title


8-3-2016  
Date

Right of Way Consultant

Title

8/02/16  
Date

Caltrans  
Reviewed and approved based on information provided to date:

  
for: Kristin Schober  
Caltrans Senior R/W Agent  
Local Programs  
Division of Right of Way

8/3/16  
Date

## **Appendix F. Risk Management Plan**



LEVEL 2 - RISK REGISTER				Project Name:	I-580 Access Improvement Project			DIST- EA	04-2J6801	Project Manager	Chadi Chazbek, HNTB					
Risk Identification							Risk Assessment					Risk Response				
Status	ID #	Type	Category	Title	Risk Statement	Current status/assumptions	Probability	Cost Impact	Cost Score	Time Impact	Time Score	Rationale	Strategy	Response Actions	Risk Owner	Updated
Active	1001	Threat	Environmental	Nesting birds	Presence of nesting birds on or near the bridge structure will likely result in limited construction windows.	Issue remains active October 2015	4-High	4 -Moderate	16	8 -High	32		Mitigate	Work with biology to identify nesting species and seek to preclude/ avoid nesting activities if possible. Construction documents can limit work activities to areas without nesting birds during the nesting season.	Chadi Chazbek	3/5/2016
Active	1002	Threat	Environmental	Seals/ Sea Lions	Presence of seals/ sea lions (pinnipeds) on rocks below eastern portion of span may restrict work activities in some areas and/ or create seasonal work windows for some activities.	Issue remains active October 2015	2-Low	4 -Moderate	8	4 -Moderate	8		Mitigate	Developed strategies to avoid impacts to pinnipeds and incorporated them into the project report and PS&E documents	Chadi Chazbek	3/5/2016
Retired	1003	Threat	Environmental	Plan Bay Area Settlement	As a result of MTC's Plan Bay Area legal settlement with environmental groups may add additional environmental scrutiny and may trigger the need for a higher level environmental document	CEQA is complete and settled.	3-Moderate	4 -Moderate	12	4 -Moderate	12		Avoid	Engage environmental groups and share shoulder running lane technical studies as they are performed, consistent with Plan Bay settlement	Chris Lillie	3/5/2016
Retired	1004	Threat	Environmental	Project Controversy	As a result of public project controversy, a higher level environmental document may be required.	CEQA is complete and settled.	2-Low	4 -Moderate	8	4 -Moderate	8		Mitigate	Project has not experienced any project opposition/ concerns and public outreach efforts show significant public support	Stefan Galvez	3/5/2016
Active	1005	Threat	Environmental	Regulatory Review Periods	Regulatory review periods on the critical path may exceed the assumed duration in the schedule, resulting in a project delay overall.	Threat remains.	3-Moderate	4 -Moderate	12	8 -High	24		Accept	Engage w/ regulatory agencies, but review times are outside of the project's control	Chris Lillie	3/5/2016
Retired	1006	Threat	ROW	Staging Areas	Project may require construction staging areas outside of the assumed project footprint	Project staging areas within project footprint have been identified and incorporated into the project.	2-Low	4 -Moderate	8	4 -Moderate	8		Avoid	Work with Construction to identify likely project staging requirements and clear staging areas as part of the environmental document.	Chadi Chazbek	3/5/2016
Retired	1007	Threat	Design	Additional Design Alternatives	A lack of consensus around the preferred bike path alignment and design amongst the project stakeholders (Richmond/ Caltrans/ Bike Coalition/ Chevron) may require study of additional alternatives beyond the currently assumed alternatives	Build alternative for bike lane on the Contra Costa side and on the RSR bridge have been confirmed.	2-Low	4 -Moderate	8	4 -Moderate	8		Mitigate	Engage stakeholder groups during preliminary design to develop inclusive design options during preliminary engineering	Chris Lillie	3/5/2016
Active	1008	Threat	Design	Design Exceptions	Inability to develop adequate design exception justification may lead to unbuildable or unbuildable alternatives	Draft DE's have been reviewed and team is working on final minor comments. Final approval forthcoming.	1-Very Low	8 -High	8	8 -High	8		Mitigate	CT Geometricians have reviewed and provided final comments on the design exceptions and the justification rational	Chadi Chazbek	3/5/2016
Active	1009	Threat	Design	ADA Compliance	Presence of non-ADA compliant grades or cross slopes on existing structure may lead to costly or unbuildable requirements for to achieve ADA compliant design	Design has not identified non-ADA compliant elements. Threat will remain very low through construction.	1-Very Low	8 -High	8	4 -Moderate	4		Accept	Preliminary facility assessment indicates that bike path will be designed to ADA standards - if non-standard grades/ cross-slopes exist, will seek ADA exception	Chadi Chazbek	3/5/2016
Retired	1010	Threat	Design	Bike path compliant barrier height	The existing 732 barrier on the causeway bridge section (west end of bridge) may have to be replaced with 40" or higher barrier to meet bike path fall protection standards	Barrier retrofit design with fall protection rail nearing consensus.	2-Low	8 -High	16	2 -Low	4		Avoid	Project design involves retrofitting the barrier with railing to meet the height requirements	Chadi Chazbek	3/5/2016
Retired	1011	Threat	Design	Utility Tray Design	As a result of the bike path design, the utility tray on the upper deck may require modification or relocation	Project design does not anticipate any impacts to the utility tray. Threat will remain active until design complete.	1-Very Low	8 -High	8	4 -Moderate	4		Avoid	Design alternatives did not impact utility tray. No modification to the utility tray is required	Chadi Chazbek	3/5/2016
Active	1012	Threat	ROW	Retaining Wall/ Utility Impacts	The project design may result in impacts to existing retaining walls and utilities on the eastern segment of the project, near Chevron	Walls and utility tunnels will be impacted by the design. Risk of delays in approvals or construction schedule exist. Threat remain active until design is complete	3-Moderate	8 -High	24	8 -High	24		Mitigate	Obtain early approvals of temporary tie-back systems from CT during the design process. Consult with specialty contractors on construction duration and on access needs	Chadi Chazbek	3/5/2016
Active	1013	Threat	Environmental	Contaminated Soil/ Materials	The presence of hazardous material contamination in existing soils or on structures may result in additional project remediation/ disposal costs	Contaminated materials will not be disturbed	3-Moderate	4 -Moderate	12	2 -Low	6		Accept	Conduct appropriate environmental testing of disturbed areas to assess contamination risk	Chadi Chazbek	3/5/2016
Active	1014	Threat	ROW	ROW/ Easements Required	Due to project design requirements, unanticipated additional right of way or easements will be required	Improvements will require permanent easements from Chevron	5-Very High	4 -Moderate	20	8 -High	40		Mitigate	Team is working with CT ROW and Chevron to advance the ROW process as much as possible prior to signing the CE/CE.	Chadi Chazbek	3/5/2016

Active	1015	Threat	Environmental	Historical Classification of RSR Bridge	Due to age of RSR Bridge, the structure is eligible for classification as a historic structure and if classified, may lead to additional project time and cost	CT deemed the Structure as historic.	4-High	4 -Moderate	16	16 - Very High	64	Accept	Work with CT on submitting the cultural resources reports to SHPO as soon as possible	Stefan Galvez	3/5/2016
Active	1016	Threat	PM	Project Cost	Unknown or under-assessed project elements may lead to increases in project cost (i.e. under-budgetting project during preliminary engineering) leading to a lack of adequate project funding.	Risk to be monitored through RTL	2-Low	8 -High	16	4 -Moderate	8	Avoid	Project cost estimates to be comprehensive and apply appropriate contingencies	Chadi Chazbek	3/5/2016
Active	1017	Threat	Construction	Unknown Buried Objects	The presence of unknown buried objects may increase project costs	Project risk to remain through construction.	3-Moderate	2 -Low	6	4 -Moderate	12	Accept	Conduct appropriate surveys during planning/ design to identify potential buried objects. Conduct field exploration as necessary	Chadi Chazbek	3/5/2016
Active	1018	Threat	Organizational	Lack of Stakeholder Consensus	The lack of consensus around a preferred bike path alternative between BATA and Caltrans may lead to project delays, additional cost and possibly project derailment	Project consensus appears to exist. Threat removed once project approval achieved.	1-Very Low	16 - Very High	16	16 - Very High	16	Mitigate	Work collaboratively and with guidance from elected leaders to develop an acceptable alternative to all parties	Chris Lillie	3/5/2016
Retired	1019	Threat	Design	Significant Structural work on RSR bridge is needed	Structural analysis of RSR bridge determines that significant structural retrofit is needed to accommodate additional load	Modification to existing structures has been determined unnecessary.	2-Low	16 - Very High	32	8 -High	16	Avoid	Prepare preliminary structures analysis to make sure project is scoped properly for structures work	Chadi Chazbek	3/5/2016
Active	1020	Threat	ROW	BCDC Permit	Project requires BCDC Permit which will require significant time.	Working with BCDC on identifying the shortest permit process possible for this project	4-High	4 -Moderate	16	8 -High	32	Mitigate	Agreed with BCDC on the permit process and began preparing the appropriate permit material in advance in order to accelerate the review process	Chadi Chazbek	3/5/2016
Active	1021	Threat	Organizational	Incident Response, Maintenance and Operations Agreements	Project requires a number of agreements with CT and other agencies in order to provide incident response, operation, and maintenance. Not having the agreements in place can potentially delay opening of the third lane and the path	Working with CT, CHP, and other agencies to develop the roles and responsibilities and draft the necessary agreements	3-Moderate	4 -Moderate	12	8 -High	24	Mitigate	Work with CT Maintenance, CHP, and other agencies to get the appropriate agreements drafted in time for opening of the project.	Chris Lillie	3/5/2016

**Appendix G. Categorical Exemption / Categorical Exclusion  
(CE/CE) form**

**CATEGORICAL EXEMPTION/CATEGORICAL EXCLUSION DETERMINATION FORM**

<b>04-CC-580</b>	<b>04-CC-580-PM</b>	<b>04-2J6800</b>
	<b>R4.98/7.79, MRN-580-PM 0.0/3.29</b>	
Dist.-Co.-Rte. (or Local Agency)	P.M./P.M.	E.A/Project No. Federal-Aid Project No. (Local Project)/Project No.

**PROJECT DESCRIPTION:** (Briefly describe project including need, purpose, location, limits, right-of-way requirements, and activities involved in this box. Use Continuation Sheet, if necessary.)

The Richmond-San Rafael Bridge Access Improvement Pilot Project ("project") proposes to convert the existing shoulders on the Richmond-San Rafael ("RSR") Bridge to accommodate bicycle and pedestrian access on the upper bridge deck (westbound), and a new vehicular travel lane on the lower deck (eastbound). Bicycle and pedestrian access on the upper deck of the RSR Bridge would be provided by installing a barrier to separate bicyclists and pedestrians from motorists. The total length of the project is approximately 6.1 miles [Contra Costa County post mile (PM) R4.98 to Marin County PM 3.29]. Please see the attached continuation sheet for a more detailed project description.

**CEQA COMPLIANCE** (for State Projects only)

Based on an examination of this proposal and supporting information, the following statements are true and exceptions do not apply (See 14 CCR 15300 et seq.):

- If this project falls within exempt class 3, 4, 5, 6 or 11, it does not impact an environmental resource of hazardous or critical concern where designated, precisely mapped and officially adopted pursuant to law.
- There will not be a significant cumulative effect by this project and successive projects of the same type in the same place, over time.
- There is not a reasonable possibility that the project will have a significant effect on the environment due to unusual circumstances.
- This project does not damage a scenic resource within an officially designated state scenic highway.
- This project is not located on a site included on any list compiled pursuant to Govt. Code § 65962.5 ("Cortese List").
- This project does not cause a substantial adverse change in the significance of a historical resource.

**CALTRANS CEQA DETERMINATION** (Check one)

**Exempt by Statute.** (PRC 21080[b]; 14 CCR 15260 et seq.)

Based on an examination of this proposal, supporting information, and the above statements, the project is:

- Categorically Exempt. Class** . (PRC 21084; 14 CCR 15300 et seq.)
- Categorically Exempt. General Rule exemption.** [This project does not fall within an exempt class, but it can be seen with certainty that there is no possibility that the activity may have a significant effect on the environment (CCR 15061[b][3].)]

Cristin Hallissy  
Print Name: Environmental Branch Chief

Mo Pazooki  
Print Name: Project Manager/DLA Engineer

Cristin Hallissy  
Signature

5/27/16  
Date

[Signature]  
Signature

5/27/16  
Date

**NEPA COMPLIANCE**

In accordance with 23 CFR 771.117, and based on an examination of this proposal and supporting information, the State has determined that this project:

- does not individually or cumulatively have a significant impact on the environment as defined by NEPA and is excluded from the requirements to prepare an Environmental Assessment (EA) or Environmental Impact Statement (EIS), and
- has considered unusual circumstances pursuant to 23 CFR 771.117(b).

**CALTRANS NEPA DETERMINATION** (Check one)

**23 USC 326:** The State has determined that this project has no significant impacts on the environment as defined by NEPA, and that there are no unusual circumstances as described in 23 CFR 771.117(b). As such, the project is categorically excluded from the requirements to prepare an environmental assessment or environmental impact statement under the National Environmental Policy Act. The State has been assigned, and hereby certifies that it has carried out the responsibility to make this determination pursuant to Chapter 3 of Title 23, United States Code, Section 326 and a Memorandum of Understanding dated June 07, 2013, executed between the FHWA and the State. The State has determined that the project is a Categorical Exclusion under:

- 23 CFR 771.117(c): activity (c) ( )
- 23 CFR 771.117(d): activity (d) ( )
- Activity \_\_\_ listed in Appendix A of the MOU between FHWA and the State

**23 USC 327:** Based on an examination of this proposal and supporting information, the State has determined that the project is a CE under 23 USC 327.

Cristin Hallissy  
Print Name: Environmental Branch Chief

Mo Pazooki  
Print Name: Project Manager/DLA Engineer

Cristin  
Signature

5/27/16  
Date

[Signature]  
Signature

5/27/16  
Date

Date of Categorical Exclusion Checklist completion: 5/20/16

Date of ECR or equivalent : 5/27/16

Briefly list environmental commitments on continuation sheet. Reference additional information, as appropriate (e.g., CE checklist, additional studies and design conditions).



**CATEGORICAL EXEMPTION/CATEGORICAL EXCLUSION DETERMINATION FORM**  
**Continuation Sheet**

<b>04-CC-580</b>	<b>04-CC-580-PM</b>	<b>04-2J6800</b>
	<b>R4.98/7.79, MRN- 580-PM 0.0/3.29</b>	
Dist.-Co.-Rte. (or Local Agency)	P.M./P.M.	E.A/Project No. Federal-Aid Project No. (Local Project)/Project No.

Continued from page 1:

**PURPOSE AND NEED**

**Purpose:**

- Reduce congestion and travel time on eastbound (EB) Interstate 580 (I-580)/Richmond-San Rafael (RSR) Bridge;
- Provide pedestrian and bicycle travel along the I-580/RSR Bridge corridor.

**Need:**

**Congestion and Delay** – Regional growth and local development in Marin County has resulted in significant traffic increases on EB I-580 and the RSR Bridge approach during evening peak commute periods. During evening peak periods, this results in significant traffic delays along EB Sir Francis Drake Boulevard, and US-101 northbound (NB) south of the Sir Francis Drake exit, with unacceptable level of service conditions occurring at the intersections of Bellam Boulevard/I-580 EB ramps, US 101 NB ramps/Sir Francis Drake Boulevard, Larkspur Landing Circle (west)/Sir Francis Drake Boulevard, Larkspur Landing Circle (east)/Sir Francis Drake Boulevard, San Quentin Gates/Sir Francis Drake Boulevard, Anderson Drive/Sir Francis Drake Boulevard, and Main Street/I-580 EB ramps. Because substantial growth is projected to occur in this region, there is a need to improve and expand eastbound bridge capacity to reduce and avoid additional traffic congestion and delay during peak commute hours.

**Accessibility for Bicyclists and Pedestrians** – The current lack of bicycle and pedestrian facilities across the RSR Bridge represents a major gap in the planned 500-mile Bay Trail, with sections of the Bay Trail adjoining the bridge on both sides. Overall, an estimated 37.9 million annual trips were made on the existing Bay Trail in 2005, making it one of the most heavily used recreational and non-motorized transportation corridors in the region; however, there is currently no access available over the RSR Bridge.

**DETAILED PROJECT DESCRIPTION**

The Richmond-San Rafael Bridge Access Improvement Pilot Project ("project") proposes to convert the existing shoulders on the Richmond-San Rafael ("RSR") Bridge to accommodate bicycle and pedestrian access on the upper bridge deck (westbound), and a new vehicular travel lane on the lower deck (eastbound). Bicycle and pedestrian access on the upper deck of the RSR Bridge would be provided by installing a barrier to separate bicyclists and pedestrians from motorists.

The total length of the project is approximately 6.1 miles [Contra Costa County post mile (PM) R4.98 to Marin County PM 3.29]. Within the project limits there are six existing structures; San Quentin Undercrossing (Main Street) (Br. No. 27-0070), the RSR Bridge (Br. No. 28-0100), Stenmark Drive Undercrossing (formerly Western Drive) (Br. No. 28-0141R), Scofield Avenue Undercrossing (Br. No. 28-0140 L/R), Marine Street Undercrossing (Br. No. 28-0139), and the Castro Street Undercrossing (Br. No. 28-0290 L/R/S). All proposed improvements are anticipated to be within existing highway and local street rights-of-way, except as noted below in Project Element 3.

The project consists of three major components that are interrelated:

- Project Element 1: EB I-580 travel lane between Marin County and Contra Costa County
- Project Element 2: Bicycle/Pedestrian Path in Contra Costa County
- Project Element 3: Bicycle/Pedestrian Path on the RSR Bridge and connections to the RSR Bridge

Project Element 1 and 3 are part of a pilot project which will run for the duration of four years. Under the pilot program, the third eastbound peak period use lane (PPUL) and the bicycle/pedestrian path will be measured/monitored for operational and safety performance. During the four-year pilot program, Caltrans, BATA and other stakeholders will evaluate the project and make necessary adjustments to the PPUL and bicycle/pedestrian path on the RSR Bridge to improve performance. Evaluation criteria have been developed to measure the success of both the PPUL and the bicycle/pedestrian path and are included in Appendix F, Performance Measures of the Project Decision Document.

***Project Element 1 – Eastbound I-580 Third Lane (including RSR Bridge Pilot Project)***

Project Element 1 of the proposed project would construct a new third travel lane by converting the existing shoulder of the eastbound lower deck of the RSR Bridge to a travel lane. The new lane will begin immediately downstream from the Main Street EB off-ramp in Marin County and terminate on the Contra Costa County side of the RSR Bridge, slightly downstream of the Marine Street/East Standard Avenue EB off-ramp in Richmond. The Bridge portion of the third lane on the lower deck will operate during peak hours only (as part of the pilot project). The exact hours of operation of the lane will be outlined in the Project Report. The off-Bridge portion of the third lane will operate 24 hours a day, 7 days per week. Electronic and static signs will be used to operate and manage the lane during the hours of operations and are included in the project description below. The third travel lane on the RSR Bridge is part of a pilot project with Project Element 3, which will run for the duration of four years and is intended to test and evaluate the performance and use of the third travel lane. After four years, the third lane on the RSR Bridge will be evaluated to determine if it is to remain a PPUL, be converted to a full-time use lane, or return to function as a shoulder. All other constructed components of Project Element 1 would be permanent. The EB I-580 third lane would include the following work elements:

- 1) Modify roadside post-mounted signage on EB I-580 and install new roadside signs.
- 2) Install new electronic signs on the bridge to communicate to drivers when each lane may be used. Dynamic Message Signs (DMS) above each lane will indicate whether the lane is open (green arrow) or closed (red X).

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- 3) Modify striping on the EB Main Street/San Quentin off-ramp to extend the existing Sir Francis Drake auxiliary lane beyond the Main Street interchange. The extension of the auxiliary lane necessitates shifting of the median barrier approximately 10 feet northerly to improve stopping sight distance for mainline eastbound traffic, at the approach to the RSR Bridge.
- 4) Widen Main Street between the eastbound and westbound ramps to accommodate two 5-foot Class II bike lanes, maintaining the 5-foot sidewalk. A Type 7 (L-shaped) retaining wall will be constructed on the west side (southbound side) of Main Street under I-580 (Retaining Wall No.1). This element will be a permanent feature and is not part of the pilot test.
- 5) Realign the EB Main Street on-ramp to merge with the proposed travel lane. A Type 7 (L-shaped) retaining wall will be constructed along the left side of the ramp (Retaining Wall No.3). Standard construction methods will be used.
- 6) Reconstruct the southeast corner of the Main Street/WB off-ramp intersection and the northeast corner of the Main Street/EB on-ramp intersection and construct a new sidewalk on the southeast corner of the Main Street/EB on-ramp. A new Type 7 (L-shaped) wall will be constructed at the foot of the embankment slope at the San Quentin Undercrossing. The wall will curve around the corner behind the northeast Main Street sidewalk, onto the north side of the Main Street on-ramp (Retaining Wall No.2). The southeast sidewalk will be constructed along the east side of Main Street, from the sidewalk constructed by Marin Public Works prior to this project (approximately 25 feet south of the EB on-ramp) where it will conform to the right-of-way line. The sidewalk will continue around the southeast corner of the EB on-ramp intersection and along the south side of the EB on-ramp, where a new Golden Gate Transit bus stop will be constructed. A new Type 5 retaining wall will be constructed along the south side of the Main Street on-ramp to preserve access to the electrical substation at the Caltrans Maintenance Yard (Retaining Wall No.6).
- 7) Remove the existing 362.5-foot retaining wall along EB I-580, immediately downstream of the Scofield Avenue Undercrossing. A new soil nail retaining wall will be constructed approximately 15 feet south of the existing edge of pavement (Retaining Wall No.4). The new wall will improve the stopping sight distance along mainline EB I-580. An additional soil nail retaining wall will be constructed 30 feet east of Retaining Wall No. 4, providing additional shoulder and lane width (Retaining Wall No. 7). The new wall will require the removal of 85 feet of the existing retaining wall along EB I-580. Additional shoulder and lane width requires that the 8-foot by 7-foot utility culvert crossing under EB I-580 be extended by 17 feet. This includes 8 feet of tunnel extension and 9 feet of access structure. This utility tunnel is located between Retaining Walls No. 4 and No. 7.
- 8) Reconfigure the Marine Street off-ramp exit nose to accommodate continuation of the eastbound travel lane and widen the inside of the existing off-ramp to provide additional storage for vehicle queuing.
- 9) Reconfigure East Standard Avenue between Marine Street and Castro Street to change one of the two westbound lanes to an eastbound lane by reconstructing the existing median barrier approximately 12 feet northerly. A permanent, Type 60 series concrete barrier will also be installed to separate the bicycle and pedestrian path from vehicular traffic. The barrier will extend along the south side of East Standard Avenue between Marine Street and Castro Street to the existing bicycle and pedestrian paths, linking the bicycle facilities on Marine Street to Castro Street. Minor sliver widening will be required along East Standard Avenue and the eastbound loop on-ramp to accommodate the full street configuration including shoulders.
- 10) Modify traffic signal and intersection operations, including upgrading, replacing, or adding new controller cabinets, traffic signal posts, and other intersection control equipment at three locations: EB I-580/Marine Street off-ramp, EB East Standard Avenue/Castro Street and WB I-580/Castro Street off-ramp. It is anticipated that any controller cabinets or traffic signal poles would be installed within the existing operational transportation right-of-way.
- 11) Install standard loop traffic monitoring stations (TMS) in the pavement of the upper and lower bridge decks.
- 12) Mount CCTV cameras with eastbound and westbound views along the Bridge. CCTV cameras with eastbound views will begin on I-580 East in Marin County and end at the Marine Street interchange in Contra Costa County. CCTV cameras with westbound views will begin on the westbound RSR Bridge, westerly of the Toll Plaza, and end near the Main Street off-ramp.
- 13) Install ramp metering at two on-ramp locations: the eastbound Main Street single-lane on-ramp and the eastbound Standard Avenue two-lane on-ramp.
- 14) Sliver widening on the left side of the Sir Francis Drake Blvd Eastbound on-ramp and addition of a type 60C concrete barrier along the inside (left) edge of pavement. The existing metal beam guardrail will be removed, and short section of the ramp will be re-striped to provide more adequate width for the existing bicycle accommodation on the right shoulder. Additional lighting will be installed within 5 feet of the outside edge-of-shoulder.
- 15) A Changeable Message Sign (CMS) will be installed at MRN 238+00, near the EB Main St. off-ramp.

All improvements for Project Element 1 will be within existing local and state right-of-way.

***Project Element 2 – Bicycle/Pedestrian Path in Contra Costa County***

The proposed Class I bi-directional bicycle and pedestrian path in Contra Costa County would be constructed along the north side of westbound (WB) I-580 from the Marine Street interchange in Contra Costa County to Stenmark Drive (formerly Western Drive) and the Toll Plaza where it would then connect to Project Element 3. The Class I bi-directional bicycle and pedestrian path would be implemented along the existing WB I-580 and Stenmark Drive off-ramp shoulders and would replace the existing one-way Class III bicycle lanes on both EB and WB I-580 between Marine Street and the Toll Plaza. The proposed bi-directional bicycle and

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pedestrian path would be separated from vehicle traffic by a continuous concrete barrier. Implementation of the path would include the following work elements:

- 1) Install a Class I bi-directional path for bicycles and pedestrians separated from automobile traffic by a permanent concrete barrier. The path will begin at the existing bike lane and sidewalk at the Marine Street EB off-ramp and continue parallel with WB I-580 to the Stenmark Drive off-ramp.
- 2) Widen the north side of the existing Stenmark Drive off-ramp to provide an inside shoulder, a vehicle lane, an outside shoulder, a concrete barrier, and a 10-foot bi-directional bicycle/pedestrian path. A new retaining wall will be constructed along the north side of the bi-directional bicycle and pedestrian path (Retaining Wall No.5). Standard construction methods will be used.
- 3) A gabion wall 5.5 feet high and approximately 50 feet long will be installed on the slope between WB 580 and the curve of the bicycle/pedestrian path, just west of Marine Street. The gabion wall will be embedded 2 feet into the ground, with a 12 degree batter.
- 4) Install a crosswalk at Stenmark Drive to continue the Class I bi-directional bicycle and pedestrian path further west on the south side of Stenmark Drive, where it will connect to the existing bicycle trail and to the Point Molate path being constructed by East Bay Regional Parks District (separate project). The path on the south side of Stenmark Drive will be 14-feet wide.
- 5) Replace the existing bridge railings on the north side of Scofield Avenue Undercrossing with a Transportation Security Administration (TSA) approved visual screen (similar to a chain-link fence) or wall to physically and visually block access to the adjacent Chevron fuel pipelines. The visual screen or wall will be designed to prevent the general public from dropping objects onto Chevron's petroleum facilities below.
- 6) PG&E will relocate utility poles and overhead wires along Stenmark Drive to a location of their choice, within local and state right-of-way (may be underground). Currently the poles are within the footprint of the multi-use path.
- 7) Project Element 2 is expected to require installation of new roadside signs and relocation or removal of existing signs.

All improvements for Project Element 2 will be within existing local and state right-of-way, except along the south side of the bike path along Stenmark Drive where an easement will be obtained from Chevron.

***Project Element 3 – Bicycle/Pedestrian Path on RSR Bridge and Related Connections to RSR Bridge (Pilot Project)***

Project Element 3 includes the continuation of the proposed Class I bi-directional bicycle and pedestrian path from the Stenmark Drive off-ramp in Richmond to East Francisco Boulevard in San Rafael. The portion of the bi-directional bicycle and pedestrian path from Stenmark Drive to the Main Street off-ramp would be part of the pilot project that would run for four years, intended to evaluate the performance and use of a bicycle and pedestrian path on the RSR Bridge. After four years, the bi-directional bicycle and pedestrian path on the RSR Bridge may be made permanent, or may return to functioning as a shoulder. All other portions of Element 3 will be permanent. Bicycle and pedestrian access improvements are also included in this project element to improve multimodal circulation and connections to the RSR Bridge. Implementation of Project Element 3 would include the following work elements:

- 1) Install a 10-foot wide Class I bi-directional bicycle and pedestrian path from Stenmark Drive west of the Toll Plaza Maintenance Buildings on an easement through Chevron property, connecting to the bicycle and pedestrian path on the RSR Bridge.
- 2) Convert the existing right shoulder to a 10-foot wide Class I bi-directional bicycle/pedestrian path on the westbound upper deck of the RSR Bridge, separated from motor vehicle traffic by a 42-inch high moveable concrete barrier. The 18-inch wide moveable barrier would start near the end of the maintenance facility and continue across the RSR Bridge to the Marin County side of WB I-580. The barrier would be movable to provide emergency access, access for RSR Bridge maintenance, and other safety considerations.
- 3) Increase the outside bridge railing height to approximately 42 inches above the utility tray (approximately 54 inches above the RSR Bridge deck) to provide additional fall protection for bicyclists and pedestrians with use of cable railings. Install necessary signage to properly guide pedestrian and bicycle traffic onto and off the bike path.
- 4) Widen westbound Main Street off-ramp to connect the Class 1 bicycle/pedestrian path to Francisco Boulevard. Construct a 10-foot bikeway on sidewalk on the north side of Francisco Boulevard between Main Street and Grange Avenue.
- 5) Install bicycle/pedestrian detection systems on the westbound upper deck of the Bridge. The detection system for the bicycle/pedestrian path on the Bridge will be located at the Marin side approach to the Bridge at the East Francisco Boulevard off-ramp. The bike detection system for the bicycle/pedestrian path in Contra Costa County will be located near the Toll Plaza.
- 6) Project Element 3 is expected to require installation of new roadside signage, and relocation or removal of existing signs.

With the exception of the segment of the bicycle/pedestrian path adjacent to the maintenance facility located on an easement to be provided by Chevron, all improvements for Project Element 3 will be located within local and state right-of-way.



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## Continuation Sheet

### Construction Methods, Access and Staging

For all three Project Elements, lane and ramp closures will be required to construct retaining walls, widen shoulders, modify and restripe lanes, modify and install railings, and install signage and electrical conduits. Total anticipated construction duration for the project is 12 to 24 months.

The most significant new construction for the project will be the removal and replacement of the existing retaining walls along EB I-580 between the Scofield Avenue Undercrossing and the Marine Street off-ramp (Retaining Wall Nos. 4 and 7). The construction of this new soil nail wall is envisioned to be a "top-down" construction where the existing wall will be demolished starting at the top, and earthwork will be excavated behind the existing wall. The new wall will be built by excavating material in lifts with a limited height. Soil nails and an initial shotcrete facing will be installed to provide support. A final layer of cast in place concrete/architectural treatment is installed once the wall construction is complete. For this work, access to the top of the existing wall will be required. Preliminary engineering indicates that access can be most readily accommodated by constructing an access road from the existing highway shoulder to the top of the wall. This access road would be approximately 20 feet in width and would begin on the eastern end of the existing retaining wall.

The following staging areas are available within the existing right-of-way and may be used during construction: the pull out area on the shoulder of EB I-580 in San Rafael, between Sir Francis Drake on-ramp and Main Street off-ramp and the pull out area on the right shoulder of EB I-580, south of the toll booths. If additional staging areas are required by the contractor, the contractor will be required to determine their location and complete any necessary environmental clearance.

### ENVIRONMENTAL COMMITMENTS

#### Archaeological/Cultural Resources

Known archaeological and cultural resources will be designated as environmentally sensitive areas (ESA's) throughout the construction-period. The RE will notify the archaeological consultant, construction contractor, and Caltrans archaeologist at least 3 calendar weeks in advance of the beginning construction date to ensure that archaeological consultant will be available to delineate the ESAs in the field, monitor Temporary Fence [Type ESA] installation, and allow for a field review of ESA locations. Temporary Fence [Type ESA] and marking paint ESA will be installed by the contractor at least one calendar week prior to start of construction. The archaeological consultant will inspect the construction area on a periodic basis to ensure that the ESAs are not breached. The importance of the ESAs will be discussed at a pre-construction meeting by the consultant archaeologist.

If previously unidentified cultural materials are unearthed or otherwise discovered during construction, it is Caltrans' policy that work be halted within a 60-foot radius of the discovery until a Caltrans is notified and their qualified archaeologist can assess the significance of the find, per Standard Special Provisions (SSP) section 14-2.02.

#### Historic Resources

New project features, such as the moveable barrier, outer RSR Bridge railing extension, CCTV camera units, and new roadside signage shall preserve distinctive materials and finishes that characterize the RSR Bridge. The new work shall be differentiated from the old and will be compatible with historic materials, size, scale, proportion, and massing of the historic bridge. The new additions will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment will be unimpaired.

The Consultant Architectural Historian will ensure SOI Standards for the RSR Bridge are clearly described and illustrated in the plans, specifications, and estimates (PS&E). The Project Engineer will notify Caltrans PQS Architectural Historian and Environmental Branch Chief at least three weeks in advance of construction. Any project changes will be reviewed by Consultant Architectural Historian to ensure they meet the SOI Standards.

#### Biological Resources – Standard Avoidance and Minimization Measures

Several mitigation measures related to biological resources will be implemented, including, but not limited to:

- Protecting ESAs
- Implementing Erosion Control Measures and Storm Water Pollution Prevention Plans (SWPPPs)
- Replant, Reseed and Restoring Disturbed Areas:
- Pre-construction Worker Environmental Awareness Training
- Implementing wildlife exclusion devices
- Federal marine mammal protection measures
- Protection of jurisdictional waters and water quality
- Measures to protect special-status birds and roosting bats
- Tree protection measures
- Construction site management practices

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**Community Impacts**

Short-term community impacts associated with traffic disruptions and construction activities will be avoided and/or minimized through implementing a Traffic Management Plan (TMP). A TMP will be developed to minimizing community impacts such as traffic disruptions, and to notify people of roadway closures, detours, and the duration of construction activities, thereby minimizing community impacts. Caltrans and BATA will conduct outreach throughout the life of the project to keep the public informed.

Caltrans standard specifications, sections 14-8, 14-9, 18-1 aimed at minimizing air quality and noise impacts during construction would also be adhered to.

**Hazardous Materials**

Investigations for asbestos-containing materials (ACM) and soil contamination will be conducted prior to construction. Surveys for lead-based paint will be conducted in the event of any demolition or modification of the structures within the ROW. Additionally, a health and safety plan will be developed and implemented to prevent worker or general public exposure to hazardous materials.

**Paleontology**

Should potential fossils be encountered, significance will need to be assessed subsequent to recovery and identification. If the planned construction will affect Quaternary marine deposits, a Paleontological Mitigation Plan may be recommended depending on the type of excavations (e.g. drilling vs. basin excavations). Information for a qualified paleontological firm will be kept on hand in the unlikely event that any fossils are encountered.

**Water Quality**

Measures to protect water quality include dewatering (in the event it's needed) and implementation of the SWPPP. The proposed project has a proposed soil disturbance of more than 1 acre; therefore, it would be regulated under the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ; effective on July 17, 2012) for the section within the Caltrans ROW.

## **Appendix H. Storm Water Data Report (Cover Page)**

APPENDIX E

Long Form - Storm Water Data Report



Dist-County-Route: 04-CC.Mrn-580  
 Post Mile Limits: 4.98/7.79 (CC), 0.0/3.29 (Mrn)  
 Project Type: Third Travel Lane and Bicycle/Pedestrian  
 Project ID (or EA): 04-2J6801  
 Program Identification: \_\_\_\_\_  
 Phase:  PID  
 PA/ED  
 PS&E

Regional Water Quality Control Board(s): San Francisco Bay

Is the Project required to consider Treatment BMPs? Yes  No   
 If yes, can Treatment BMPs be incorporated into the project? Yes  No

If No, a Technical Data Report must be submitted to the RWQCB  
 at least 30 days prior to the projects RTL date. List RTL Date: \_\_\_\_\_

Total Disturbed Soil Area: 6.88ac Risk Level: 2  
 Estimated: Construction Start Date: September 2016 Construction Completion Date: January 2018  
 Notification of Construction (NOC) Date to be submitted: September 2016

Erosivity Waiver Yes  Date: \_\_\_\_\_ No   
 Notification of ADL reuse (if Yes, provide date) Yes  Date: \_\_\_\_\_ No   
 Separate Dewatering Permit (if yes, permit number) Yes  Permit # \_\_\_\_\_ No

*This Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the date upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E.*

[Signature] 5/25/2016  
 Stephanie Schuster, P.E., Registered Project Engineer Date

I have reviewed the stormwater quality design issues and find this report to be complete, current and accurate:



[Signature] 05/25/2016  
 Chadi Chazbek, Project Manager Date

[Signature] 06/3/2016  
 Bob Braga, Designated Maintenance Representative Date

[Signature] 6/8/2016  
 For David Yam, Designated Landscape Architect Representative Date

(Stamp Required for PS&E only)

[Signature] 06/03/2016  
 Norman Gonsalves, District/Regional Design SW Coordinator or Designee Date

## **Appendix I. Decision Documents #1 and #2**



## DECISION DOCUMENT

### I-580 ACCESS IMPROVEMENT PROJECTS

#### Richmond-San Rafael (RSR) Bridge: 3<sup>rd</sup> Eastbound Travel Lane and Barrier Separated Bicycle - Pedestrian Path

**Problem Statement.** Congestion and Delay – Regional growth and local development in Marin County has resulted in significant traffic increases on eastbound I-580, Sir Francis Drake Blvd. and the RSR Bridge approach during evening peak commute periods. To accommodate the substantial growth projected to occur in this region, there is a need to improve and expand eastbound bridge operations to reduce and avoid additional traffic congestion and delay.

**Accessibility for Pedestrians and Bicyclists** –The lack of non-motorized traffic across the RSR Bridge represents a major gap in the 270-mile Bay Trail preventing bicyclists and pedestrians access across a major transportation corridor linking Marin County to Contra Costa County and beyond. To accommodate the need for non-motorized traffic using the Bay Trail, there is a need to improve and expand the availability of transportation options for transbay travel.

The PSR(PDS) under development for this project will be consistent with this Decision Document.

#### **Recommendation.**

**EB Direction [PSR(PDS) Element 1 and 2]** The proposed project will convert the existing shoulder on eastbound I-580 and the lower deck of the Richmond San Rafael Bridge to a 3rd travel lane between Sir Francis Drake Boulevard and Marine Street as a 4 year pilot (Element 1). This conversion will address the congestion and delay as noted above. This proposal also includes the necessary modifications required to safely accommodate bicycle traffic which is currently allowed on the shoulders of I-580 from Marine Street to Pointe Molate, and adds pedestrian access to this segment (Element 2). The 3rd EB lane will be open to vehicular traffic during the weekday evening peak periods only.

**WB Direction [PSR(PDS) Element 3]** The proposed project will convert the existing shoulder on the upper deck of the RSR Bridge to a class I bike path using a movable barrier system separating bicycle/pedestrian traffic from vehicular traffic as a 4-year pilot project. The movable barrier will create a 10-foot wide path to allow non-motorized access to the RSR Bridge for the first time.

It is anticipated that in order for the proposed project be successful, additional features will need to be incorporated. These features include traffic ITS and ATM elements (creating a 'smart' bridge corridor), an emergency response plan, enhanced enforcement, and maintenance planning. The details of these items, along with a performance matrix, will be developed in the next phase of the project.

This Decision Document approves this proposed project to proceed with environmental and technical studies in order to comply with CEQA and NEPA.

**Fiscal Impact.** The project is sponsored and funded by BATA. The existing BATA-Caltrans Cooperative Agreement will reimburse Caltrans for project related costs.

#### **Organizational Impact.**

**Employee Impact.** Resources for project related costs are available on a reimbursed basis. No employee impact is anticipated beyond normal duties and responsibilities

**Stakeholder Impact.** Initial outreach of stakeholders indicate that the project has a wide range of support. Additional outreach will be performed during the next phase of the project.

**Policy Impact.** The project does not entail any changes to policy. It fulfills several policy documents, including DP 05, DP 08 and DD 64-R2.

**Risks**

This Decision Document does not eliminate the need for BATA and Caltrans to comply with requirements set forth by CEQA and NEPA. Final approval of the project is subject to the successful completion of the required environmental review. Successfully completing the environmental review of the scope as defined herein is a project risk. It is anticipated that a subsequent Decision Document will be developed which will include specific performance metrics for the pilot project.

**Proposed Implementation Schedule.**

- Complete PSR (PDS) – March 2015
- Circulate Draft Environmental Document – January 2016
- Complete Project Report and Environmental Document – July 2016


**Contacts for notices and communications:**

To BATA: Attention: Andrew Fremier  
Bay Area Toll Authority  
101 Eighth Street  
Oakland, CA 94607


To Caltrans: Attention: Dan McElhinney  
Caltrans District 4  
111 Grand Avenue  
Oakland, CA 94612

FHWA California Division Project Delivery Director, Matt Schmitz concurs with this decision.


**APPROVAL RECOMMENDED**

 5/29/15  
\_\_\_\_\_  
BIJAN SARTIPI Date  
District 4 Director  
Caltrans

**APPROVAL RECOMMENDED**

 5/21/15  
\_\_\_\_\_  
STEVE HEMINGER Date  
Executive Director  
BATA

**APPROVED**

 6/3/2015  
\_\_\_\_\_  
MALCOLM DOUGHERTY Date  
Director  
Caltrans



## **DECISION DOCUMENT TO ACCOMPANY PROJECT REPORT**

### **Richmond-San Rafael Bridge Access Improvement Project: Third Eastbound Travel Lane and Barrier-Separated Bicycle – Pedestrian Path Pilot Program**

#### **1. Problem Statement**

Congestion and Delay – Regional growth and local development in Marin County have resulted in significant traffic increases on eastbound I-580, Sir Francis Drake Blvd, and the Richmond-San Rafael (RSR) Bridge approach during evening peak commute periods. To accommodate the substantial growth projected to occur in this region, there is a need to improve and expand eastbound bridge operations to reduce and avoid additional traffic congestion and delay. This is referred to as Element 1 later in this document.

Accessibility for Pedestrians and Bicyclists on Contra Costa side – The non-motorized access between Point Richmond and Point Molate areas is currently provided by allowing bicycles only (no pedestrians) to ride on the EB and WB shoulders of I-580 between Marine St and Stenmark Dr interchanges. There is a need to improve and expand the transportation options to accommodate both bicycles and pedestrians between these two areas in the City of Richmond. This new feature will construct a barrier separated two-way bicycle and pedestrian path and will connect the existing trail under Marine St to the Point Molate Beach Trail currently under design by East Bay Regional Park District. This element is referred to as Element 2 later in this document and is a permanent feature of the project and not part of the “Pilot” project.

Accessibility for Pedestrians and Bicyclists on RSR Bridge – The lack of non-motorized access across the RSR Bridge represents a major gap in the 500-mile Bay Trail system, preventing bicyclists and pedestrians access across a major transportation corridor linking Marin County to Contra Costa County and beyond. There is a need to improve and expand the transportation options to accommodate non-motorized transbay travel. This feature will reduce the trip from San Quentin to Point Richmond from an existing 61 miles around the bay to 6 miles across the bridge and is anticipated to provide a transportation link which will enhance California’s economy and livability. This is referred to as Element 3 later in this document.

#### **2. Recommendation**

This document recommends the approval, construction, operation, and evaluation of this project as a “pilot project” to convert the existing right shoulder on the lower deck to a part-time travel lane to provide congestion relief in the eastbound direction on the RSR Bridge and to convert the shoulder on the upper westbound deck to a bicycle/pedestrian path.

The intent of this pilot project is for the Bay Area Toll Authority (BATA) and Caltrans (CT) to determine under 1) Element 1 - Eastbound direction –will using a shoulder as a lane during peak travel times seamlessly alleviate congestion, and under 2) Element 3 - Westbound direction - what are the operational characteristics and impacts from, converting the shoulder to a Class I bicycle and pedestrian path (pathway). Appendix B includes the Project Description of Elements 1, 2, and 3. Approval of this decision document will establish the following agreements between Caltrans and BATA for the pilot project:

1. Agree to re-designate the right shoulder on the lower deck (eastbound) as a travel lane during weekday evening peak periods or other time periods agreed to by both agencies.

2. Use a moveable barrier, modified to a minimum 42" height as required by AASHTO LRFD Bridge Design Specifications and per the Caltrans Highway Design Manual, as a separation device between the pathway and the travel lanes on the upper deck (westbound). BATA will procure, install, operate, and maintain the moveable concrete barrier and barrier transfer machine for the duration of the pilot period. BATA will provide training for Caltrans maintenance personnel to operate the barrier transfer machine in case of emergencies that require unplanned closures of the bicycle pedestrian path on the upper deck and reinstatement of the shoulder. If bicycle and pedestrian access is eliminated during or after the pilot period, the moveable barrier and the barrier transfer machine become the property of BATA.
3. BATA and Caltrans will review performance of the part-time travel lane (Element 1) and the bicycle/pedestrian path (Element 3) during the four-year pilot and recommend appropriate future adjustments if necessary to enhance operational characteristics. See Appendix F.
4. Approval of design features that are associated with the pilot project. See Appendix E.
5. Caltrans and BATA will execute an enhanced incident response and operation plan, currently under development, to address occurrences on the RSR Bridge once the pilot project is implemented. It is envisioned that BATA will provide the appropriate incident response equipment while Caltrans maintenance, CHP, and toll bridge staff will maintain and operate them. Moreover, this plan will be coordinated with the CHP and fire departments in Marin and Contra Costa Counties. The specific list of equipment to be provided by BATA will be detailed in the incident management plan document.

The two elements (Element 1 and 3) of the pilot project will be evaluated separately during the four year pilot duration. Separate performance metrics have been established for the third lane and the bicycle/pedestrian path (See Appendix F for details). Depending on the performance of each element, a decision to keep, modify, or eliminate either one or both of the two elements could be made during or at the end of the pilot period. Even though both elements are being approved through this single decision document, these two elements will maintain their independent status and keeping or eliminating one does not require keeping or eliminating the other element.

### **3. Fiscal Impact**

The project is sponsored and funded by BATA. BATA and Caltrans will utilize their existing cooperative agreement (Agreement No. 4-2078-A1) to cover the completion of the Project Initiation, Project Approval, Final Design and Right of Way Phases. A separate cooperative agreement will be required for the Construction Phase and subsequent maintenance and operational needs.

Other fiscal impacts include costs associated with enhanced incident management response, opening and closing of the pathway and third lane; storing and operating the barrier transfer machine and incident response equipment, and maintaining and controlling the bicycle and pedestrian counters. The responsibility for these fiscal impacts will be detailed in the agreements between the two agencies.

### **4. Organizational Impact**

#### **a. Employee Impact**

Once the project is finished, it must be maintained and operated. No additional Maintenance staff is anticipated but adjustments may be necessary as the pilot progresses. Training to operate the

moveable barrier machine, the moveable barrier system, and additional utility vehicles (for the CHP) will be provided by the BATA vendors to CT staff.

**b. Stakeholder Impact**

The project will require agreements and coordination with other agencies such as CHP, City of Richmond, City of San Rafael, local fire departments, emergency response personnel, and the Bay Conservation and Development Commission (BCDC).

**5. Enforcement Operations – Impact and Mitigation**

The project design has been coordinated with CHP to ensure appropriate measures are included in the project plans to facilitate enforcement operations once the shoulders are converted to a lane or bike/ped path. Overhead signs that indicate when the lane is open or closed and a large number of CCTV cameras on both decks are among the infrastructure improvements that were incorporated into the project design in order to facilitate monitoring and managing traffic on the bridge and assist in enforcement operations. BATA intends to provide CHP with utility vehicles equipped with necessary CHP devices in order to assist with quicker enforcement and incident response times. These utility vehicles will be stored at the maintenance yard and can be driven in the bike/ped path in case access using a regular CHP cruiser is impeded due to accidents/congestion in the travel lanes. BATA will also provide one additional tow truck to be stationed at the CT Paint Yard in Marin County to assist with enforcement and incident response. In addition, the emergency responders will be given access to these utility vehicles.

**6. Policy Impact**

The project does not entail any changes to policy. It fulfills several policy documents, including DP-05, DP-08 and DD 64-R2. The project team also confirmed with FHWA that a Concept of Operation is not required for this project. Other policy impacts to consider are the use of the shoulder as a travel lane during peak period congestion and the associated signing and striping needed to indicate when the lane is open and when it is closed.

The project also does not require any change to current law. According to conversations with CHP, the California Vehicle Code (CVC) section 22651(f) requires California Highway Patrol (CHP) to tag a disabled vehicle parked on a shoulder and allow its owner 4 hours to remove it before being towed. Once the lane becomes open the CVC Section 22651 (a) and (b) would supersede section (f). Therefore, Caltrans or any authorized tow truck may tow the vehicle to a nearby parking area. If a bridge tow truck is unavailable, a CHP rotation tow truck may be used under the CHP authority. Caltrans may also tow a vehicle under the CVC section 22651 (c) to the nearest parking area. On the RSR Bridge, that would be the pull out on the East side, or the Main Street off-ramp on the West side.

**7. Risks**

The project is required to comply with requirements set forth by CEQA and NEPA. Successfully completing the environmental review of the scope as defined herein is a project risk. Other risks associated are the increased potential for Caltrans tort liability, increased congestion in the westbound direction due to the lack of shoulder, increased public complaints requesting re-opening the third westbound lane on the bridge, increased emergency response time due to the lack of shoulders, damage to bridge facilities due to public access to the upper deck, and finding a suitable project to reuse the moveable barrier system if the program is eliminated after the pilot period.

Caltrans conducted a safety analysis for the project and the results are shown in Appendix G. The project includes a range of design modifications to accommodate the recommendations from the safety analysis.

**8. Proposed Implementation Schedule**


PSR/PDS – Signed Nov 2015  
Environmental Document and Final Design – target approval date: July 2016  
Award Construction Contract – target approval date: September 2016  
Complete Construction – target approval date: October 2017


**9. Contacts for notices and communications:**

To BATA: Attention: Andrew Fremier  
Bay Area Toll Authority  
375 Beale Street, Suite 800  
San Francisco, CA 94105


To Caltrans: Attention: Dan McElhinney  
Caltrans District 4  
111 Grand Avenue  
Oakland CA 94612


**RECOMMENDED FOR APPROVAL**

  
\_\_\_\_\_  
ANDREW FREMIER Date  
DEPUTY EXECUTIVE DIRECTOR  
BAY AREA TOLL AUTHORITY (BATA)

  
\_\_\_\_\_  
DAN McELHINNEY Date  
CHIEF DEPUTY DISTRICT DIRECTOR  
CALTRANS – DISTRICT 4

**APPROVED**

  
\_\_\_\_\_  
THOMAS P. HALLENBECK, CHIEF Date  
DIVISION OF TRAFFIC OPERATIONS

  
\_\_\_\_\_  
TIMOTHY L. CRAGGS, CHIEF Date  
DIVISION OF DESIGN

**ATTACHMENTS**

Appendix A – Location Map

Appendix B – Decision Document Attachment

Appendix C – Typical Sections on RSR Bridge

Appendix D – Lower Deck Pavement Delineation Plans

Appendix E – Design Features

Appendix F – Performance Measures

Appendix G – Safety Analysis

**Appendix A – Location Map**



**LOCATION MAP**

## **Appendix B – Decision Document Attachment**

### **1. Background**

Accommodation of bike and pedestrian traffic on the RSR Bridge has been studied several times over the years. The last effort resulted in a PSR/PDS that was approved by Caltrans in 2015 and established the concept of a two-way bicycle and pedestrian path on the upper deck of the RSR Bridge separated by a moveable barrier.

The third lane on the lower deck was studied and proposed by Transportation Authority of Marin (TAM) in 2013 due to increased congestion on eastbound I-580 and northbound US 101 during the evening commute hours.

The congestion in the WB direction during the morning commute hours is largely metered by the existing lane drop and the toll plaza, resulting in queues on WB I-580 east of the toll plaza.

A decision document to study the benefits and impacts of a pilot project to construct a Class I bike path on the upper deck and a part time lane on the lower deck was approved on 6/1/2015. An analysis of the safety impacts of these proposals at that time yielded no significant impacts as long as critical locations were mitigated appropriately. Further safety analysis done during the PA&ED phase dated 10/30/2015 and 02/09/2016 identified specific safety recommendations to mitigate nonstandard design features. These recommendations have been incorporated into the project.

While these features mainly focus on the approaches to the RSR Bridge, with these safety recommendations incorporated, along with the active traffic management tools employed on the RSR Bridge itself (e.g. live surveillance and real-time response to incidents and increased toll bridge patrols), it is expected that the project will not have a significant impact on collision rates or severity.

### **2. Alternatives**

#### **2.1 “No Action” Alternative**

The “no action” (no-project) alternative will not provide connectivity to the San Francisco Bay Trail between Marin and Contra Costa Counties and will not relieve congestion in the eastbound direction of I-580 during peak PM commute.

#### **2.2 Other Alternatives**

A number of alternatives were evaluated for the project. These included:

- Providing a bicycle/pedestrian shuttle from the RSR Bridge Toll Plaza to the Marine Street off-ramp during the hours when the third lane is open to traffic
- Providing a bike/pedestrian path on the south side of I-580 (along eastbound I-580), including options to widen Scofield Avenue undercrossing, build a separate Scofield bike/pedestrian overcrossing, or build a new bike path structure to the top of Office Hill
- Providing a separate path through the Chevron Refinery on the north side of I-580
- Widening westbound I-580 to accommodate the bike/pedestrian path without reducing lane and shoulder widths, including widening Scofield Avenue Undercrossing and relocating the Chevron pipes
- Providing a narrower two-way bicycle-only path (4.75’) on the upper deck of the RSR Bridge
- Providing a narrower two-way bicycle-only path (4.75’) on the upper deck of the RSR Bridge with few bulb-outs in the moveable barrier to allow bicycle to pass each other



- Providing a 10' wide two-way bicycle and pedestrian path on the upper deck with few emergency vehicle pull out areas where the bike/pedestrian path narrows to 4.75' and the extra width is given to the right shoulder on the other side of the moveable barrier

These alternatives were eliminated from further study because they did not meet the purpose and need, were cost-prohibitive, did not present a permanent solution, and/or did not provide the same value as the selected alternative to go forward.

### **2.3 Recommended Alternative**

The proposed project will improve the current multimodal access on I-580 within Marin and Contra Costa Counties, including the RSR Bridge. Proposed multimodal access improvements will accommodate bicycle and pedestrian access on the upper bridge deck (westbound). Bicycle and pedestrian access on the upper deck of the RSR Bridge would be provided by installing a moveable barrier to separate bicyclists and pedestrians from vehicles.

The project will consist of three major components that are interrelated:

- Element 1: A third part-time eastbound lane between Marin County and Contra Costa County (previously called a shoulder running lane)
- Element 2: Bicycle/Pedestrian Path in Contra Costa County
- Element 3: Bicycle/Pedestrian Path on the RSR Bridge and in Marin County

Elements 1 and 3 will be initiated as a 4-year pilot program. Operational and safety performance of Elements 1 and 3 will be monitored and evaluated as part of the pilot program. On or before the end of the 4-year pilot program, Caltrans and BATA will reevaluate the operations of the two elements.

#### **Eastbound Direction (Element 1 and 2):**

*Detailed Engineering Features:* The part-time lane (Element 1) will begin on the trestle portion of the RSR Bridge and continue to Marine Street. The on-ramp from Sir Francis Drake Boulevard will enter onto its own lane, continue past the Main Street off-ramp (entrance to San Quentin State Prison) and onto the cantilever portion of the RSR Bridge. At that point, overhead signs will inform motorists if the rightmost lane is open or not. The eastbound on-ramp from Main Street will be reconfigured to address the merging traffic from this ramp into the third lane, and a ramp meter will be installed. There will be some modifications to the lane configurations approaching the RSR Bridge in order to address sight distance restrictions. Overhead signs will be placed at intervals on the trestle portion of the RSR Bridge to reinforce the lane open or lane closed message such that no less than two such signs will be visible and comprehensible at any given time. The signs shall be placed over each lane where feasible.

These signs will be controlled by the Bay Area Traffic Management Center (TMC), and will be supplemented by a series of live video feeds to the TMC. Call boxes and an enhanced Freeway Service Patrol is included in the Active Traffic Management of this bridge, making it operate as a "Smart Bridge", enabling it to respond to traffic demands and incidents in real time.

The third lane will continue past the toll plaza and the Marine Street off-ramp, before it merges back with the existing through lanes, shortly after the off-ramp. Only the portion of the lane that is on the lower deck of the bridge will operate during the evening commute hours. The lane on

both sides of the bridge would be in operation 24/7. The mainline between Scofield Avenue undercrossing and the Marine Street off-ramp will be widened to the right (southside of I-580) in order to improve the sight distance and provide a right shoulder, entailing the reconstruction of a retaining wall. Additional traffic anticipated to reach Marine Street will be accommodated by widening the off-ramp and reconfiguring E. Standard Avenue, which serves as the approach to the Richmond Parkway, to two eastbound lanes and one westbound lane.

The proposed Class I bi-directional bicycle and pedestrian path in Contra Costa County (Element 2) would be permanently constructed along the north side of westbound I-580 from the Marine Street interchange in Contra Costa County to Stenmark Drive and the Toll Plaza where it would then connect to Project Element 3. The Class I bi-directional bicycle and pedestrian path would be implemented along the existing WB I-580 and Stenmark Drive shoulders and would replace the existing one-way Class II bicycle lanes on both EB and WB I-580 shoulders between Marine Street and the Toll Plaza. The proposed bi-directional bicycle and pedestrian path would be separated from vehicle traffic by a continuous concrete barrier.

*Traffic Studies:* An analysis of the impacts to traffic safety was conducted pursuant to Traffic Operations Directive 11-02 which concluded that with mitigation, the impacts to traffic safety should be minimal compared to the current configuration. Mitigation includes lowering the speed limit within the project limits to 50 mph, the above mentioned Active Lane Management provisions, and additional signs and pavement delineation designed to improve drivers' decision making abilities. A Traffic Operations Analysis Report shows that the additional third lane provided during the afternoon peak period would significantly reduce recurrent congestion, which would also lead to a reduction in congestion related collisions. The proposed Active Traffic Management components are anticipated to alleviate non-recurrent incident congestion concerns.

*Implementation:* The project is proposed to be advertised and constructed with Elements 1 and 3, a four year pilot program, implemented to monitor the impacts and benefits of the project. BATA and Caltrans will monitor the safety and operations of the bridge closely during this time and will make any necessary adjustments in order to achieve the project goals. A research study will follow up on several performance metrics during and at the conclusion of the pilot period (see Appendix F).

*Impacts:* Bicyclists currently use the eastbound and westbound shoulder of I-580 between Marine Street and Stenmark Drive to access Point Molate Beach Park. The third eastbound lane would eliminate this ability as there are portions of the freeway at the east end of the RSR Bridge approach which would not be widened through this project. The most critical area is the I-580 overcrossing over Scofield Avenue. This street is privately owned by Standard Oil Company (Chevron) and also carries several large petroleum pipelines serving the Richmond Refinery which supplies the West Coast with fuel. The refinery predates the Interstate. Modifications to this overcrossing would have a significant impact on the refinery production and the cost of the project. The current bridge allows for three lanes of traffic without the necessary width for standard left or right shoulders. This width is being reconfigured to optimize sight distance, which results in the elimination of the right shoulder for use by bicyclists.

*Mitigation:* The project will construct a barrier separated two-way Class I bike path, open to pedestrians along the existing westbound approach to the RSR Bridge (Element 2). This path will use the existing westbound bike path elements from Marine Street to Stenmark Drive, and further connect to downtown Richmond via a barrier separated path along eastbound East Standard Ave.

The critical elements in this proposal are also at the Scofield Avenue Overcrossing where the right westbound shoulder is being converted to a 10' wide barrier separated Class I bike and pedestrian path which will also be ADA compliant. A 10' width was chosen as the most prudent as this width will allow for maintenance vehicles to utilize the bike path for maintenance activities.

Mitigation includes lowering the speed limit within the project limits to 50 mph with additional signs and pavement delineation designed to improve drivers' decision making abilities. In addition, the same Active Lane Management provisions as noted in the eastbound direction will be utilized in the westbound direction, consisting primarily of 24 hour surveillance and Freeway Service Patrols.

Because this is proposed to be a permanent feature, Element 2 is not considered part of this decision document. However, both BATA and Caltrans will monitor and evaluate the safety, accidents, and operations of the bridge and its approaches closely and will make any necessary adjustments in order to achieve the project goals in a timely manner. This study may result in a modification to this element, either on its own merit, or as a result of the pilot project status for Elements 1 and/or 3.

*Maintenance:* Routine maintenance of the bridge will be coordinated with the operation of the part-time third lane. In the case of the part time lane, Maintenance will need to be conducted during off-peak hours when the lane would be closed anyway. This is not significantly different from current practice since maintenance activities do not take place during commute hours. Crews will need to mobilize and demobilize every day for simple routine maintenance activities. When maintenance activities require the use of a K-rail, CT and BATA will have to evaluate the most appropriate approach since the part time lane and the adjacent lane would most likely need to be closed to provide a level of safety satisfactory to the given maintenance activity. Information about whether the peak period lane is open or closed can be disseminated to the public through the new signage and the existing public information systems that CT uses for construction and maintenance work.

*Liability:* The exposure of Caltrans and BATA to lawsuits is expected to remain unchanged because the project has been designed to mitigate the risk of incidents.

### **Westbound Direction (Element 3)**

*Detailed Engineering Features:* The two-way ADA compliant Class I bike and pedestrian path along the westbound direction (upper deck) of the RSR Bridge would connect to Stenmark Drive via a conventional at-grade Class I bike path, and continue to Main Street in Marin County. At that point, bicyclists would continue along Francisco Boulevard East. Near the existing northbound I-580 on-ramp from Francisco Boulevard East, a connection to the San Francisco Bay Trail would be constructed. Bicyclists wishing to continue to Greenbrae would travel along the existing Class 2 bike path which extends along the connecting ramp from I-580 to Sir Francis Drake Boulevard and as they do today. Likewise, bicyclists coming from Greenbrae to the RSR Bridge, would travel along the existing right eastbound shoulder of Sir Francis Drake and I-580 shoulder as they do today. Intersection modifications at the I-580 on- and off-ramps to and from Main Street are included in the project to facilitate additional non-motorized traffic. The project also includes minor improvements to the Sir Francis Drake connector ramps to eastbound I-580. Improvements to the I-580 WB off-ramp to Sir Francis Drake are being deferred to future project after the pilot project is completed. In this interim period, there will be no pedestrian access along

I-580 and connector ramp to Sir Francis Drake. The bridge railing and moveable barrier will comply with the railing height requirement as contained in the Highway Design Manual.

*Traffic studies:* Mitigation includes lowering the speed limit within the project limits to 50 mph, Active Lane Management provisions with additional signs and pavement delineation designed to improve drivers' decision making abilities. Accessible call boxes will be provided for the use by motorists and users of the bike path. A Traffic Operations Analysis Report shows that the conversion of the shoulder into a bike and pedestrian path would not have significant impact on recurrent congestion. The proposed Active Traffic Management components are anticipated to alleviate non-recurrent incident congestion concerns.

*Implementation:* The project is proposed to be advertised and constructed with Elements 1 and 3, a four year pilot program, implemented to monitor the impacts and benefits of the program. BATA and Caltrans will monitor and evaluate the safety, accidents, and operations of the bridge and its approaches closely and will make any necessary adjustments in order to achieve the project goals. A research study will follow up on several performance metrics during and at the conclusion of the pilot period (see Appendix F).

*Maintenance:* Routine maintenance of the bridge will be coordinated with the operation of the bike and pedestrian path. Information about scheduled maintenance activities that require closure of the bike path on the upper deck will be disseminated to the public via the 511 system approximately 72 hours in advance. In case of an emergency maintenance activity or an incident requiring an emergency closure of the path, status of the bike and pedestrian path (open or closed) will always be available through the 511 system and website. Maintenance crews will need to mobilize and demobilize every day. The moveable barrier will provide the needed protection, in lieu of a K-rail, for the majority of the maintenance activities. Depending on the usage of the path and the time of day for the path closure, a bicycle/pedestrian shuttle across the RSR Bridge may need to be provided.

*Liability:* The exposure of Caltrans and BATA to lawsuits is expected to remain unchanged because the project has been designed to mitigate the risk of incident.

Preliminary Engineering and environmental studies have been completed for Elements 1, 2, and 3, and these elements are considered viable. For additional details, please refer to the Project Report.

### **3. Performance Measures**

#### **3.1 Deliverable(s)**

Primary deliverables will be a third traffic lane in the eastbound direction and a bike/pedestrian path on the RSR Bridge.

The University of California Berkeley, under the direction of Caltrans and BATA, will conduct a "before and after" study during the 4-year pilot project and will provide reports summarizing the findings in correlation with the performance guidelines listed in the attached performance metrics (Appendix F).

#### **3.2 Change Measure(s)**

As part of the 4-year pilot program, the third eastbound lane (Element 1) and the bicycle/pedestrian path (Element 3) on the RSR Bridge will be studied using performance metrics

04-CC-580-PM 4.98/7.79

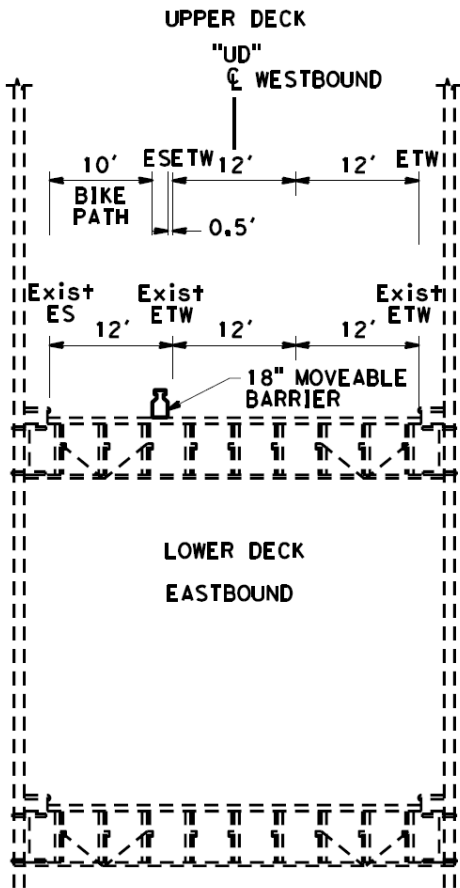
04-Mrn-580-PM 0.0/3.29

EA 04-2J6801/04-4J7101

July 25, 2016

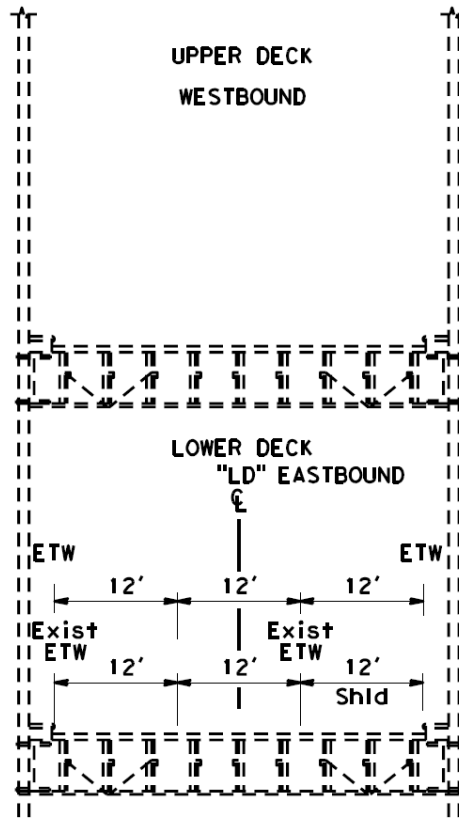
to determine the effectiveness of the pilot project. Performance guidelines have been developed to measure the success of the pilot program. Depending on the performance of the corridor during or at the end of the 4-year pilot project, modifications to the project elements may be required to address any safety, operation, maintenance, or incident response concerns. See Appendix F for further details.

**Appendix C – Typical Sections on RSR Bridge**



**ROUTE 580**

"UD" 278+33 TO 446+34



**ROUTE 580**

"LD" 286+33 TO "LD" 446+34

**TYPICAL SECTION ON RSR BRIDGE**

04-CC-580-PM 4.98/7.79

04-Mrn-580-PM 0.0/3.29

EA 04-2J6801/04-4J7101

July 25, 2016

**Appendix D - Lower Deck Pavement Delineation Plans**



See Appendix B of the Draft Project Report for the  
Pavement Delineation Plans

## **Appendix E – Design Features**

This alternative includes the following design features as discussed below.

### Design Features for Element 1:

Currently, the existing lower deck of the RSR Bridge provides 2-12' travel lanes and a 12' shoulder. The total existing width of the lower deck of the RSR Bridge is 36 feet measured from curb to curb. The project proposes to restripe the lower deck to provide three-12' vehicular travel lanes. The third lane will operate as a third lane during peak hours and a closed lane during non-peak hours. See Appendix C for typical bridge cross section.

The proposed lane/shoulder configuration on the lower deck of the RSR Bridge does not meet current standards. The following standards cited from the Highway Design Manual (HDM) are applicable to the lane/shoulder configuration and cannot be met by the project.

#### Standards for Highway Shoulder Widths – (HDM Index 302.1):

**“The shoulder widths given in Table 302.1 shall be the minimum continuous usable width of paved shoulder on highways.”**

Per Table 302.1, the standard shoulder width is 5' for the left and 10' for the right shoulder. The project currently proposes no left or right shoulders as part of the design. The project is not able to provide the standard shoulder width without reducing vehicular travel lane widths on the lower deck of the RSR Bridge. The reduction in the travel lane widths would violate the minimum 12' wide lane width standard (HDM Index 301.1). Alternatively, reconstructing the RSR Bridge to comply with standards currently is infeasible due to cost and environmental factors.

### Design Features for Element 3:

Currently, the existing upper deck of the RSR Bridge provides 2-12' travel lanes and a 12' shoulder. The total existing width on the upper deck of the RSR Bridge is 36 feet measured from curb to curb. The project proposes to re-configure the upper deck to provide two-12' vehicular travel lanes, 0.5' buffer to a barrier, 18" moveable barrier and a two-way 10-foot wide Class I bicycle path. The bicycle path is segregated from the adjoining vehicular traffic by a moveable barrier. A 10' width was chosen as this width complies with Index 1003.1(3) for clear width on structure, and will allow maintenance vehicles access to the bike path.

The proposed lane/shoulder configuration on the upper deck of the RSR Bridge does not meet current standards. The following standards cited from the HDM are applicable to the lane/shoulder configuration and cannot be met by the project.

#### Standards for Shoulder Width – (HDM Index 302.1):

**“The shoulder widths given in Table 302.1 shall be the minimum continuous usable width of paved shoulder on highways.”**

Per Table 302.1, the standard shoulder width is 5' for the left and 10' for the right shoulder. The project currently proposes no left or right shoulders as part of the design. The project is not able to provide the standard shoulder width without reducing vehicular travel lane widths on the lower deck of the RSR Bridge. The reduction in the travel lane widths would violate the minimum 12' wide lane width standard (HDM Index 301.1). Alternatively, reconstructing the RSR Bridge to comply with standards currently is infeasible due to cost and environmental factors.

A traffic safety analysis has evaluated these features, and the recommended mitigation measures are incorporated into the project. With the implementation of these features, including Active Traffic Management features, it is anticipated that there will be no increase in crash rates and severity.

## **Appendix F – Performance Measures**

BATA and Caltrans agree to review performance of the third lane and the bike path during the four-year pilot project and to modify the project features as appropriate to accommodate the operation and performance conditions. A list of performance measures that are being proposed for the evaluation of the pilot project has been established for the project. These performance measures have been incorporated into a “before and after” study for the project that is being led by Caltrans Division of Research, Innovation, and System Information and conducted by University of California, Berkeley. These measures are listed below.

### **Third Lane Evaluation Methodology (Element 1)**

Under the pilot program, the third eastbound lane will be measured / monitored for operational and safety performance. The following guidelines were developed to measure the success of the program:

1. I-580 Eastbound mainline travel time, speeds, delays, congestion duration, vehicle throughput and travel time reliability with specific attention to key locations in both Marin and Contra Costa Counties, such as I-580 / Sir Francis Drake, I-580 / Bellam, and I-580 / Marine St.
2. Changes in accident data on I-580 Eastbound mainline and ramps
3. Changes in duration of auto incidents and time to clear them
4. Local street traffic conditions in Marin County and in Richmond (intersection operations, queues, bottlenecks, delays, and reduction / increase in accidents)
5. Improved business (qualitative analysis) due to improved access to businesses in the US101 / I-580 / Sir Francis Drake triangle
6. Change in emissions calculated from speed changes through the corridor (calculated from INRIX and counts if corridor is I-580 only)
7. Impact of project on the user’s economy and quality of life.
8. Impact on Maintenance

### **Upper Deck Bike Path Evaluation Methodology (Element 3)**

Under the pilot program, the bicycle/pedestrian path on the RSR Bridge will be monitored for assessment. The following guidelines were developed to measure the success of the program:

1. Counters on the bike path (possibly document findings in terms of hour, day, month, and direction)
2. Type of bicycle and pedestrian users, time of use, experience rating

3. Changes in accident data on I-580 Westbound mainline and ramps
4. Incidents on the bike path – how many, when, type of incident.
5. Economic benefit – revenue generated from walk / bike events held during the four-year period
6. Social benefit – number of special events that took advantage of the path
7. Health Benefit – Calories burned, miles traveled, etc...
8. Changes in travel time, average speed, and hours of delay for motorized traffic through the corridor (calculated from INRIX if corridor is I-580 only)
9. Changes in duration, location, and severity of auto incidents and time to clear them. Length of resulting queues
10. Change in emissions calculated from speed changes through the corridor (calculated from INRIX and counts if corridor is I-580 only)
11. Impact of project on the user's economy and quality of life.
12. Consistency with regional / state transportation and accessibility goals
13. Perception of travel across the bridge (level of comfort, amenities needed, frequency of use)
14. Impact on Maintenance

During the 4-year pilot program, Caltrans, BATA and other stake holders will evaluate the project and make necessary adjustments to the third eastbound lane and the pedestrian/bicycle path on the RSR Bridge to improve performance.

The following are options that can be considered at the end of the pilot program:

- Element 1: On the lower deck of the RSR Bridge, the third eastbound lane can continue to operate on a part-time peak period basis, be converted for use as a full-time lane, or revert back to a shoulder.
- Element 3: On the upper deck of the RSR Bridge, the bicycle/pedestrian path may continue to operate every day or have its hours or days of operation reduced or eliminated. Some possible future configurations include operating the path only on the weekends and be utilized as a shoulder for the weekdays. Another option would be to open a new third part-time lane during peak periods, or revert back to a path or shoulder during the non-peak

periods. It could also continue to operate as a bike and pedestrian path in its current configuration as an extended pilot program.

- If after the pilot period, the bike path is selected to be retained as a permanent feature, further evaluation of the bicycle connections at the western terminus of the RSR Bridge will be conducted. Currently bicycle traffic is directed to the Sir Francis Drake Boulevard connectors and, in the eastbound direction the shoulder of I-580, to travel to and from Sir Francis Drake Boulevard to the RSR Bridge. The pilot project includes interim measures to improve this connection. A pedestrian option will be evaluated as well if the bike path on the RSR Bridge is selected to be retained.
- Documentation of the pilot project after the pilot period will be via a subsequent Decision Document and Final Report, supported by the results of the aforementioned performance measure study. Any follow up project will proceed separately following standard project development process.
- During this pilot period, the performance measures cited above will be evaluated, and if data indicates that one or more features be adjusted due to critical safety performance indicators, BATA and Caltrans will make adjustments in a timely manner.

## **Appendix G – Safety Analysis**

Attached is the safety analysis for the Contra Costa segments of the project. Additional safety analysis that covers the entire project limits is included in the Project Report.




# Memorandum

*Flex your power!  
Be energy efficient!*

To : VINCE BONNER  
District Branch Chief  
Office of Design - Contra Costa

Date : June 22, 2016

File No. : 04-MRN-580-PM 0.0/3.29  
04-CC-580-PM 4.98/7.79  
EA 04-2J680  
Project ID# 0414000552  
I-580 Access Improvement  
Project

From : EMILY TANG   
District Branch Chief  
Office of Traffic Safety

Subject : Revised Traffic Safety Analysis and Recommendations

For your reference, this memo replaces the previous Traffic Safety Analysis and Recommendations dated August 5, 2015 for the I-580 Access Improvement Project within the project limits of Contra Costa County.

## TRAFFIC DATA

The following traffic volumes were taken from the **2011 Traffic Volumes on California State Highway** and **2010 Annual Average Daily Truck Traffic on the California State Highway System** booklets.

### 2013 Traffic Volumes

- CC- 580- AADT

<u>Postmile</u>	<u>Location</u>	<u>Peak Hour</u>	<u>Peak Month</u>	<u>AADT</u>
R 5.428	Castro/Marine Street	5,900	72,000	69,000
6.125	Toll Plaza	5,800	73,000	68,000
7.786	CC/Mrn County Line	5,800	73,000	68,000

- Ala-580 MRN-580 Truck AADT

Postmile	Location	Truck		Truck AADT by Axle			
		AADT	%	2	3	4	5+
(Ala-580)							
R 47.35	Albany, North JCT. RTE. 80	5,342	6.14	1,871	621	173	2,677
(MRN-580)							
4.782	JCT. RTE. 101	4,002	6.90	1,789	496	224	1,493

## ACCIDENT DATA

### A. Mainline

Per requested, the TASAS Table B printout shows the following accident numbers and rates for each year from 2003 to 2012.

#### 1. Year 2003

- CC-580 (PM R4.980 – PM 7.767, mainline)

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/03-03/31/04	62	0	12	.000	.16	.83	.004	.25	.79

The accident collision types are as follows:

- |                           |                      |
|---------------------------|----------------------|
| A. Head-on (1.6%)         | B. Sideswipe (22.6%) |
| C. Rear End (64.5%)       | D. Broadside (2.1%)  |
| E. Hit Object (8.1%)      | F. Overturn (0.0%)   |
| G. Auto Pedestrian (0.0%) | H. Other (0.0%)      |

46.8% of the accidents caused by speeding, 6.5% caused by improper turn. 4.8% caused by influence alcohol, 25.8% by other violation.

67.6% of total accidents occurred between the hours of 6 AM to 4 PM due to rush hour congestion. 69.4% of the accidents occurred in daylight, 8.1% of the accidents occurred under wet pavement conditions.

16.1 % of total accidents occurred on eastbound direction of the freeway and 83.9% occurred at westbound.

## 2. Year 2004

- **CC-580 (PM R4.980 – PM 7.767, mainline)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/04-03/31/05	80	0	15	.000	.20	<b>1.06</b>	.004	.25	.80

The accident collision types are as follows:

- |                           |                      |
|---------------------------|----------------------|
| A. Head-on (0.0%)         | B. Sideswipe (32.5%) |
| C. Rear End (46.3%)       | D. Broadside (1.3%)  |
| E. Hit Object (16.3%)     | F. Overturn (0.0%)   |
| G. Auto Pedestrian (0.0%) | H. Other (2.5%)      |

48.8% of the accidents caused by speeding, 7.5% caused by improper turn, 25.0% by other violation.

81.5% of total accidents occurred between the hours of 6 AM to 7 PM due to rush hour congestion. 65.0% of the accidents occurred in daylight, 6.3% of the accidents occurred under wet pavement conditions.

30 % of total accidents occurred on eastbound direction of the freeway and 70% occurred at westbound.

## 3. Year 2005

- **CC-580 (PM R4.980 – PM 7.767, mainline)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/05-03/31/06	55	0	16	.000	.21	.73	.004	.25	.80

The accident collision types are as follows:

- |                           |                      |
|---------------------------|----------------------|
| A. Head-on (0.0%)         | B. Sideswipe (27.3%) |
| C. Rear End (45.5%)       | D. Broadside (0.0%)  |
| E. Hit Object (23.6%)     | F. Overturn (0.0%)   |
| G. Auto Pedestrian (0.0%) | H. Other (3.6%)      |

38.2% of the accidents caused by speeding, 16.4% caused by improper turn. 1.8% caused by influence alcohol, 27.3% by other violation.

87.2% of total accidents occurred between the hours of 6 AM to 7 PM due to rush hour congestion. 81.8% of the accidents occurred in daylight, 12.7% of the accidents occurred under wet pavement conditions.

23.6 % of total accidents occurred on eastbound direction of the freeway and 76.4% occurred at westbound.

#### 4. Year 2006

- **CC-580 (PM R4.980 – PM 7.767 mainline)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/06-03/31/07	57	1	17	.013	.24	.76	.004	.25	.80

The accident collision types are as follows:

- |                           |                      |
|---------------------------|----------------------|
| A. Head-on (1.8%)         | B. Sideswipe (12.3%) |
| C. Rear End (52.6%)       | D. Broadside (1.8%)  |
| E. Hit Object (26.3%)     | F. Overturn (3.5%)   |
| G. Auto Pedestrian (0.0%) | H. Other (0.0%)      |

47.4% of the accidents caused by speeding, 15.8% caused by improper turn. 10.5% caused by influence alcohol, 24.6% by other violation.

77.2% of total accidents occurred between the hours of 6 AM to 7 PM due to rush hour congestion. 66.7% of the accidents occurred in daylight, 14.0% of the accidents occurred under wet pavement conditions.

22.8 % of total accidents occurred on eastbound direction of the freeway and 77.2% occurred at westbound.

#### 5. Year 2007

- **CC-580 (PM R4.980 – PM 7.767, mainline)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/07-03/31/08	55	0	15	.000	.22	.81	.004	.24	.75

The accident collision types are as follows:

- |                           |                      |
|---------------------------|----------------------|
| A. Head-on (0.0%)         | B. Sideswipe (23.6%) |
| C. Rear End (49.1%)       | D. Broadside (5.5%)  |
| E. Hit Object (16.4%)     | F. Overturn (5.5%)   |
| G. Auto Pedestrian (0.0%) | H. Other (0.0%)      |

40% of the accidents caused by speeding, 21.8% caused by improper turn, 3.6% caused by influence alcohol, 27.3% by other violation.

92.7% of total accidents occurred between the hours of 6 AM to 7 PM due to rush hour congestion. 81.8% of the accidents occurred in daylight, 12.7% of the accidents occurred under wet pavement conditions.

32.7 % of total accidents occurred on eastbound direction of the freeway and 67.3% occurred at westbound.

## 6. Year 2008

- **CC-580 (PM R4.980 – PM 7.767, mainline)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/08-03/31/09	46	0	17	.000	.25	.68	.004	.24	.74

The accident collision types are as follows:

- |                           |                      |
|---------------------------|----------------------|
| A. Head-on (0.0%)         | B. Sideswipe (10.9%) |
| C. Rear End (63.0%)       | D. Broadside (2.2%)  |
| E. Hit Object (19.6%)     | F. Overturn (2.2%)   |
| G. Auto Pedestrian (0.0%) | H. Other (0.0%)      |

67.4% of the accidents caused by speeding, 10.9% caused by improper turn, 4.3% caused by influence alcohol, 10.9% by other violation.

93.2% of total accidents occurred between the hours of 6 AM to 7 PM due to rush hour congestion. 84.4% of the accidents occurred in daylight, 15.2% of the accidents occurred under wet pavement conditions.

19.6 % of total accidents occurred on eastbound direction of the freeway and 80.4% occurred at westbound.

**7. Year 2009**

- **CC-580 (PM R4.980 – PM 7.767, mainline)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/09-03/31/10	36	0	13	.000	.19	.54	.004	.24	.74

The accident collision types are as follows:

- |                           |                      |
|---------------------------|----------------------|
| A. Head-on (2.8%)         | B. Sideswipe (11.1%) |
| C. Rear End (61.1%)       | D. Broadside (0.0%)  |
| E. Hit Object (19.4%)     | F. Overturn (5.6%)   |
| G. Auto Pedestrian (0.0%) | H. Other (0.0%)      |

61.1% of the accidents caused by speeding, 8.3% caused by improper turn, 8.3% caused by influence alcohol, 13.9% by other violation.

81.4% of total accidents occurred between the hours of 4 AM to 5 PM due to rush hour congestion. 77.8% of the accidents occurred in daylight, 8.3% of the accidents occurred under wet pavement conditions.

27.8 % of total accidents occurred on eastbound direction of the freeway and 72.2% occurred at westbound.

**8. Year 2010**

- **CC-580 (PM R4.980 - PM7.767l, mainline)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/10-03/31/11	45	0	11	.000	.16	.65	.004	.24	.75

The accident collision types are as follows:

- |                           |                      |
|---------------------------|----------------------|
| A. Head-on (0.0%)         | B. Sideswipe (22.2%) |
| C. Rear End (48.9%)       | D. Broadside (2.2%)  |
| E. Hit Object (20.0%)     | F. Overturn (2.2%)   |
| G. Auto Pedestrian (2.2%) | H. Other (2.2%)      |

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37.8% of the accidents caused by speeding, 31.1% caused by improper turn, 4.4% caused by influence alcohol, 20.0% by other violation.

82.2% of total accidents occurred between the hours of 6 AM to 6 PM due to rush hour congestion. 77.8% of the accidents occurred in daylight, 13.3% of the accidents occurred under wet pavement conditions.

28.9 % of total accidents occurred on eastbound direction of the freeway and 71.1% occurred at westbound.

## 9. Year 2011

- **CC-580 (PM R4.980 - PM7.767l, mainline)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/11-03/31/12	35	0	7	.000	.10	.51	.004	.24	.75

The accident collision types are as follows:

- |                           |                      |
|---------------------------|----------------------|
| A. Head-on (0.0%)         | B. Sideswipe (31.4%) |
| C. Rear End (42.9%)       | D. Broadside (2.9%)  |
| E. Hit Object (17.1%)     | F. Overturn (0.0%)   |
| G. Auto Pedestrian (0.0%) | H. Other (5.7%)      |

37.1% of the accidents caused by speeding, 14.3% caused by improper turn, 5.7% by follow too close, 2.9% caused by influence alcohol, 20.0% by other violation and 5.7% caused by other than driver..

91.6% of total accidents occurred between the hours of 6 AM to 6 PM due to rush hour congestion. 91.4% of the accidents occurred in daylight, 20.0% of the accidents occurred under wet pavement conditions.

28.6 % of total accidents occurred on eastbound direction of the freeway and 71.4% occurred at westbound.

## 10. Year 2012

- **CC-580 (PM R4.980 - PM7.767l, mainline)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/12-03/31/13	42	0	15	.000	.22	.62	.004	.24	.75



The accident collision types are as follows:

A. Head-on (2.4%)	B. Sideswipe (21.4%)
C. Rear End (63.4%)	D. Broadside (2.4%)
E. Hit Object (7.1%)	F. Overturn (0.0%)
G. Auto Pedestrian (0.0%)	H. Other (2.4%)

61.9% of the accidents caused by speeding, 7.1% caused by improper turn, 7.1% caused by influence alcohol, 19.0% by other violation.

88.1 % of total accidents occurred between the hours of 6 AM to 6 PM due to rush hour congestion. 83.3% of the accidents occurred in daylight, 7.1% of the accidents occurred under wet pavement conditions.

26.2 % of total accidents occurred on eastbound direction of the freeway and 73.8% occurred at westbound.

### Accident concentrated area

Following table shows the accident rates for mainline segments (from Castro Street I/C to end of county line) from 04/01/10 to 03/31/13:

- Eastbound:

Post mile	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
R4.980 – R5.428	5	0	0	.00	.00	.35	.002	.14	.44
R5.428 – 5.799	1	0	0	.00	.00	.07	.003	.19	.62
<b>5.799 – 6.125</b>	11	0	1	0.0	.08	<b>.88</b>	.003	.19	.62
6.125 – 6.787	7	0	2	0.0	.08	.28	.004	.24	.74
6.787 – 7.232	6	0	1	0.0	.06	.36	.005	.29	.90
7.232 – 7.768	4	0	2	0.0	.01	.20	.005	.29	.90

Type of accidents: Sideswipe 18.2%; Rear end 54.5%; Broadside 9.1%; Hit object 18.2%.

18.2% of the accidents caused by speeding, 27.3% caused by improper turn, 27.3% caused by influence alcohol, 27.3% by other violation.

54.5 % of total accidents occurred between the hours of 6 AM to 6 PM due to rush hour congestion. 54.5% of the accidents occurred in daylight, 18.2% of the accidents occurred under ICY pavement conditions.

• **Westbound:**

<u>Post mile</u>	<u>Actual Number</u>			<u>Actual Rates</u>			<u>Average Rates</u>		
	<u>Total</u>	<u>Fatal</u>	<u>Injury</u>	<u>Fat.</u>	<u>F+I</u>	<u>Total</u>	<u>Fat.</u>	<u>F+I</u>	<u>Total</u>
R4.980 – R5.428	6	0	1	.00	.007	.42	.002	.14	.44
R5.428 – 5.799	2	0	1	.00	.00	.14	.003	.19	.62
<b>5.799 – 6.125</b>	20	0	3	0.0	<b>.24</b>	<b>1.61</b>	.003	.19	.62
<b>6.125 – 6.787</b>	39	0	14	0.0	<b>.56</b>	<b>1.56</b>	.004	.24	.74
6.787 – 7.232	11	0	6	0.0	.36	.65	.005	.29	.90
7.232 – 7.768	10	0	2	0.0	.10	.49	.005	.29	.90

Type of accidents: Head-on 1.7%; Sideswipe 27.1%; Rear end 45.8%; Broadside 3.4%; Hit object 18.6%; Overturn 1.7%.

45.8% of the accidents caused by speeding, 18.61% caused by improper turn, 5.1% caused by influence alcohol, 25.0% by other violation.

89.8 % of total accidents occurred between the hours of 6 AM to 6 PM due to rush hour congestion. 84.7% of the accidents occurred in daylight, 17% of the accidents occurred under wet pavement conditions.

**B. Ramps**

• **CC- 580 SEG WB on-ramp from Canal BLVD (PM R 4.980)**

<u>Year</u>	<u>Actual Number</u>			<u>Actual Rates</u>			<u>Average Rates</u>		
	<u>Total</u>	<u>Fatal</u>	<u>Injury</u>	<u>Fat.</u>	<u>F+I</u>	<u>Total</u>	<u>Fat.</u>	<u>F+I</u>	<u>Total</u>
04/01/10-03/31/13	0	0	0	.000	.00	.00	.002	.18	0.55

• **CC- 580 SEG WB off-ramp to Castro St. (PM R 4.981)**

<u>Year</u>	<u>Actual Number</u>			<u>Actual Rates</u>			<u>Average Rates</u>		
	<u>Total</u>	<u>Fatal</u>	<u>Injury</u>	<u>Fat.</u>	<u>F+I</u>	<u>Total</u>	<u>Fat.</u>	<u>F+I</u>	<u>Total</u>
04/01/10-03/31/13	1	0	1	.000	.17	.17	.003	.35	1.01

The accident collision types are as follows:

A. Head-on (0.0%)

B. Sideswipe (0.0%)

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- C. Rear End (0.0%)                      D. Broadside (0.0%)
- E. Hit Object (100%)                    F. Overturn (0.0%)
- G. Auto Pedestrian (0.0%)            H. Other (0.0%)

• **CC- 580 SEG WB on-ramp from Castro St. (PM R 5.129)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/10-03/31/13	2	0	0	.000	.17	.27	.003	.24	.72

The accident collision types are as follows:

- A. Head-on (0.0%)                      B. Sideswipe (0.0%)
- C. Rear End (0.0%)                    D. Broadside (0.0%)
- E. Hit Object (50%)                    F. Overturn (50%)
- G. Auto Pedestrian (0.0%)            H. Other (0.0%)

• **CC- 580 SEG Castro to Marine RT (PM R 5.135)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/10-03/31/13	1	0	0	.000	.00	.14	.004	.19	.72

The accident collision types are as follows:

- A. Head-on (0.0%)                      B. Sideswipe (0.0%)
- C. Rear End (100.0%)                    D. Broadside (0.0%)
- E. Hit Object (0.0%)                    F. Overturn (0.0%)
- G. Auto Pedestrian (0.0%)            H. Other (0.0%)

• **CC- 580 SEG EB on-ramp from Castro & Marine St. (PM R 5.39)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/10-03/31/13	3	0	1	.000	.30	.90	.003	.24	.72

The accident collision types are as follows:

- A. Head-on (0.0%)                      B. Sideswipe (0.0%)
- C. Rear End (0.0%)                    D. Broadside (0.0%)

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E. Hit Object (33.3%)                      F. Overturn (66.7%)  
G. Auto Pedestrian (0.0%)                H. Other (0.0%)

• **CC- 580 SEG EB off-ramp to Marine St. (PM R 5.56)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/10-03/31/13	5	0	2	.000	.23	.57	.003	.35	1.01

The accident collision types are as follows:

A. Head-on (0.0%)                      B. Sideswipe (0.0%)  
C. Rear End (40.0%)                    D. Broadside (0.0%)  
E. Hit Object (40.0%)                   F. Overturn (20.0%)  
G. Auto Pedestrian (0.0%)              H. Other (0.0%)

• **CC- 580 WB on-ramp from Western Drive (PM 5.847)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/10-03/31/13	0	0	0	.000	.00	.00	.003	.14	0.41

• **CC- 580 WB off-ramp to Western Drive (PM 6.00)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/10-03/31/13	2	0	1	.000	1.66	3.32	.004	.24	.75

The accident collision types are as follows:

A. Head-on (0.0%)                      B. Sideswipe (0.0%)  
C. Rear End (0.0%)                    D. Broadside (0.0%)  
E. **Hit Object (100%)**                    F. Overturn (0.0%)  
G. Auto Pedestrian (0.0%)              H. Other (0.0%)

- **CC- 580 WB on-ramp from Western Drive (PM 6.098)**

Year	Actual Number			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
04/01/10-03/31/13	0	0	0	.000	.00	.00	.003	.14	0.41

**ACCIDENT ANALYSIS:**

- **Mainline**

The 10 years accident history shows that maximum accident rate (1.06) for this segment of freeway occurred in the year of 2004 and gradually reduced to 0.62 in 2012.

Majority of the accident (70-80%) occurred in westbound direction.

Rear-enders and sideswipe type collisions, which generally are due to driver's inattention, unsafe speeds, and lane changing in recurring traffic congestion, account for 65-85% of all the accidents. The primary collision factors causing the "Hit Object" (26-8%) type of accidents are speeding, driving under the influence of alcohol, following too close, and drivers falling asleep. There are about 6-2% overturn type accidents, mainly caused by speeding, unsafe turning movement while avoiding an object on freeway, and defective vehicle equipment.

68-92% of total accidents occurred between the hours of 6 AM to 6 PM due to rush hour congestion. 92-65% of the accidents occurred in daylight, 20-6% of the accidents occurred under wet pavement conditions.

Eastbound traffic accident concentration between Scofield Ave. UC (PM 5.799) to Toll Plaza (PM 6.125), and westbound traffic accident concentration between Scofield Ave. UC (PM 5.799) to Richmond -San Rafael bridge (PM 6.787) are mostly due to congestion around Toll Plaza area during commute hours.

**RECOMMENDATION**

The following safety improvements/enhancements are recommended to be included in this project:

**General Recommendations**

1. Upgrade existing barrier/guard railing systems including connections to bridge rail and extension as needed to meet current standards.
2. Install new Midwest Guardrail Systems to the following locations:

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- On west side of Railroad Ave OH. (PM R 4.98) at the bridge approaches (EB & WB).
  - On east side of Marin St. UC (PM R 5.428) at the bridge approaches (EB & WB).
3. All permanent stripes shall be thermoplastic with high-performance glass beads.
  4. All existing striping, pavement markers and pavement marking removed due to project work shall be replaced in kind except that the lane lines shall be replaced with Detail 13M and Detail 14M for AC pavement and with shadow stripes for PCC pavement.
  5. Install roadside delineators, guardrail delineators, concrete barrier markers/delineators, median barrier markers, bridge rail delineators, wall delineators and object markers per California MUTCD Chapter 3F and Chapter 7 of Traffic Manual.
  6. Install pedestrian countdown signals/APS for signalized intersections with crosswalks within project limits.
  7. Provide enhance striping/signing treatments for pedestrian crossing at all uncontrolled crosswalks within project limits.
  8. Upgrade existing curb ramps to meet ADA current standards within project limits.

#### **Lighting Enhancement**

From the above collision analysis, dark accidents are concentrated between Marin St. UC (PM 5.428) to Toll Plaza (PM 6.125) at both directions. Additional lighting enhancement is recommended for this area.

Should you have any questions, please feel free to contact me at 510-286-4422 or Cheung-Chim Lau of my staff at 510-286-4571.

#### Attachments:

1. Sample specification for thermoplastic with high-performance glass beads.
2. Details of 13M, 14M and shadow stripes.

Cc: Mo Pazooki/Project Manager  
Roland Au-Yeung/Cheung-Chim Lau/Traffic Files  
Jerry Champa/Luu Nguyen/HQ Traffic Operations & Safety Liaison  
Robert Effinger /HQ Project Delivery Liaison  
Ronald Tsung/David Wilkerson/Design  
William Gee/Design Coordinator

Replace "Reserved" in section 84-6 with:

#### 84-6.01 GENERAL

##### 84-6.01A Summary

Section 84-6 includes specifications for applying thermoplastic traffic stripes and pavement markings with enhanced wet night visibility.

Thermoplastic must comply with section 84-2.

##### 84-6.01B Submittals

Submit a certificate of compliance for glass beads.

##### 84-6.01C Quality Control and Assurance

Within 14 days of applying a thermoplastic traffic stripe or pavement marking with enhanced wet night visibility, the retroreflectivity must be a minimum of 700 millicandelas per square meter per lux for white stripes and markings and 500 millicandelas per square meter per lux for yellow stripes and markings. Test the retroreflectivity under ASTM E 1710. Have a reflectometer as described in ASTM E 1710 at the job site for making these measurements.

#### 84-6.02 MATERIALS

Thermoplastic traffic stripes and pavement markings with enhanced wet night visibility must consist of a single uniform layer of thermoplastic and 2 layers of glass beads as follows:

1. The 1st layer of glass beads must be on the Authorized Material List under high-performance retroreflective glass beads for use in thermoplastic traffic stripes and pavement markings. The color of the glass beads must match the color of the stripe or marking to which they are being applied.
2. The 2nd layer of glass beads must comply with AASHTO M 247, Type 2.

Both types of glass beads must be surface treated for use with thermoplastic under the bead manufacturer's instructions.

#### 84-6.03 CONSTRUCTION

Use a ribbon extrusion or screed type applicator to apply a thermoplastic traffic stripe.

Operate the striping machine at a speed of 8 mph or slower during the application of thermoplastic traffic stripe and glass beads.

Apply a thermoplastic traffic stripe at a rate of at least 0.38 pounds per foot of 4-inch wide solid stripe. The applied thermoplastic traffic stripe must be at least 0.090 inch thick.

Apply a thermoplastic pavement marking at a rate of at least 1.06 pounds per square foot. The applied thermoplastic pavement marking must be at least 0.100 inch thick.

Apply a thermoplastic traffic stripe and both types of glass beads in a single pass. Apply the thermoplastic 1st, followed immediately by consecutive applications of high-performance glass beads and then AASHTO M 247, Type 2 glass beads. Use 2 separate applicator guns for the glass beads, 1 applicator gun for each type of glass bead.

You may apply glass beads by hand methods on pavement markings.

Distribute all glass beads uniformly on traffic stripes and pavement markings. Apply high-performance glass beads at a rate of at least 6 pounds per 100 square feet of stripe or marking. Apply AASHTO M 247, Type 2 glass beads at a rate of at least 8 pounds per 100 square feet of stripe or marking. The combined weight of the 2 types of glass beads must be greater than 14 pounds per 100 square feet of stripe or marking.

#### 84-6.04 PAYMENT

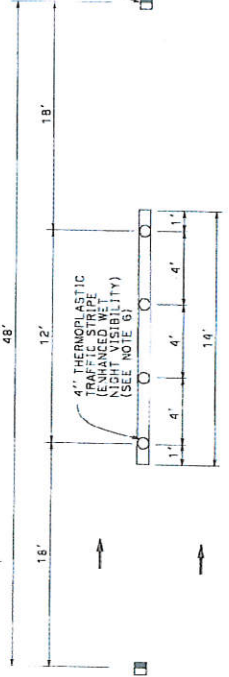
A double thermoplastic traffic stripe (enhanced wet night visibility) consisting of two 4-inch wide yellow stripes is measured as 2 traffic stripes.



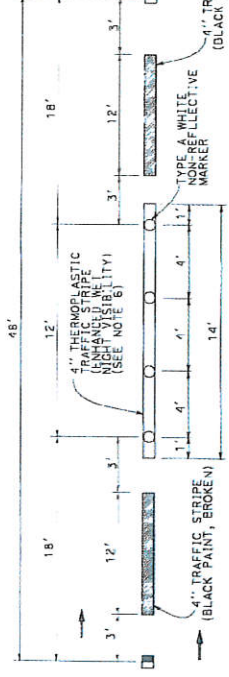
DIST.	COUNTY	ROUTE	SHEET TOTAL
04	CC	BO	C. D./10.1
REGISTERED CIVIL ENGINEER			DATE
P. A. S. APPROVAL DATE			DATE
PROJECT NO.			DATE
PROJECT TITLE			DATE

NOTES:

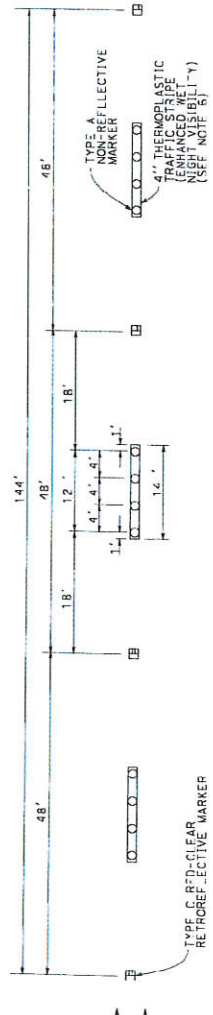
1. DETAIL 13M AND 13MS ARE MODIFIED PAVEMENT DELINEATION DETAIL 13.
2. DETAIL 14M AND 14MS ARE MODIFIED PAVEMENT DELINEATION DETAIL 14.
3. DETAIL 25S IS MODIFIED PAVEMENT DELINEATION DETAIL 25.
4. DETAIL 27BS IS MODIFIED PAVEMENT DELINEATION DETAIL 27B.
5. DETAIL 13MS, 14MS, 25S AND 27BS ARE TO BE USED ON CONCRETE PAVEMENT SURFACE ONLY.
6. USE ALL 4" WHITE AFTER INSTALLING PAVEMENT MARKERS.
7. FOR DETAILS NOT SHOWN, SEE STANDARD PLAN A20A AND A20B.



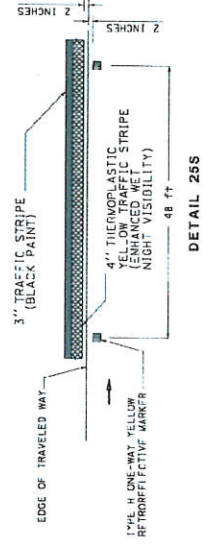
DETAIL 13M



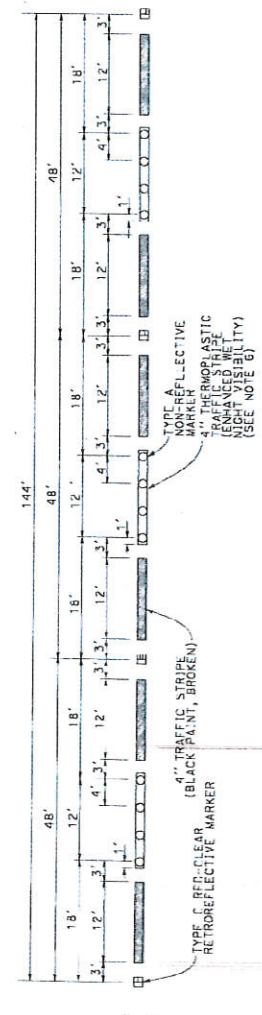
DETAIL 13MS



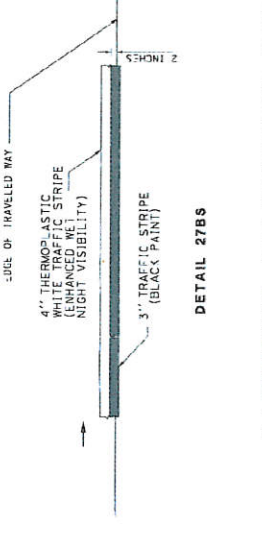
DETAIL 14M



DETAIL 25S



DETAIL 14MS



DETAIL 27BS

PAVEMENT DELINEATION DETAILS  
NO SCALE

PDD-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DATE PLOTTED: 25-08-2015	PROJECT NUMBER & PHASE	UNIT 0735	04120001401
DESIGNED BY: RAYMOND CHAN	DATE REISED: 25-08-2015	PROJECT NUMBER & PHASE	UNIT 0735	04120001401
CHECKED BY: DEREK BUD/CHUNG CHIN LAU	DATE REISED: 25-08-2015	PROJECT NUMBER & PHASE	UNIT 0735	04120001401
FUNCTIONAL REVISION	DATE REISED: 25-08-2015	PROJECT NUMBER & PHASE	UNIT 0735	04120001401
EMILE TANG	DATE REISED: 25-08-2015	PROJECT NUMBER & PHASE	UNIT 0735	04120001401
TRAFFIC	DATE REISED: 25-08-2015	PROJECT NUMBER & PHASE	UNIT 0735	04120001401
REVISIONS	DATE REISED: 25-08-2015	PROJECT NUMBER & PHASE	UNIT 0735	04120001401

## **Appendix J. FHWA Approval**



U.S. Department  
of Transportation  
**Federal Highway  
Administration**

1200 New Jersey Ave., SE  
Washington, D.C. 20590

August 18, 2011

In Reply Refer To:  
HSST/ B-69D

Mr. Gerrit A. Dyke, P.E.  
Vice President of Engineering and R & D  
Barrier Systems, Inc.  
3333 Vaca Valley Parkway, Suite 800  
Vacaville, CA 95688

Dear Mr. Dyke:

This letter is in response to your request for the Federal Highway Administration (FHWA) acceptance of a roadside safety system for use on the National Highway System (NHS).

Name of system: Quickchange Concrete Reactive Tension Barrier System (QMB-CRTS)  
Type of system: Moveable Concrete Longitudinal Barrier  
Test Level: NCHRP Report 350 Test Level 4 (TL-4)  
Testing conducted by: Safe Technologies, Inc. and MIRA, LTD  
Date of request: December 28, 2010  
Date request acknowledged: January 7, 2011  
Task Force 13 designator: SGM22b

You requested that we find this system acceptable for use on the NHS under the provisions of the National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features" at TL-4.

### **Requirements**

Roadside safety devices should meet the guidelines contained in NCHRP Report 350 if tested prior to December 31, 2010. Devices tested after that date must follow the guidelines contained in the American Association of State Highway and Transportation Officials' (AASHTO) Manual for Assessing Safety Hardware (MASH). The FHWA memorandum "ACTION: Identifying Acceptable Highway Safety Features" of July 24, 1997, provides further guidance on crash testing requirements of roadside features, including crash cushions.

### **Decision**

The following system design was found acceptable, with details provided below:

- Quickchange Concrete Reactive Tension Barrier System (QMB-CRTS)

**Description**

The system is a portable and moveable reinforced concrete longitudinal barrier intended for use as a temporary barrier in highway construction zones or as a semi-permanent installation for use in reversible-lane operations. It was originally tested and accepted as an NCHRP Report 350 TL-3 barrier and fully described in FHWA Acceptance Letters B69 and B-69A. Only the internal reinforcement was changed to achieve the higher performance level. Barrier segment shape and connection details were unchanged from the TL-3 design.

**Crash Testing**

Crash testing was performed at Safe Technologies, Inc. in California and at the MIRA. LTD facility in the United Kingdom. Although all of the tests described below were based on the European EN 1317 standards, tests with the NCHRP Report 350 820C and 2000P test vehicles were successfully conducted in conjunction with the FHWA's original TL-3 acceptance letters for the original QMB-RTS designs. Tests 3-10 and 3-11 are identical to tests 4-10 and 4-11. The results of these earlier tests were included with acceptance letter B-69.

The first test reported here was EN 1317 Test TB11 which is comparable to NCHRP Report 350 Tests 3-10 and 4-10. The test installation consisted of 41 meters (134 feet) of anchored Steel Reactive Tension QMB units for additional mass, followed by 42 meters (138 feet) of 1-meter (39-inch) long CRTS units. Dynamic deflection was 540 millimeters (21.3 inches). Enclosure 2 is the test summary sheet prepared by Safe Technologies, Inc.

The second test completed by Safe Technologies, Inc. was EN 1317 Test TB32. This test installation consisted of 24 meters (79 feet) of unanchored Steel Reactive Tension QMB units for additional mass, followed by 48 meters (157 feet) of 1-meter (39 inch) long CRTS units in the impact area. Another 23 meters (75.5 feet) of Steel Reactive Tension units were connected to the downstream end of the CRTS units. Dynamic deflection was 700 millimeters (27.6 inches). Enclosure 3 is the test summary sheet. The Impact Severity (IS) for this test was recorded as 87.7 kJ, significantly less than the Report 350 recommended value of 138.1 kJ. However, as noted above, test 3-11 was successfully run on the original CRST design and was the basis for FHWA acceptance letter B-69. For that test, the reported dynamic deflection was 610 millimeters (24.0 inches). Since test 3-11 is identical to test 4-11 and the only design change to the CRST was the addition of internal reinforcing, the earlier 3-11 test will suffice to demonstrate the crashworthiness of the CRST with the 2000P test vehicle.

EN 1317 test TB51 was conducted by MIRA, LTD. The test vehicle was a 13000-kg (28,660-pound) bus impacting the CRST barrier at a nominal speed of 70 km/hr (43.5 mph) and an impact angle of 20 degrees. The test installation consisted of 99 meters (325 feet) of free-standing CRST units, anchored at both ends. The dynamic deflection was 1.7 meters (5.6 feet). Enclosure 4 is the test summary sheet. Because the impact severity of this test far exceeded the Report 350 target value and the center of mass of the bus was higher than the Report 350 8000S single-unit truck, the FHWA will accept this test as a substitute for Report 350 test 4-12.

**Findings**

Based upon the successful completion of the EN 1317 tests you provided, we agree that your QMB-CRTS, with additional internal reinforcement, is acceptable for use as a TL-4 longitudinal

barrier under NCHRP Report 350 test and evaluation conditions. The design, as described above, may be used on the NHS when such use is acceptable to the contracting authority.

In supplemental correspondence, you stated that all of your CRST barrier segments have been manufactured with the additional reinforcing since successful completion of Test TB32 and that barriers made subsequent to this acceptance letter will be marked to identify their TL-4 capacity. For barriers already in circulation, you can verify TL-3 or TL-4 capacity by determining their date of manufacture if requested to do so by a using agency.

Please note the following standard provisions that apply to the FHWA letters of acceptance:

- This letter includes an AASHTO/ARTBA/AGC Task Force 13 designation that should be used when drafting new or revised Task Force 13 drawings.
- This acceptance is limited to the crashworthiness characteristics of the systems and does not cover their structural features, or conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may adversely influence the crashworthiness of the system will require a new acceptance letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals unacceptable safety problems, or that the system being marketed is significantly different from the version that was crash tested, we reserve the right to modify or revoke our acceptance.
- You will be expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.
- You will be expected to certify to potential users that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance, and that it will meet the crashworthiness requirements of the FHWA and NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance is designated as number B-69d and shall not be reproduced except in full. This letter and the test documentation upon which it is based are public information. All such letters and documentation may be reviewed at our office upon request.
- The QMB-RTS TL-4 barrier is a patented product and considered proprietary. If proprietary devices are specified by a highway agency for use on Federal-aid projects, except exempt, non-NHS projects, (a) they must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with the existing highway facilities or that no equally suitable alternative exists; or (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411.

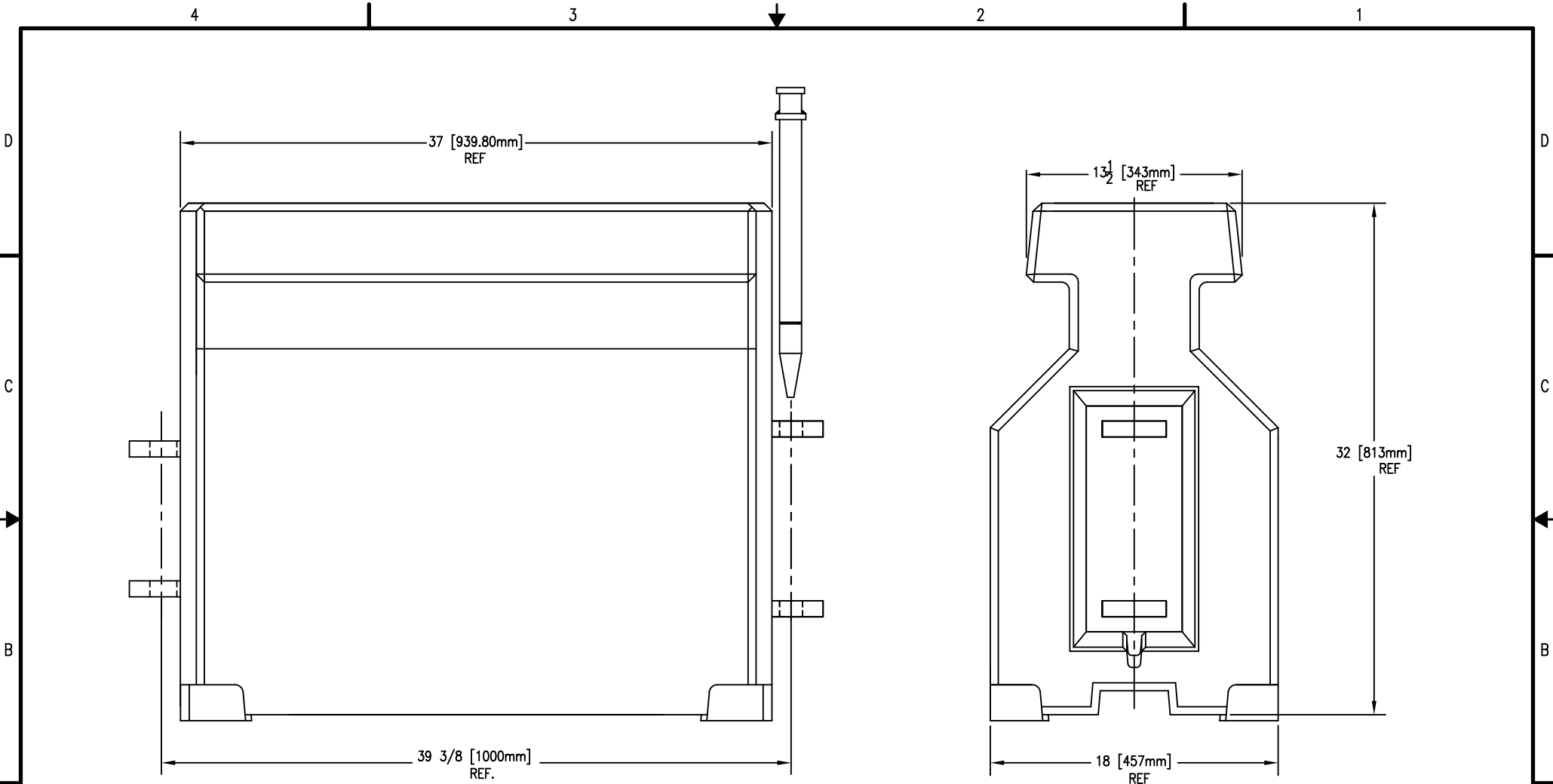
- This acceptance letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented system for which the applicant is not the patent holder. The acceptance letter is limited to the crashworthiness characteristics of the candidate system, and the FHWA is neither prepared nor required to become involved in issues concerning patent law. Patent issues, if any, are to be resolved by the applicant.

Sincerely yours,



Michael S. Griffith  
Director, Office of Safety Technologies  
Office of Safety

Enclosures



© 2010 BARRIER SYSTEMS INC.  
 THE INFORMATION CONTAINED IN THIS  
 DRAWING IS THE SOLE PROPERTY OF  
 BARRIER SYSTEMS INC. ANY REPRODUCTION  
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 PERMISSION OF BARRIER SYSTEMS INC. IS  
 PROHIBITED.

UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN INCHES.  
 TOLERANCES ARE:  
 FRACTIONS DECIMAL ANGLES  
 ±1/16 .003 ±1/2  
 .000 ±.010  
 INTERPRET DIMENSIONS AND  
 TOLERANCES PER ASME  
 Y14.5-1994

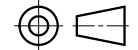


3333 Vaca Valley Parkway Ste 800  
 Vacaville, CA 95688  
 Tel: 800-800-3691  
 www.barriersystemsinc.com

**APPROVALS**

DRAWN BY: GAD  
 DRAWN DATE: 12/29/2010  
 APPR'D BY: GAD  
 APPR'D DATE: 12/29/2010

THIRD ANGLE PROJECTION



DO NOT SCALE DRAWING

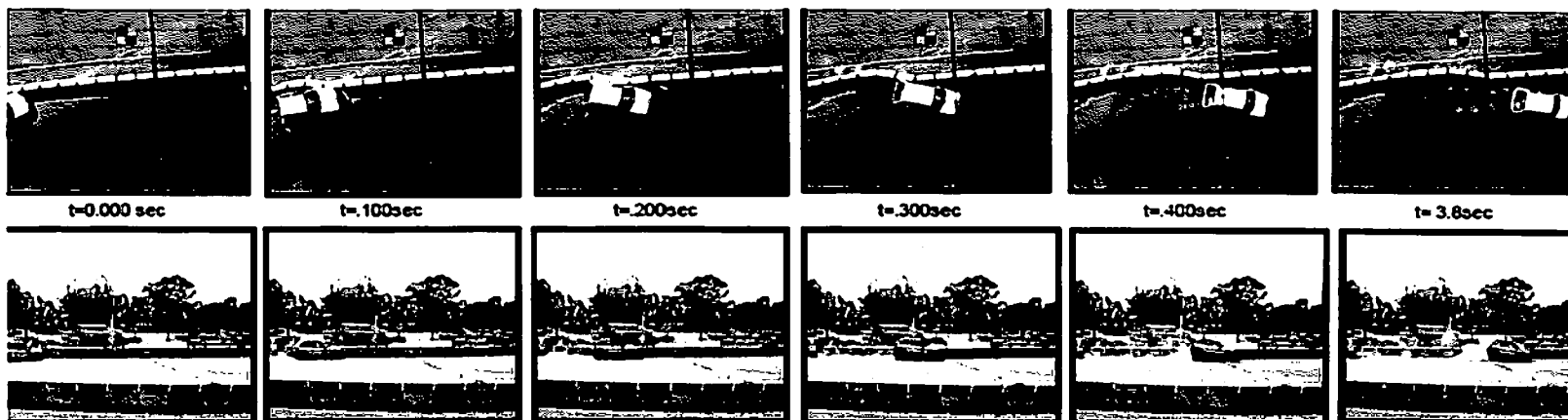
TITLE  
**CONCRETE BARRIER  
 18" RTS, TL4**

SIZE DWG NO. REV.  
**B C050236-US A**

REV ECN# DATE  
 - 1758 10/12/2011

SCALE 1:6 SHEET 1 OF 1





**General Information**

Test Agency.....SAFE TECHNOLOGIES, INC.  
 Test Designation.....EN 1317-2, Test TB 11  
 Test No.....RTS02  
 Date.....4/19/2000

**Test Article**

Type.....Barner Systems, Inc.  
 18" CRTS/QMB Longitudinal Barrier

Installation Length.....83 meters overall (42-CRTS)

Size and/or dimension and material  
 of key elements.....CRTS Section length 1000mm, height 813mm,  
 width 457mm, mass 680kg

**Test Vehicle**

Type.....Production Model  
 Designation.....900 kg  
 Model.....1990, Ford Festiva

**Mass (kg)**

Curb.....795  
 Test Inertial.....791  
 Dummy(s).....75  
 Gross Static.....912

**Impact Conditions**

Speed (km/h).....104.7  
 Angle (deg).....20  
 Impact Severity (kJ).....41.4

**Exit Conditions**

Speed (km/h).....70  
 Angle (deg).....14

**Occupant risk Values**

Impact Velocity (m/s)  
 x-direction.....4.5  
 y-direction.....-7.8  
 Rollover Acceleration (g's)  
 x-direction.....-8.3  
 y-direction.....18.2  
 TH-V (km/h).....31  
 FHD (g's).....19  
 ASI.....1.4

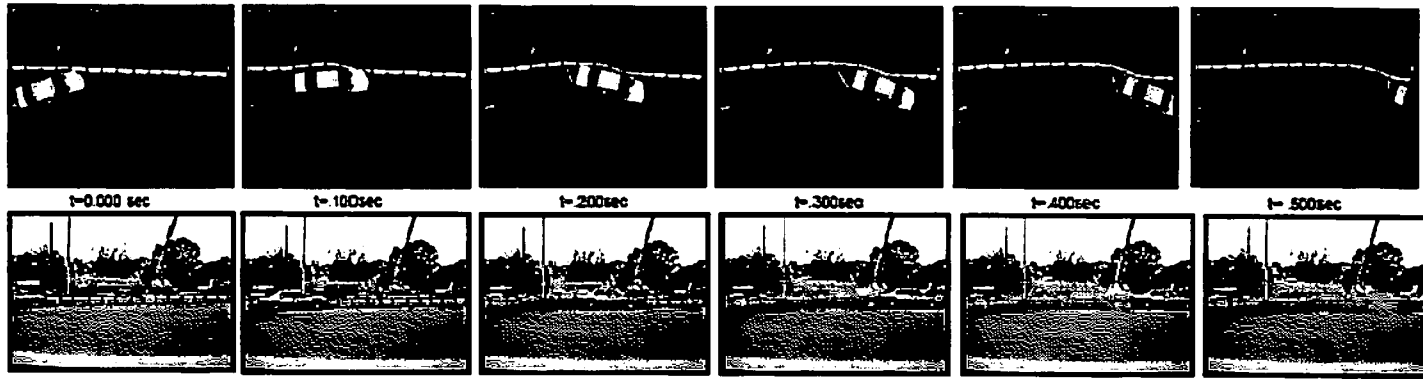
**Test Article Deflection (mm)**

Dynamic.....540  
 Permanent.....540  
 Working Width.....W3

**Vehicle Damage**

Exterior  
 VDS.....LFG-3  
 CDC.....11FLEE3  
 Interior  
 OCCI.....AS0000000

Enclosure 3



**General Information**

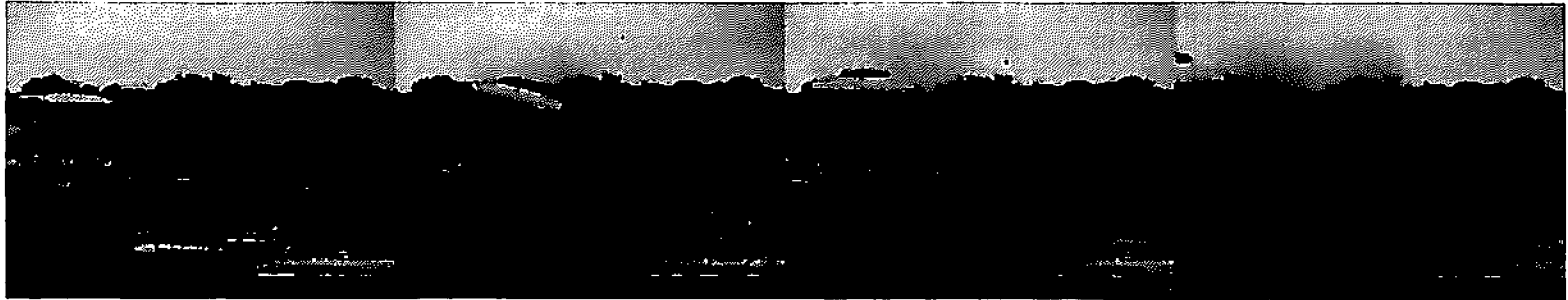
Test Agency .....	SAFE TECHNOLOGIES, INC.
Test Designation .....	EN 1597-2, Test TB 32
Test No. ....	CO2N2
Date .....	12/6/2000
<b>Test Article</b>	
Type .....	Barrier Systems, Inc. 18' CRTS-QMS Longitudinal Barrier
Installation Length .....	95 meters overall (48-CRTS)
Size and/or dimension and material of key elements .....	CRTS Section length 1000mm, height 813mm, width 457mm, mass 660kg.
<b>Test Vehicle</b>	
Type .....	Production Model
Designation .....	1500 kg
Model .....	1998, BACW 528e
<b>Mass (kg)</b>	
Curb .....	1393
Test Inertial .....	1452
Dummy(s) .....	n/a
Gross Static .....	1452
<b>Impact Conditions</b>	
Speed (km/h) .....	115.7
Angle (deg) .....	20
Impact Severity (kJ) .....	87.7

**Exit Conditions**

Speed (km/h) .....	81.7
Angle (deg) .....	21
<b>Occupant risk Values</b>	
Impact Velocity (m/s)	
x-direction .....	4.8
y-direction .....	6.7
Roll-down Acceleration (g's)	
x-direction .....	7.5
y-direction .....	19.2
THIV (km/h) .....	27
PhiD (g's) .....	700 .26
ACI .....	700 .12

**Test Article Deflection (mm)**

Dynamic .....	
Permanent .....	
Working Width .....	
<b>Vehicle Damage</b>	
Exterior	
VDS .....	LFC-4
CDC .....	11 PLEE4
Interior	
CCDI .....	AS0010000



General Information			Impact Conditions		Test Article Deflections (Deflection of Traffic face)	
Test Agency	MIRA Ltd		Speed (km/h)	71.4 km/h (2% above target speed)	Working Width (m)	1.0m
Test No	DD104		Angle (deg)	10.0deg (0.5% below target weight)	Dynamic (m)	1.7m
Date	25 <sup>th</sup> July 2005		Exit Conditions		Permanent (m)	1.4m
Test Article			Speed (km/h)	50 km/h	Vehicle Penetration (m)	1.7m
Type	H2 Concrete Safety Barrier		Angle (deg)	3.5°	Vehicle Damage – Exterior	
Installation Length (m)	90m Inc End Anchors (Nom)		Occupant Risk Values		VDS	N/a
Size and/or dimension and material of key elements	32"H x 19"W x 30"L Sections		THIV (km/h)	11 km/h	CDC	N/a
Soil Type and Condition	Concrete plinth		PHD (g)	7g	Vehicle Damage – Interior	
Test Vehicle			ASI	0.4	OCDI	Not Applicable to this type of vehicle
Type	Coach				Post Impact Vehicular Behaviour	
Designation	Bedford				Max Roll Angle (deg)	-11.6 (CFC60 filter)
Model	N/a				Max Pitch Angle (deg)	4.6 (CFC60 filter)
Mass					Max Yaw Angle (deg)	-20.0 (CFC60 filter)
	Kerb (kg)	8600				
	Test Inertial (kg)	12995	Target Test Inertial:	13000		
	Total Ballast (kg)	4305				
	Gross Static (kg)	12995				

## **Appendix K. Moveable Barrier Information**

# THE ROAD ZIPPER SYSTEM®

FOR MANAGED LANES



Quickchange® Moveable Barrier (QMB™) is designed to cost effectively increase capacity and reduce congestion by making more efficient use of new or existing roadways. Applications include high volume highways where additional right-of-way may not be available, where environmental concerns may exist, or where the lack of funding may slow or inhibit support for new construction.

The system can transfer a mile (1.6 km) of high performance concrete barrier up to two lanes in less than 10 minutes, offering DOT's an innovative strategy for making our congested highway system more efficient, safe and functional. These benefits can be realized in less than one year and at a fraction of the cost of new construction.

Moveable barrier technology provides a quick and cost-effective solution for highway capacity improvements, without having to wait for time consuming study reviews. It allows DOT's to preserve their corridor options (Managed Lanes, Bus Rapid Transit (BRT), Reversible Lanes, Contraflow, HOV and HOT Lanes), while providing a "fast-build" solution for mitigating congestion.

## MOVEABLE MEDIANS

The moveable median is perhaps the most simple way of optimizing highway capacity. In this case, there is no fixed barrier on the highway, and the moveable barrier is the only barrier. The barrier is moved back and forth multiple times per day to reconfigure the roadway based on the needs of peak traffic. The moveable median is most commonly applied to bridges and other highway applications with few center structures (viaducts or elevated structures also fit this model).



A moveable median creates a 4/3, 3/4 traffic pattern using 7 lanes

Ben Franklin Bridge, Philadelphia, PA

### MOVEABLE MEDIAN CROSS SECTIONS



AM Peak Traffic



PM Peak Traffic



## REDUCES CONGESTION

Moveable barrier gives more lanes to the peak traffic direction for AM and PM commuters.

## INCREASES SAFETY

Positive barrier protection eliminates the possibility of cross over, head-on accidents.

## "FAST-BUILD" SOLUTION

New construction can take years for planning and environmental reviews. Moveable barrier can often be deployed in less than one year.

## GREEN BENEFITS

Benefits include improved air quality, improved fuel efficiency, and reduced atmospheric CO<sub>2</sub>.

## QUALIFIES FOR MAP-21

Federal funds are available to help create managed lanes in the US.

## STRETCHES TRANSPORTATION BUDGETS

According to the FHWA, new urban freeway construction can cost up to \$15.4 million per urban lane mile. Moveable barrier is a fraction of this cost.

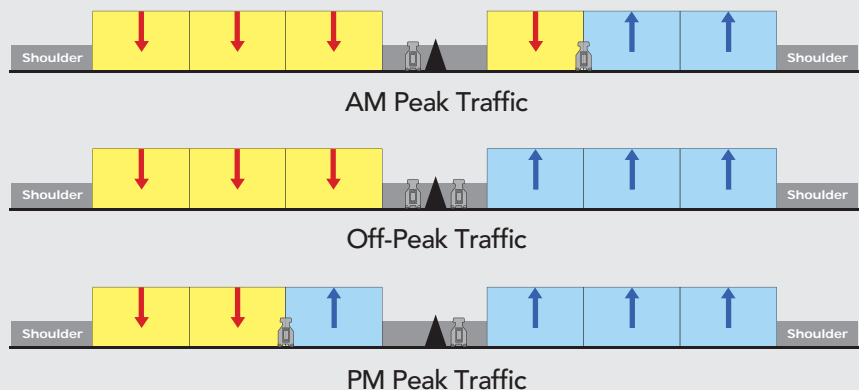
## CONTRAFLOW LANES

A single moveable median barrier may not be practical in some situations. This may be because the two directions of the highway are on different elevations or structures, because there is a substantial existing median barrier, or because there are many center structures. In these cases, two moveable walls are used, one on each side of the roadway, in order to take unused capacity from the off-peak side of the road and allow traffic from the peak side to cross over and use the new lane, thus gaining additional capacity. This system provides the same optimization and efficiency as a moveable median despite the geometric challenges.



I-30, Dallas, TX

### CONTRAFLOW CROSS SECTIONS





**PHYSICAL SPECIFICATIONS**

**Concrete Reactive Tension System (18 inch)**

Heavily reinforced concrete barrier sections have superior deflection and vehicle stability when compared to Temporary Concrete Barrier.

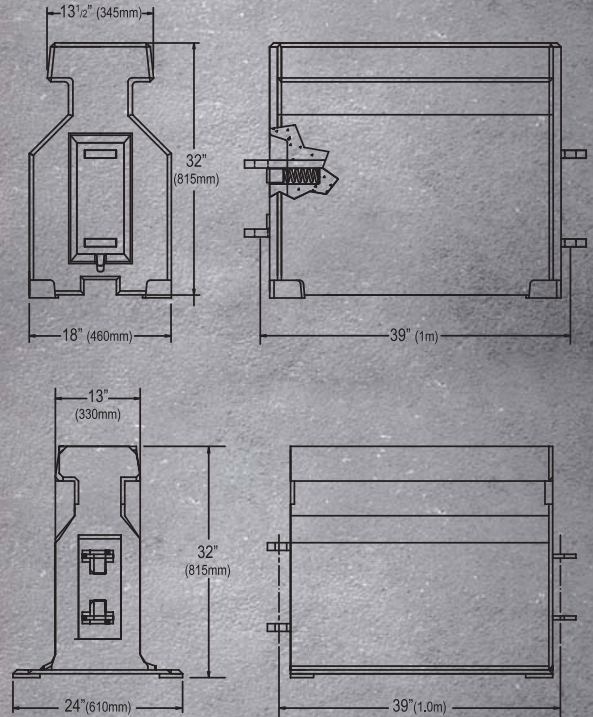
**Steel Reactive Tension System (13 inch)**

High strength steel structure filled with concrete and Reactive Tension elements resulting in the narrowest profile and low deflection. Ideal for use where low deflection is required and minimum lane width exists.

**Performance**

Tested and Approved to NCHRP Report 350, Test Level 3 (100 km/h)  
 Maximum Deflection at TL3: 28 in. (0.7 m)  
 BS EN 1317-2 Test Level H2 (Concrete RTS)

**Mass of Each Barrier Element**  
 Approximately 1500 lbs (680 kg)



<b>BARRIER TRANSFER MACHINE</b>	
Transfer Speed	10 mph (16 km/h)
Roading Speed	20 mph (32 km/h)
Lateral Transfer	Up to 24 feet (7.3 m) per transfer
Transfer Time	1 mile in 6 minutes (1.6 km)

**ROAD ZIPPER CASE STUDY**

**Dallas, TX I-30**

- 15,000 commuters daily in the HOV lanes
- Saves 14 minutes per trip = 1 million hours per year
- Benefit to Cost ratio of 6.5 to 1
- Helps Dallas meet air quality goals
- Average US vehicle occupancy = 1.1, Dallas HOV = 2.9
- Most cost-effective way to mitigate congestion (system expanded 3 times)



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# QUICKCHANGE® MOVEABLE BARRIER

FOR CONSTRUCTION APPLICATIONS





### IMPROVES SAFETY

Workers and motorists have positive barrier protection at all times.

### REDUCES CONGESTION

QMB allows more lanes to be open for peak traffic at all times by reconfiguring the roadway in real time.

### SPEEDS CONSTRUCTION

By combining or eliminating stages due to the larger work space, contractors can save months or even entire construction seasons.

### CREATES EFFICIENCIES

Dedicated haul lanes create safer, more efficient deliveries and material staging.

### BETTER QUALITY REPAIRS

More work zone space allows contractors to use larger, more efficient equipment, resulting in better quality repairs that last years longer.

### RAPID STAGE CHANGES

Moveable barrier reconfigures the road in minutes. It can take days to reposition miles of temporary concrete barrier.

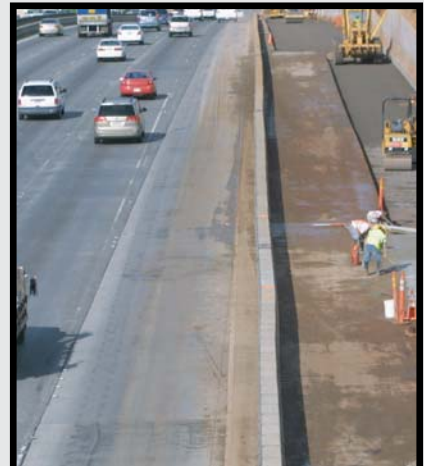
## ROAD WIDENING OR SHOULDER / MEDIAN REPAIR

### H-1 FREEWAY, HAWAII: ROAD WIDENING

When working in the shoulder or median, moveable barrier allows the contractor to expand the work zone during off-peak traffic hours by taking one or more lanes from traffic. More work zone space can be used for dedicated haul lanes or allow for larger, more efficient equipment. These options help the contractor combine stages and accelerate construction for early job completion with better quality repairs.



More room to work during off-peak



More lanes for traffic during peak

An extra lane is returned to motorists prior to the peak traffic period - Honolulu, HI

### EDGE OF ROAD CROSS SECTIONS



Peak Traffic Condition



Off Peak Traffic Condition

The QuickChange® Moveable Barrier System (QMB®) is designed to create a flexible, positive traffic barrier between opposing lanes of traffic, or between motorists and construction work zones. The system uses a wall of interlocked 1-meter barriers that can be lifted and repositioned by a transfer machine to create additional work zone space for construction crews, and to provide more

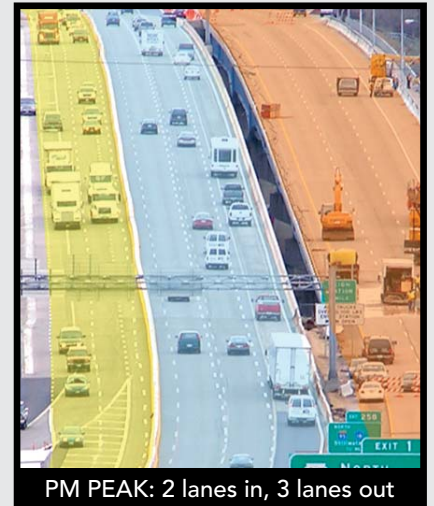
lanes to the peak traffic direction to mitigate congestion. For widening work and shoulder / median repair, QMB allows the contractor to increase the size of the work zone during off-peak traffic hours to create dedicated haul lanes and use larger, more efficient equipment to combine or eliminate stages and significantly accelerate the construction process.

For partial width construction with traffic switches, the QMB system reduces congestion by enabling more lanes to be open during peak hour traffic. The barrier is moved several times per day to reconfigure the roadway in real time to maximize the number of lanes available for peak traffic.

**PARTIAL WIDTH CONSTRUCTION WITH TRAFFIC SWITCH**

**ST. CROIX RIVER BRIDGE, WISCONSIN: PARTIAL WIDTH CONSTRUCTION**

During partial width construction, QMB helps keep more lanes open in the peak traffic direction at all times by reconfiguring the road in real time as a “moveable median” with no disruption to live traffic. This significantly reduces traffic queues and user delay costs, and it saves hundreds of thousands, or even millions of dollars in temporary asphalt widening to meet minimum traffic flow requirements.



Award winning I-94 St. Croix Bridge construction project – Wisconsin, USA

**TRAFFIC SWITCH CROSS SECTIONS**



AM Peak Traffic



PM Peak Traffic

**PHYSICAL SPECIFICATIONS**

**QuickChange Moveable Barrier**

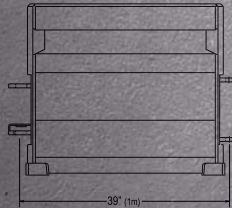
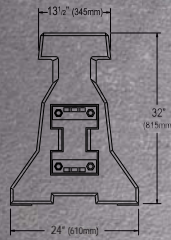
Heavily reinforced concrete barrier sections have similar deflection and superior vehicle stability when compared to standard Temporary Concrete Barrier

**Performance**

Tested and Approved to NCHRP Report 350, Test Level 3 (100 km/h)  
Maximum Deflection at TL3: 52 in. (1.3m)

**Mass of Each Barrier Element**

Approximately 1425 lbs (646 kg)



<b>BARRIER TRANSFER MACHINE</b>	
Transfer Speed	5 mph (7km/h)
Roading Speed	20 mph (32km/h)
Lateral Transfer	Up to 18 feet (5.5m) per transfer
Transfer Time	1 mile in 12 minutes

**QMB CONSTRUCTION CASE STUDIES**

**Devore, CA I-15**

Type: Pavement Reconstruction  
Contractor: Coffman Specialties  
Project Length: 2 miles

- Project completion accelerated from 8 months to 6 weeks
- Construction savings of more than \$6 million
- Traffic queues and user delay costs minimized<sup>1</sup>



**Salt Lake City, UT SR 171**

Type: Arterial Widening  
Contractor: Granite Construction  
Project Length: 1.7 miles

- Project completed 7 months ahead of schedule
- Moveable barrier benefits estimated at \$1.7 million to \$2.4 million
- B/C ratio of 10:1 "if all benefits are considered"<sup>2</sup>



<sup>1</sup> CalTrans, CA4PRS

<sup>2</sup> T.Y. Lin International, Evaluation of Moveable Barrier in 2 Construction Work Zones

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## **Appendix L. Master Cooperative Agreement & Draft Construction Cooperative Agreement**

**COOPERATIVE AGREEMENT BETWEEN  
THE CALIFORNIA DEPARTMENT OF TRANSPORTATION  
AND THE BAY AREA TOLL AUTHORITY  
RELATING TO THE BRIDGES**

THIS AGREEMENT, IS MADE ENTERED INTO AND EFFECTIVE ON April 25, 2006, the date of the defeasance of the existing bonds secured by the toll bridge seismic retrofit surcharge imposed under subdivision (a) of SHC section 31010, between the STATE OF CALIFORNIA, acting by and through its Department of Transportation, hereinafter referred to as "DEPARTMENT," and the BAY AREA TOLL AUTHORITY (BATA), hereinafter referred to as "AUTHORITY."

RECITALS

1. AUTHORITY was created pursuant to Section 30950, *et seq.* of the California Streets and Highways Code (SHC), which transferred certain California Transportation Commission (CTC) and DEPARTMENT responsibilities for the disposition of toll revenues collected from toll bridges owned and operated by DEPARTMENT in the San Francisco Bay Area.
2. Department's toll bridges subject to this AGREEMENT (identified in SHC section 30910) are the Antioch Bridge, Benicia-Martinez Bridges, Carquinez Bridges, Dumbarton Bridge, Richmond-San Rafael Bridge, San Francisco-Oakland Bay Bridge and San Mateo-Hayward Bridge, hereinafter collectively referred to as "BRIDGES".
3. The respective statutory geographic limits of certain of the BRIDGES are found in the SHC and others are established by post mile or other locators as defined in original project documents. The extent of the San Francisco-Oakland Bay Bridge is defined in SHC section 30600 as the bridge and its approaches; the limits of the Carquinez and Benicia-Martinez Bridges are found in SHC section 30750; the extent of the Antioch Bridge is defined in SHC section 30760; the limits of the San Mateo-Hayward and Dumbarton Bridges are defined in SHC section 30790 (the Dumbarton Bridge limits are redefined in SHC section 30792.2); and the limits of the Richmond-San Rafael Bridge are not statutorily defined. Exhibit "A", attached hereto and made an express part of this AGREEMENT, identifies the geographic limits of each of the BRIDGES by post mile.
4. SHC sections 30150 and 30952 provide that DEPARTMENT shall collect tolls, operate, maintain, and provide rehabilitation of the BRIDGES, including all related toll facilities, and shall be responsible for the design and construction of eligible projects which may include, without limitation, capital improvements, seismic retrofit, emergency repairs and restorations, rehabilitation, Regional Measure One, and Category B Maintenance (as defined in SHC section 188.4) projects, which are hereinafter collectively referred to as "Eligible Projects", affecting the BRIDGES in accordance with programming and scheduling requirements of the CTC and AUTHORITY.



5. SHC section 30952 further provides that DEPARTMENT and AUTHORITY shall enter into a cooperative agreement, upon mutually agreed terms and conditions, setting forth the methodology by which DEPARTMENT will operate the BRIDGES and be responsible for the planning, design, and construction of improvements, repairs or alterations to the BRIDGES to be funded from the AUTHORITY'S toll bridge revenues.
6. DEPARTMENT and AUTHORITY first entered into a cooperative agreement pursuant to SHC section 30952 in 1998, which agreement was subsequently superceded by a new cooperative agreement on July 1, 2003, and amended on December 15, 2004.
7. Pursuant to Assembly Bill No. 144 ("AB 144"), enacted and made effective on July 18, 2005, certain project oversight and control responsibilities relative to the construction of the Benicia Martinez Bridge and the state Toll Bridge Seismic Retrofit Program projects (hereinafter referred to as "Seismic Projects") were given to AUTHORITY. The Seismic Projects are more particularly described in SHC section 188.5.
8. As part of AB144, SHC section 30950.2, gives AUTHORITY the responsibility for administering all toll revenues from the state-owned toll bridges within the jurisdiction of the Metropolitan Transportation Commission, once the obligations of the California Infrastructure and Economic Development Bank secured by the seismic retrofit surcharge imposed pursuant to subdivision (a) of SHC section 31010 are no longer outstanding (as defined by the constituent instruments), currently the Bay Area Toll Bridges Seismic Retrofit Revenue Bonds Series 2003A First Lien Bonds and Seismic Retrofit Revenue Notes Series 2005A Second Lien Commercial Paper.
9. AB 144 further added section 30952.05 to the SHC requiring DEPARTMENT and AUTHORITY to amend their cooperative agreement to incorporate the project oversight and control responsibilities described therein relative to the Benicia Martinez Bridge and the Seismic Projects.
10. In accordance with SHC Sections 30952 and 30952.05, AUTHORITY and DEPARTMENT now set forth herein the terms of a revised and amended AGREEMENT to set forth the parties respective obligations.

This AGREEMENT supersedes and replaces the prior amended Cooperative Agreements entered into on July 1, 2003, as amended on December 15, 2004, and any prior agreements or memoranda of understanding between the parties relating to the BRIDGES.

## SECTION I - ELECTRONIC AND MANUAL TOLL COLLECTION

### DEPARTMENT AGREES

1. To cooperate with the AUTHORITY and its vendors, consultants and contractors regarding oversight and management of the operations of the electronic toll collection system customer service center (CSC) for the BRIDGES. The DEPARTMENT's tasks in support of the AUTHORITY's operation of the CSC shall include, but not be limited to, establishing and maintaining DMV access for processing violation notices.
2. That the AUTHORITY is granted all the DEPARTMENT'S right, title and interest in and to the Advanced Toll Collection And Accounting System (ATCAS) application software as defined in Purchase Orders 25154, as amended, and Purchase Order 57042, as amended, provided however, the DEPARTMENT shall likewise retain a non-exclusive, unlimited, irrevocable right to use, transfer, and distribute all ATCAS application software as defined above. In the event the AUTHORITY shall enhance the ATCAS application software through modification, amendment and /or additions thereto, the DEPARTMENT shall have the royalty free, non-exclusive, irrevocable right to use, transfer, distribute and modify for its purposes such enhancements, including all associated source code and source code documentation.
3. To provide staffing and supervision for the manual collection of toll revenues related to the BRIDGES; including, but not limited to, management of toll collectors and all related personnel and reviewing disputes related to the manual collection of tolls. The DEPARTMENT will staff and operate manual toll collection operations in accordance with state law and consistence with the AUTHORITY's adopted budgets.

### AUTHORITY AGREES

4. To operate, manage and maintain the operations of the electronic toll collection CSC, including, but not limited to, maintenance of the electronic toll collection customer accounts, administering service contracts in relation to these operations, the identification of toll violators and the processing of toll violations, processing of customer and violation disputes, financial management including procurement of credit card processing services, reciprocal relationships with other California toll operators, the procurement of electronic toll collection transponders, and the integration of these operations with other transportation related operations.
5. To provide management oversight of DEPARTMENT's manual toll collections operations, including, but not limited to, reviewing procedures for the manual collection, handling and reconciliation of cash toll revenues, reviewing staffing plans for the manual toll collection operations, and reviewing training and training procedures for DEPARTMENT's manual toll collection staff.

**SECTION II - CASH COUNTING, BANKING AND TOLL ACCOUNTING**

**DEPARTMENT AGREES:**

1. To cooperate with the AUTHORITY and its vendors, consultants and contractors in the AUTHORITY'S financial oversight and management of the toll revenues collected on the BRIDGES, including, but not limited to, toll accounting, armored car, vault and bank services.
2. To transfer to the AUTHORITY equipment used for toll accounting acquired solely with toll revenue funds and to fully assist the AUTHORITY in the operation and relocation of the host toll collection equipment and systems from the DEPARTMENT'S District offices to the AUTHORITY'S offices or other location as determined by the AUTHORITY.

**AUTHORITY AGREES:**

3. To provide armored car, vault and bank services for cash toll revenues collected by the Department on the BRIDGES.
4. To provide toll accounting services, including, but not limited to, accounting for toll revenues, preparing toll revenue and traffic reports, reconciliation of manual and electronic toll revenues, and toll auditing.

### **SECTION III - TOLL BRIDGE OPERATIONS AND MAINTENANCE**

#### **DEPARTMENT AGREES:**

1. To maintain (Category A Maintenance), and operate the bridge structures and maintain (Category B Maintenance) and operate the toll plaza buildings and facilities in a safe and efficient manner in accordance with applicable DEPARTMENT policies and standards for the BRIDGES, excepting for those items identified in Article 7 of Section III, 7 which the AUTHORITY will own, maintain, repair, and operate. Operational and maintenance tasks shall include but are not be limited to, managing maintenance staff and all related personnel and contracts and contract employees, maintaining bridge infrastructure and equipment, obtaining necessary permits for the operation and maintenance of the BRIDGES, and generating and maintaining proper records relating to the BRIDGES. Excepting tasks related to emergency repairs performed pursuant to Article 5, of Section III all tasks will be planned to be consistent with the annually adopted AUTHORITY operations and capital budget and long-range plans of toll related costs to be reimbursed to DEPARTMENT from the bay area toll account by AUTHORITY. Category A expenditures shall include, but are not be limited to, the following: maintenance of the BRIDGES and related structures, roadbeds, pavement, drainage, debris removal, landscaping, traffic guidance systems, ice control, dedicated bridge maintenance stations, maintenance training, electrical maintenance and electrical energy other than the architectural lighting. Category B operational and maintenance expenditures shall include, but are not limited to, toll administration building and toll facilities, toll system related energy, architectural lighting energy, booth maintenance and repair, reconstruction and replacement of mechanical and electronic toll equipment.
2. To cooperate with the AUTHORITY and its vendors in the Authority's maintenance, repair and replacement services for the toll lane, plaza and host toll collection equipment and systems for the BRIDGES, including, but not limited to, providing the AUTHORITY staff and its contractors (a) access to toll lane, plaza and host toll collection equipment and systems; (b) processing requests for all necessary encroachment permits; (c) administering or facilitating the transfer of any service or equipment contracts related to the maintenance of the toll lane, plaza and host toll collection equipment and systems; (d) assisting the AUTHORITY or its contractors with the closure of lanes and management of traffic to carryout maintenance activities for the toll lane, toll plaza and host toll collection equipment and systems; and (f) assisting the AUTHORITY and its contractors in the development of processes and procedures for the reporting of problems related to toll lane, plaza and host toll collection equipment and systems.
3. To provide AUTHORITY a detailed anticipated fiscal year budget, description of work activities and charges for Category A and Category B Maintenance expenditures as defined in SHC section 188.4, and an annual report of actual expenditures upon completion of each fiscal year.

4. To inform AUTHORITY of any non-emergency activities undertaken by DEPARTMENT that may affect the operation, appearance or safety of the BRIDGES, and to provide advance notice to AUTHORITY of any DEPARTMENT activities that would require any amendment to AUTHORITY's adopted annual operations and capital budget and Long Range Plans.
5. To take whatever immediate actions are necessary for emergency repairs to any of the BRIDGES which have been damaged or are in immediate danger and report to AUTHORITY as soon as possible, but not later than ten (10) working days, after any occurrence requiring the expenditure of toll funds for emergency repair on the BRIDGES.
6. To provide tow truck services on the BRIDGES from state-funded sources for as long as authorized by California law and budgeted in the annual State Budget Act.

AUTHORITY AGREES:

7. To own, operate, and provide maintenance services for the toll lane, plaza and host toll collection equipment and systems for the BRIDGES as a necessary component of audit, internal, and cash controls, which shall include but are not limited to software, hardware, computer equipment, lane readers, violation enforcement system, automatic vehicle classification (AVC) system, and telecommunications for these systems. These systems shall be maintained in such a manner as to provide consistent and functional interface to the CSC system.
8. To give first priority to projects and expenditures that are deemed necessary by DEPARTMENT to preserve and protect the BRIDGES as provided by SHC section 30950.3 (c)
9. To pay all of the DEPARTMENT's costs approved by the DEPARTMENT and the AUTHORITY incurred for toll operations maintenance and support provided by the DEPARTMENT. Costs will be compiled and computed in accordance with the DEPARTMENT's standard accounting practices and the State Administrative Manual.

**SECTION IV - TOLL BRIDGE CAPITAL IMPROVEMENT PROGRAM**

**DEPARTMENT AGREES:**

1. To assist AUTHORITY in connection with AUTHORITY's preparation and adoption of Long Range Plans, as required by SHC section 30950.3, and any subsequent amendments to said Plans.
2. To plan, design and construct Eligible Projects for the BRIDGES in accordance with the Long Range Plans that reflect AUTHORITY's approved long term multi-year capital outlay and capital outlay support budgets for eligible capital projects, consistent with AUTHORITY's annual operations and capital budgets, that conform to AUTHORITY's approved operations, maintenance, and capital reimbursement limits (subject to modification when required) for a given fiscal year when adopted by AUTHORITY.
3. To develop contract specifications and bid documents and invite bid and award contracts for capital improvements to the BRIDGES.
4. To provide, subject to annual State Budget Act authorization, sufficient staff resources within DEPARTMENT to assure timely implementation of projects in the Long Range Plans adopted by AUTHORITY.
5. To maintain and provide, on a monthly basis, a current schedule of Eligible Projects funded from the bay area toll account.
6. To provide AUTHORITY with complete monthly reports of costs incurred by DEPARTMENT for bridge operations, toll collections and capital projects affecting the BRIDGES for which subsequent reimbursement will be made to DEPARTMENT by AUTHORITY. These reports will be prepared for each bridge within the BRIDGES listed by SHC section 30910.
7. To provide AUTHORITY access to all project development information regarding the projects identified in the Long Range Plan and the Toll Bridge Seismic Program, including, but not limited to, project files kept in accordance with project development procedures and manuals, project initiation documents, environmental technical studies, environmental documents and plans, and specifications and estimates for the identified projects in the Capital Improvement Program.
8. To acquire property essential to complete Eligible Projects contained in the Long Range Plans. Any subsequent sale of excess land, property, equipment or any other assets that were purchased with toll funds shall be reverted to the bay area toll account. Any sale of excess land require the approval of the CTC and maybe subject to the reimbursing the federal government its proportional contribution, if any.
9. To perform all other activities necessary for the extended operation, maintenance, and protection of the BRIDGES, including, but not limited to, obtaining and maintaining all regulatory permits necessary to authorize those maintenance and construction activities.

DEPARTMENT will inform AUTHORITY of any anticipated unique or significantly unusual DEPARTMENT activities affecting the BRIDGES as they arise.

10. As required by SHC section 30952.1, to establish and participate, in conjunction with the AUTHORITY and the CTC, in a Toll Bridge Program Oversight Committee, to oversee and provide direction for the Seismic Projects and the Benicia-Martinez Bridge New Span project.

AUTHORITY AGREES:

11. To review and approve as necessary and appropriate all project initiation documents, environmental documents, right of way agreements and project bid documents for all Eligible Projects identified in the Capitol Improvement Program.
12. To update the Long Range Plans, as specified in SHC section 30950.3, when necessary.
13. As required by SHC section 30952.1, to establish and participate, in conjunction with the DEPARTMENT and the CTC, in a Toll Bridge Program Oversight Committee, to oversee and provide direction for Toll Bridge Seismic Retrofit Program projects and the Benicia-Martinez Bridge New Span project.
14. To contract with and oversee one or more consulting firms to provide project oversight and control services for the Benicia-Martinez Bridge project and the Toll Bridge Seismic Retrofit Program projects as specified in subsection (d) of SHC section 30952.05. The Toll Bridge Oversight Committee shall review and approve all such contracts, as specified in subsection (d) of SHC section 30952.05.
15. To review and approve all contract specifications and bid documents prepared by DEPARTMENT prior to advertising the bid documents for the Benicia-Martinez Bridge project and the Toll Bridge Seismic Retrofit Program projects in accordance with subsection (b) of SHC section 30952.05.



**SECTION V – PROGRAM/PROJECT FINANCIAL MANAGEMENT AND  
FINANCING**

**DEPARTMENT AGREES:**

1. To cooperate with the AUTHORITY in the issuance of new or replacement bonds by AUTHORITY, including, but not limited to, developing and updating project schedules, projected cash flows and risk management plans for each of the Eligible Projects identified in the seismic or long range plan programs.
2. To cooperate with the AUTHORITY, in all actions necessary for the defeasance of the existing bonds issued on behalf of the DEPARTMENT and secured by the toll bridge seismic retrofit surcharge imposed under subdivision (a) of SHC section 31010.
3. To cooperate fully with the Toll Bridge Seismic Retrofit Account close out audit to be conducted subsequent to the defeasance of the bonds, retirement of the commercial paper, and any other outstanding seismic obligations of the California Infrastructure and Economic Development Bank.
4. Upon defeasance of the Bonds, retirement of the commercial paper, and any other outstanding seismic financial obligations of the California Infrastructure and Economic Development Bank and after satisfying the immediate cash flow requirements of the Toll Bridge Seismic Retrofit Program projects, transfer the revenues and fund balances in the Toll Bridge Seismic Retrofit Account to the AUTHORITY for deposit in the bay area toll account.
5. To work in consultation with the AUTHORITY and the CTC to adopt a schedule for the payment of the remaining state contributions identified in SHC sections 188.5 and 188.6 for the Toll Bridge Seismic Retrofit Program projects identified in SHC section 188.5.
6. To develop procedures for the timely allocation and payment of all toll bridge seismic retrofit funds due to the Toll Bridge Seismic Retrofit Program, including, but not limited to: 1) approving invoices as submitted by BATA that are consistent with CTC allocations; 2) providing best efforts to ensure that the state budget includes any necessary provisions to allow for the transfer of funds to BATA for the Toll Bridge Seismic Retrofit Program; 3) confirming that the Controller makes payments into BATA accounts in accordance with the CTC adopted allocation schedule; and 4) cooperating with the CTC in the scheduling and allocation of funds committed to the Toll Bridge Seismic Retrofit Program.

**AUTHORITY AGREES**

7. To manage all of the toll revenues, including, but not limited to, keeping full and complete accounts for toll revenues and expenses and preparing balance sheets on an annual fiscal year basis showing the financial condition of the BRIDGES. If and when

necessary and at the AUTHORITY's discretion: (1) to increase the amount of the seismic surcharge, pursuant to SHC section 31011 for the purpose of completing the Toll Bridge Seismic Retrofit Program projects; (2) to issue toll bridge revenue bonds pursuant to SHC section 30920; and, (3) pursuant to SHC 30916(c), to increase the base toll in order to meet its obligations on any such bonds or to satisfy bond covenants.

8. To work in consultation with the DEPARTMENT and the CTC to adopt a schedule for the payment of the remaining state contributions identified in SHC Sections 188.5 and 188.6 for the Toll Bridge Seismic Retrofit Program projects in SHC section 188.5.
9. To work cooperatively with the DEPARTMENT and CTC on the schedule and allocation of seismic retrofit funds due to the Toll Bridge Seismic Retrofit Program funds, utilizing all funds designated in AB 144 and allocated by the CTC exclusively for the Toll Bridge Seismic Retrofit Program, as defined in state law, and to establish appropriate accounts and accounting procedures for management of toll the bridge seismic retrofit funds.

**SECTION VI - TOLL PROGRAM PROJECT FUNDING**

**DEPARTMENT AGREES:**

1. To continue to budget to fund tow truck services on the BRIDGES from state-funded source until directed otherwise.
2. To continue to fund from state-funded sources the Category A BRIDGES expenditures that are part of the seismic retrofit and replacement program specified in SHC section 188.5 until the seismic retrofit or replacement work is complete on those BRIDGES and the AUTHORITY undertakes that duty using toll revenues.

**AUTHORITY AGREES:**

3. To allocate toll revenues consistent with AUTHORITY's annual operations and capital budget for Eligible Projects conforming with AUTHORITY-approved Long Range Plans, and to pay for the DEPARTMENT's toll related costs incurred pursuant to this AGREEMENT consistent with the AUTHORITY's adopted budgets.
4. To pay for maintenance and operations of the current Transbay Transit Terminal as long as it is owned and operated by the DEPARTMENT, (a statutory part of the San Francisco-Oakland Bay Bridge, located in downtown San Francisco) from toll bridge revenues. Said costs are subject to the annual BATA budget process.
5. To fund Category A maintenance expenditures on the BRIDGES from toll revenues, except for those toll bridges that are part of the seismic retrofit program specified in SHC section 188.5 for which the seismic retrofit or replacement work is not complete. Such maintenance expenditures shall be funded by AUTHORITY from toll revenues upon completion of the seismic retrofit or replacement work.
6. To maintain self insurance of not less than \$50 million as an extraordinary loss account solely for the purpose of funding major emergency reconstruction, repair and operations of any of the BRIDGES.

## **SECTION VII – PROGRAM/PROJECT BUDGETING AND INVOICING**

### **DEPARTMENT AGREES:**

1. To provide AUTHORITY, consistent with the schedule for developing DEPARTMENT's annual fiscal year budget, information necessary for AUTHORITY to adopt an annual operations and capital budget for operations, maintenance, repairs and construction of Eligible Projects on the BRIDGES which is, to the extent possible, consistent with DEPARTMENT's statutory and contractual obligations assumed herein and AUTHORITY's approved Long Range Plans.
2. To report to the AUTHORITY the level of services that the DEPARTMENT will be able to provide if, in the judgment of the DEPARTMENT, the AUTHORITY's adopted annual operations and capital budget does not provide funding adequate for the DEPARTMENT's services as defined in this AGREEMENT.
3. To cooperate fully with AUTHORITY in the annual auditing and reporting process, as well as any other audit, financial, or internal control reports that may be undertaken by AUTHORITY or DEPARTMENT relating to the bay area toll accounts and the BRIDGES. AUTHORITY shall issue these audit reports relative to the bay area toll accounts and the BRIDGES to AUTHORITY and DEPARTMENT.
4. To provide AUTHORITY a monthly request for thirty (30) days advance funding based upon the DEPARTMENT'S estimate of the anticipated costs that it will incur by the DEPARTMENT in performance of this AGREEMENT. DEPARTMENT will provide the AUTHORITY, along with the estimate, the DEPARTMENT's published electronic fund transfer (EFT) invoice schedule. The DEPARTMENT will submit, within thirty (30) days after submission of each funding advance request, a detailed expenditure report for the charges contained therein, including project closeout adjustments within the adopted budget. Each succeeding monthly estimate will be adjusted to reflect actual costs expended and any reallocation or additional costs anticipated over that succeeding month.
5. Upon receipt of a notice of invoice discrepancy from AUTHORITY, DEPARTMENT shall review the notice and credit undisputed claims to AUTHORITY in its following invoice. If DEPARTMENT disputes any discrepancy claim, in whole, or in part, DEPARTMENT shall endeavor to notify AUTHORITY in writing within seven (7) working days of receipt of the notice of invoice discrepancy. Upon final resolution of a disputed claim, STATE shall make the appropriate credit or debit to AUTHORITY's account and notify AUTHORITY in writing of any such action.
6. To provide to AUTHORITY a detailed fiscal year-end accounting of expended and accrued costs within sixty (60) days of the end of the fiscal year with supporting information.

AUTHORITY AGREES:

7. To adopt an annual operations and capital budget by July 1st of each fiscal year, which includes DEPARTMENT's costs associated with operations, maintenance, toll collection, and the support and capital costs of Eligible Projects relating to the BRIDGES, which costs are funded from the bay area toll accounts and consistent with AUTHORITY approved Long Range Plans. Costs are defined as including all documented direct and indirect charges together with functional and administrative overhead charges authorized by the State Administrative Manual as part of DEPARTMENT's standard accounting practice, except that administrative overhead cost assessments will not be included for the Toll Bridge Seismic Retrofit Program pursuant to SHC, section 31021. Each budget shall be subject to regular review and revision during the year as appropriate and shall contain funds to cover unanticipated efforts to be undertaken by DEPARTMENT as may be required for the continued operation, maintenance, repair, protection and improvement of the BRIDGES.
8. To act promptly on requests by DEPARTMENT for actions necessary to implement Eligible Projects contained in the Long Range Plans and for urgent unbudgeted operating or maintenance requirements affecting the annual operations maintenance and capital budgets adopted by AUTHORITY.
9. On a monthly basis, and within four (4) working days of the receipt of DEPARTMENT's request for advance funding as described in Article 4 of this Section VII above, to electronically transfer (wire) to DEPARTMENT funds equal to the amount of eligible costs incurred or anticipated, subject to provisions of Articles 10 and 11 of Section VII of this AGREEMENT below.
10. Upon receipt of DEPARTMENT's detailed expenditure report, AUTHORITY will endeavor to notify DEPARTMENT in writing within thirty (30) days of those charges with which AUTHORITY disagrees by issuing a specific notice of discrepancy.
11. To adopt formal resolutions and any supplemental documents necessary to implement the requirements of SHC section 30950 *et seq.* and to establish detailed AUTHORITY policies and procedures applicable to the BRIDGES and the bay area toll accounts consistent with the terms and conditions of this AGREEMENT.
12. To act promptly on requests by DEPARTMENT for the expenditure of bay area toll account funds by DEPARTMENT in response to emergency occurrences, subject to the notification requirements of Article 5 in Section III of this AGREEMENT above.
13. To contract for annual financial audits, to be conducted by an outside independent auditor, of the bay area toll accounts, toll receipts collected on the BRIDGES, and all expenses of DEPARTMENT and AUTHORITY funded by the bay area toll accounts; and to submit all required financial statements to the Legislature in accordance with SHC section 30961(b).

## SECTION VIII – MUTUAL PROVISIONS

### IT IS MUTUALLY AGREED:

1. Nothing in this AGREEMENT is intended to affect the legal liability of either party to the AGREEMENT by imposing any standard of care with respect to the BRIDGES different from the standard of care imposed by law.
2. Neither DEPARTMENT nor any officer or employee thereof is responsible for any damage or liability occurring by reason of anything done or omitted to be done by AUTHORITY under or in connection with any work, authority or jurisdiction delegated to AUTHORITY under this AGREEMENT. It is understood and agreed that AUTHORITY shall fully defend, indemnify and save harmless DEPARTMENT, its officers and employees from all claims, suits or actions of every name, kind and description brought for or on account of injury, or any other damage sustained by a third party, occurring by reason of anything done or omitted to be done by AUTHORITY under or in connection with any work, authority or jurisdiction delegated to AUTHORITY under this AGREEMENT.
3. Neither AUTHORITY nor any Commissioner, officer or employee thereof is responsible for any damage or liability occurring by reason of anything done or omitted to be done by DEPARTMENT under or in connection with any work, authority or jurisdiction delegated to DEPARTMENT under this AGREEMENT. It is understood and agreed that, DEPARTMENT shall defend, indemnify and save harmless AUTHORITY, its Commissioners, officers and employees from all claims, suits or actions of every name, kind and description brought for or on account of injury, or any other damage sustained by a third party, occurring by reason of anything done or omitted to be done by DEPARTMENT under or in connection with any work, authority or jurisdiction delegated to DEPARTMENT under this AGREEMENT.
4. This AGREEMENT shall be amended or superseded by another agreement as necessary with the enactment of future legislation or by mutual agreement.
5. Regular meetings will be held to fulfill the intent of this AGREEMENT. More detailed working agreements and procedures may be developed and documented in operating memoranda to establish mutually supportive policies.
6. This AGREEMENT shall be subject to re-adoption as amended by the parties effective July 1, 2015, and every ten (10) years thereafter. This AGREEMENT may also be amended in writing at any time by mutual consent. Each amendment must be in writing and no alteration or variation to the terms of this AGREEMENT shall be valid unless made in writing and signed by both parties. No oral understanding or agreement not incorporated herein shall be binding on any of the parties hereto.
7. No State, DEPARTMENT, or AUTHORITY funds are encumbered or allocated under this AGREEMENT.

8. The transfer of funds by AUTHORITY to DEPARTMENT as advance payments for support and capital outlay for the BRIDGES shall in no way be construed as an unconditional acceptance of such actual and proposed charges. Approval of DEPARTMENT charges by AUTHORITY will occur only after complete review of detailed program and project expenditure information in a format mutually acceptable to both DEPARTMENT and AUTHORITY.
9. In the event of an emergency and/or unforeseen difficulty where DEPARTMENT is unable to obtain a construction progress payment on time, DEPARTMENT will include an estimate of such charges in DEPARTMENT's next monthly invoice, submitted pursuant to Article 4 of Section VII above and AUTHORITY agrees to pay that estimated amount subject to subsequent adjustment.
10. The AUTHORITY, upon request by the DEPARTMENT, and following review and consultation with the DEPARTMENT, will provide funds to the DEPARTMENT using toll revenues, to the extent permitted by law, for the payment of any and all costs incurred by the DEPARTMENT to indemnify the California Infrastructure and Economic Development Bank, the State Treasurer and all other indemnified parties, as such costs are required by the DEPARTMENT'S obligations set forth in the Second Amendment to the Financing Agreement dated April 25, 2006, following defeasance of the Infrastructure Bank Debt as it is defined in the Second Amendment to the Financing Agreement.
11. That the AUTHORITY and the DEPARTMENT will enter into a Fund Transfer Agreement contemporaneously herewith, for the transfer of funds from the DEPARTEMNT to the AUTHORITY in accordance with a schedule adopted by the CTC in its resolution of December 15, 2005.
12. Subject to the CTC's concurrence, if necessary, and to the Authority's acceptance, parcels of real property acquired and held by the DEPARTMENT are to be transferred by Director's Deed, or as the parties shall agree, to the AUTHORITY for its management and control as part of the BRIDGES or as needed for the support of the BRIDGES until such time as the AUTHORITY shall dispose of them by public sale at their fair market value. The costs of the DEPARTMENT to comply herewith are to be paid from toll revenues and the net proceeds of any sale or transfer to the AUTHORITY are to be deposited in the bay area toll account for use on the BRIDGES.



IN WITNESS WHEREOF, the Agreement has been executed by the parties hereto as of the day and year first written above.

STATE OF CALIFORNIA  
Department of Transportation

BAY AREA TOLL AUTHORITY

By: Andy McKen

By: [Signature]  
Steve Heminger, Executive Director

Approved as to form and procedure:

Approved as to form and procedure:

[Signature]  
Todd M. Van Santen, Deputy Attorney  
Department of Transportation

[Signature]  
Francis Chin, General Counsel  
Bay Area Toll Authority

Certified as to budgeting of funds:

[Signature]  
District Budget Manager  
Department of Transportation

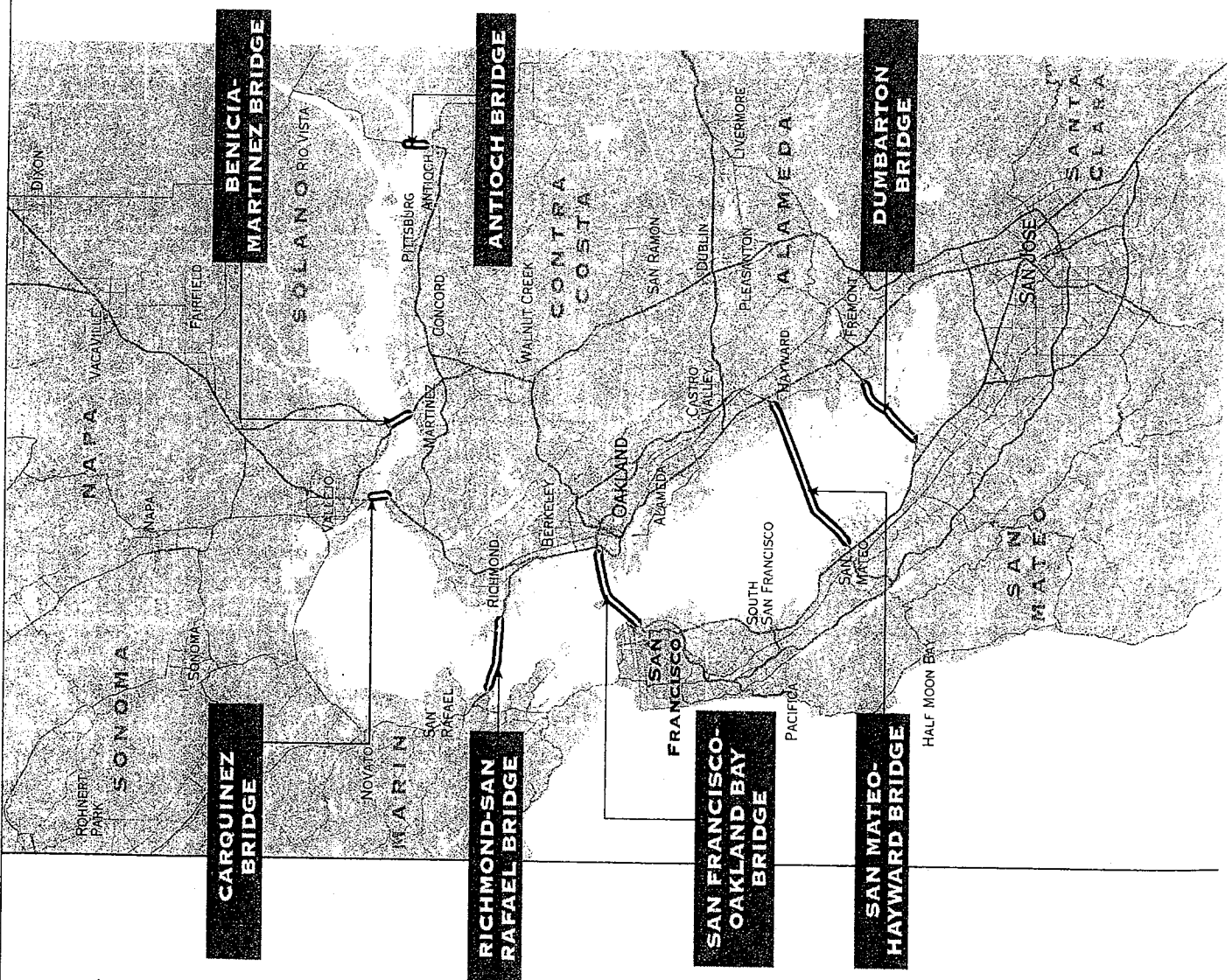
Certified as to financial terms and  
Conditions:

Clark Paub  
HQ Accounting Administrator  
Department of Transportation

Exhibit "A"

Geographic Limits For Funding On District 4 Toll Bridges

- 1 DUMBARTON BRIDGE  
 4 - SM - 84 - 25.72 / 30.15  
 4 - SM - 109 - 01.35 / 01.87  
 4 - SM - 114 - 05.01 / 05.92  
 4 - ALA - 84 - 00.00 / 06.92
- 2 SAN MATEO-HAYWARD BRIDGE  
 4 - SM - 92 - R12.14 / R18.80  
 4 - ALA - 92 - R00.00 / 06.39  
 4 - ALA - 880 - 16.70 / 20.68
- 3 SAN FRANCISCO-OAKLAND BAY BRIDGE  
 4 - SF - 80 - 05.05 / 08.85  
 4 - ALA - 80 - 00.00 / 03.21
- 4 RICHMOND-SAN RAFAEL BRIDGE  
 4 - CC - 580 - 04.46 / 07.79  
 4 - MRN - 580 - 0.00 / 04.78
- 5 CARQUINEZ BRIDGE  
 4 - CC - 80 - 12.75 / 14.14  
 4 - SOL - 80 - 00.00 / 04.43
- 6 BENICIA-MARTINEZ BRIDGE  
 4 - CC - 680 - 21.19 / 25.46  
 4 - SOL - 680 - 00.00 / 13.13  
 4 - SOL - 780 - 00.68 / 01.52
- 7 ANTIOCH  
 4 - CC - 160 - 00.48 / 01.33  
 3 - SAC - 160 - L00.00 / L10.80



**DEPARTMENT OF TRANSPORTATION**

111 GRAND AVENUE  
P. O. BOX 23660  
OAKLAND, CA 94623-0660  
PHONE (510) 286-5906  
FAX (510) 286-6301  
TTY (800) 735-2929



*Flex your power!  
Be energy efficient!*

June 14, 2011

Mr. Andrew Fremier  
Metropolitan Transportation Commission  
Bay Area Toll Authority  
101 Eighth Street  
Oakland, CA 94607-4700

BATA/Caltrans Restated and Amended  
Master Cooperative Agreement 4-2078-A1

Att: Rod McMillan:

Enclosed for BATA's file is a fully executed copy of Cooperative Agreement No. 4-2078-A1 between the Department and BATA to restate and amend the master agreement between the parties relating to the Bay Area Bridges. The revision pertains to Bridge post miles only.

This Agreement, executed on June 13, 2011 replaces the existing master agreement dated April 25, 2006.

Sincerely,

A handwritten signature in blue ink that reads "Dan McElhinney".

DAN McELHINNEY  
Chief Deputy District Director

Enclosures

**RESTATED AND AMENDED  
COOPERATIVE AGREEMENT BETWEEN  
THE CALIFORNIA DEPARTMENT OF TRANSPORTATION  
AND THE BAY AREA TOLL AUTHORITY  
RELATING TO THE BRIDGES**

THIS AGREEMENT, IS MADE ENTERED INTO AND EFFECTIVE ON April 25, 2006, the date of the defeasance of the existing bonds secured by the toll bridge seismic retrofit surcharge imposed under subdivision (a) of SHC section 31010, and is amended and restated as of June 13, 2011, between the STATE OF CALIFORNIA, acting by and through its Department of Transportation, hereinafter referred to as "DEPARTMENT," and the BAY AREA TOLL AUTHORITY (BATA), hereinafter referred to as "AUTHORITY."

RECITALS

1. AUTHORITY was created pursuant to Section 30950, *et seq.* of the California Streets and Highways Code (SHC), which transferred certain California Transportation Commission (CTC) and DEPARTMENT responsibilities for the disposition of toll revenues collected from toll bridges owned and operated by DEPARTMENT in the San Francisco Bay Area.
2. Department's toll bridges subject to this AGREEMENT (identified in SHC section 30910) are the Antioch Bridge, Benicia-Martinez Bridges, Carquinez Bridges, Dumbarton Bridge, Richmond-San Rafael Bridge, San Francisco-Oakland Bay Bridge and San Mateo-Hayward Bridge, hereinafter individually referred to as "BRIDGE" and collectively referred to as "BRIDGES".
3. The respective statutory geographic limits of certain of the BRIDGES and the approaches to the BRIDGES are found in the SHC and others are established by post mile or other locators as defined in original project documents. The extent of the San Francisco-Oakland Bay Bridge is defined in SHC section 30600 as the bridge and its approaches; the limits of the Carquinez and Benicia-Martinez Bridges are found in SHC section 30750; the extent of the Antioch Bridge is defined in SHC section 30760; the limits of the San Mateo-Hayward and Dumbarton Bridges are defined in SHC section 30790 (the Dumbarton Bridge limits are redefined in SHC section 30792.2); and the limits of the Richmond-San Rafael Bridge are not statutorily defined. The respective statutory geographic limits of certain of the BRIDGES and the approaches to the BRIDGES, and those limits established by agreement as to the Richmond-San Rafael Bridge, are delineated in Exhibit "A", attached hereto and made an express part of this AGREEMENT.
4. SHC sections 30150 and 30952 provide that DEPARTMENT shall collect tolls, operate, maintain, and provide rehabilitation of the BRIDGES, including all related toll facilities, and shall be responsible for the design and construction of eligible projects which may include, without limitation, capital improvements, seismic retrofit, emergency repairs and restorations, rehabilitation, Regional Measure One and Category B Maintenance (as defined in SHC section 188.4) projects, which are hereinafter collectively referred to as

"Eligible Projects", affecting the BRIDGES in accordance with programming and scheduling requirements of the CTC and AUTHORITY.

5. SHC section 30952 further provides that DEPARTMENT and AUTHORITY shall enter into a cooperative agreement, upon mutually agreed terms and conditions, setting forth the methodology by which DEPARTMENT will operate the BRIDGES and be responsible for the planning, design, and construction of improvements, repairs or alterations to the BRIDGES to be funded from the AUTHORITY'S toll bridge revenues.
6. DEPARTMENT and AUTHORITY first entered into a cooperative agreement pursuant to SHC section 30952 in 1998, which agreement was subsequently superceded by a new cooperative agreement on July 1, 2003, and amended on December 15, 2004.
7. Pursuant to Assembly Bill No. 144 ("AB 144"), enacted and made effective on July 18, 2005, certain project oversight and control responsibilities relative to the construction of the Benicia Martinez Bridge and the state Toll Bridge Seismic Retrofit Program projects (hereinafter referred to as "Seismic Projects") were given to AUTHORITY. The Seismic Projects are more particularly described in SHC section 188.5.
8. As part of AB144, SHC section 30950.2, gives AUTHORITY the responsibility for administering all toll revenues from the state-owned toll bridges within the jurisdiction of the Metropolitan Transportation Commission, once the obligations of the California Infrastructure and Economic Development Bank secured by the seismic retrofit surcharge imposed pursuant to subdivision (a) of SHC section 31010 are no longer outstanding (as defined by the constituent instruments), currently the Bay Area Toll Bridges Seismic Retrofit Revenue Bonds Series 2003A First Lien Bonds and Seismic Retrofit Revenue Notes Series 2005A Second Lien Commercial Paper.
9. AB 144 further added section 30952.05 to the SHC requiring DEPARTMENT and AUTHORITY to amend their cooperative agreement to incorporate the project oversight and control responsibilities described therein relative to the Benicia Martinez Bridge and the Seismic Projects.
10. In accordance with SHC Sections 30952 and 30952.05, AUTHORITY and DEPARTMENT now set forth herein the terms of a revised and amended AGREEMENT to set forth the parties respective obligations.

This AGREEMENT supersedes and replaces the prior amended Cooperative Agreements entered into on July 1, 2003, as amended on December 15, 2004, and any prior agreements or memoranda of understanding between the parties relating to the BRIDGES.

## **SECTION I - ELECTRONIC AND MANUAL TOLL COLLECTION**

### **DEPARTMENT AGREES:**

1. To cooperate with the AUTHORITY and its vendors, consultants and contractors regarding oversight and management of the operations of the electronic toll collection system customer service center (CSC) for the BRIDGES. The DEPARTMENT's tasks in support of the AUTHORITY's operation of the CSC shall include, but not be limited to, establishing and maintaining DMV access for processing violation notices.
2. That the AUTHORITY is granted all the DEPARTMENT'S right, title and interest in and to the Advanced Toll Collection And Accounting System (ATCAS) application software as defined in Purchase Orders 25154, as amended, and Purchase Order 57042, as amended, provided however, the DEPARTMENT shall likewise retain a non-exclusive, unlimited, irrevocable right to use, transfer, and distribute all ATCAS application software as defined above. In the event the AUTHORITY shall enhance the ATCAS application software through modification, amendment and /or additions thereto, the DEPARTMENT shall have the royalty free, non-exclusive, irrevocable right to use, transfer, distribute and modify for its purposes such enhancements, including all associated source code and source code documentation.

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3. To provide staffing and supervision for the manual collection of toll revenues related to the BRIDGES; including, but not limited to, management of toll collectors and all related personnel and reviewing disputes related to the manual collection of tolls. The DEPARTMENT will staff and operate manual toll collection operations in accordance with state law and consistence with the AUTHORITY's adopted budgets.

### **AUTHORITY AGREES:**

4. To operate, manage and maintain the operations of the electronic toll collection CSC, including, but not limited to, maintenance of the electronic toll collection customer accounts, administering service contracts in relation to these operations, the identification of toll violators and the processing of toll violations, processing of customer and violation disputes, financial management including procurement of credit card processing services, reciprocal relationships with other California toll operators, the procurement of electronic toll collection transponders, and the integration of these operations with other transportation related operations.
5. To provide management oversight of DEPARTMENT's manual toll collections operations, including, but not limited to, reviewing procedures for the manual collection, handling and reconciliation of cash toll revenues, reviewing staffing plans for the manual toll collection operations, and reviewing training and training procedures for DEPARTMENT's manual toll collection staff.

**SECTION II - CASH COUNTING, BANKING AND TOLL ACCOUNTING**

**DEPARTMENT AGREES:**

1. To cooperate with the AUTHORITY and its vendors, consultants and contractors in the AUTHORITY'S financial oversight and management of the toll revenues collected on the BRIDGES, including, but not limited to, toll accounting, armored car, vault and bank services.
2. To transfer to the AUTHORITY equipment used for toll accounting acquired solely with toll revenue funds and to fully assist the AUTHORITY in the operation and relocation of the host toll collection equipment and systems from the DEPARTMENT'S District offices to the AUTHORITY'S offices or other location as determined by the AUTHORITY.

**AUTHORITY AGREES:**

3. To provide armored car, vault and bank services for cash toll revenues collected by the Department on the BRIDGES.
  4. To provide toll accounting services, including, but not limited to, accounting for toll revenues, preparing toll revenue and traffic reports, reconciliation of manual and electronic toll revenues, and toll auditing.
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### **SECTION III - TOLL BRIDGE OPERATIONS AND MAINTENANCE**

#### **DEPARTMENT AGREES:**

1. To maintain (Category A Maintenance), and operate the bridge structures and maintain (Category B Maintenance) and operate the toll plaza buildings and facilities in a safe and efficient manner in accordance with applicable DEPARTMENT policies and standards for the BRIDGES, excepting for those items identified in Article 7 of Section III, 7 which the AUTHORITY will own, maintain, repair, and operate. Operational and maintenance tasks shall include but are not limited to, managing maintenance staff and all related personnel and contracts and contract employees, maintaining bridge infrastructure and equipment, obtaining necessary permits for the operation and maintenance of the BRIDGES, and generating and maintaining proper records relating to the BRIDGES. Excepting tasks related to emergency repairs performed pursuant to Article 5, of Section III all tasks will be planned to be consistent with the annually adopted AUTHORITY operations and capital budget and long-range plans of toll related costs to be reimbursed to DEPARTMENT from the bay area toll account by AUTHORITY. Category A expenditures shall include, but are not limited to, the following: maintenance of the BRIDGES and related structures, roadbeds, pavement, drainage, debris removal, landscaping, traffic guidance systems, ice control, dedicated bridge maintenance stations, maintenance training, electrical maintenance and electrical energy other than the architectural lighting. Category B operational and maintenance expenditures shall include, but are not limited to, toll administration building and toll facilities, toll system related energy, architectural lighting energy, booth maintenance and repair, reconstruction and replacement of mechanical and electronic toll equipment.
2. To cooperate with the AUTHORITY and its vendors in the Authority's maintenance, repair and replacement services for the toll lane, plaza and host toll collection equipment and systems for the BRIDGES, including, but not limited to, providing the AUTHORITY staff and its contractors (a) access to toll lane, plaza and host toll collection equipment and systems; (b) processing requests for all necessary encroachment permits; (c) administering or facilitating the transfer of any service or equipment contracts related to the maintenance of the toll lane, plaza and host toll collection equipment and systems; (d) assisting the AUTHORITY or its contractors with the closure of lanes and management of traffic to carryout maintenance activities for the toll lane, toll plaza and host toll collection equipment and systems; and (f) assisting the AUTHORITY and its contractors in the development of processes and procedures for the reporting of problems related to toll lane, plaza and host toll collection equipment and systems.
3. To provide AUTHORITY a detailed anticipated fiscal year budget, description of work activities and charges for Category A and Category B Maintenance expenditures as defined in SHC section 188.4, and an annual report of actual expenditures upon completion of each fiscal year.

4. To inform AUTHORITY of any non-emergency activities undertaken by DEPARTMENT that may affect the operation, appearance or safety of the BRIDGES, and to provide advance notice to AUTHORITY of any DEPARTMENT activities that would require any amendment to AUTHORITY's adopted annual operations and capital budget and Long Range Plans.
5. To take whatever immediate actions are necessary for emergency repairs to any of the BRIDGES which have been damaged or are in immediate danger and report to AUTHORITY as soon as possible, but not later than ten (10) working days, after any occurrence requiring the expenditure of toll funds for emergency repair on the BRIDGES.
6. To provide tow truck services on the BRIDGES from state-funded sources for as long as authorized by California law and budgeted in the annual State Budget Act.

AUTHORITY AGREES:

7. To own, operate, and provide maintenance services for the toll lane, plaza and host toll collection equipment and systems for the BRIDGES as a necessary component of audit, internal, and cash controls, which shall include but are not limited to software, hardware, computer equipment, lane readers, violation enforcement system, automatic vehicle classification (AVC) system, and telecommunications for these systems. These systems shall be maintained in such a manner as to provide consistent and functional interface to the CSC system.
8. To give first priority to projects and expenditures that are deemed necessary by DEPARTMENT to preserve and protect the BRIDGES as provided by SHC section 30950.3 (b).
9. To pay all of the DEPARTMENT's costs approved by the DEPARTMENT and the AUTHORITY incurred for toll operations maintenance and support provided by the DEPARTMENT. Costs will be compiled and computed in accordance with the DEPARTMENT's standard accounting practices and the State Administrative Manual.

**SECTION IV - TOLL BRIDGE CAPITAL IMPROVEMENT PROGRAM**

**DEPARTMENT AGREES:**

1. To assist AUTHORITY in connection with AUTHORITY's preparation and adoption of Long Range Plans, as required by SHC section 30950.3, and any subsequent amendments to said Plans.
  2. To plan, design and construct Eligible Projects for the BRIDGES in accordance with the Long Range Plans that reflect AUTHORITY's approved long term multi-year capital outlay and capital outlay support budgets for eligible capital projects, consistent with AUTHORITY's annual operations and capital budgets, that conform to AUTHORITY's approved operations, maintenance, and capital reimbursement limits (subject to modification when required) for a given fiscal year when adopted by AUTHORITY.
  3. To develop contract specifications and bid documents and invite bid and award contracts for capital improvements to the BRIDGES.
  4. To provide, subject to annual State Budget Act authorization, sufficient staff resources within DEPARTMENT to assure timely implementation of projects in the Long Range Plans adopted by AUTHORITY.
- 
5. To maintain and provide, on a monthly basis, a current schedule of Eligible Projects funded from the bay area toll account.
  6. To provide AUTHORITY with complete monthly reports of costs incurred by DEPARTMENT for bridge operations, toll collections and capital projects affecting the BRIDGES for which subsequent reimbursement will be made to DEPARTMENT by AUTHORITY. These reports will be prepared for each bridge within the BRIDGES listed by SHC section 30910.
  7. To provide AUTHORITY access to all project development information regarding the projects identified in the Long Range Plan and the Toll Bridge Seismic Program, including, but not limited to, project files kept in accordance with project development procedures and manuals, project initiation documents, environmental technical studies, environmental documents and plans, and specifications and estimates for the identified projects in the Capital Improvement Program.
  8. To acquire property essential to complete Eligible Projects contained in the Long Range Plans. Any subsequent sale of excess land, property, equipment or any other assets that were purchased with toll funds shall be reverted to the bay area toll account. Any sale of excess land require the approval of the CTC and maybe subject to the reimbursing the federal government its proportional contribution, if any.
  9. To perform all other activities necessary for the extended operation, maintenance, and protection of the BRIDGES, including, but not limited to, obtaining and maintaining all regulatory permits necessary to authorize those maintenance and construction activities.

DEPARTMENT will inform AUTHORITY of any anticipated unique or significantly unusual DEPARTMENT activities affecting the BRIDGES as they arise.

10. As required by SHC section 30952.1, to establish and participate, in conjunction with the AUTHORITY and the CTC, in a Toll Bridge Program Oversight Committee, to oversee and provide direction for the Seismic Projects and the Benicia-Martinez Bridge New Span project.

AUTHORITY AGREES:

11. To review and approve as necessary and appropriate all project initiation documents, environmental documents, right of way agreements and project bid documents for all Eligible Projects identified in the Capital Improvement Program.
12. To update the Long Range Plans, as specified in SHC section 30950.3, when necessary.
13. As required by SHC section 30952.1, to establish and participate, in conjunction with the DEPARTMENT and the CTC, in a Toll Bridge Program Oversight Committee, to oversee and provide direction for Toll Bridge Seismic Retrofit Program projects and the Benicia-Martinez Bridge New Span project.
14. To contract with and oversee one or more consulting firms to provide project oversight and control services for the Benicia-Martinez Bridge project and the Toll Bridge Seismic Retrofit Program projects as specified in subsection (d) of SHC section 30952.05. The Toll Bridge Oversight Committee shall review and approve all such contracts, as specified in subsection (d) of SHC section 30952.05.
15. To review and approve all contract specifications and bid documents prepared by DEPARTMENT prior to advertising the bid documents for the Benicia-Martinez Bridge project and the Toll Bridge Seismic Retrofit Program projects in accordance with subsection (b) of SHC section 30952.05.

**SECTION V – PROGRAM/PROJECT FINANCIAL MANAGEMENT AND  
FINANCING**

**DEPARTMENT AGREES:**

1. To cooperate with the AUTHORITY in the issuance of new or replacement bonds by AUTHORITY, including, but not limited to, developing and updating project schedules, projected cash flows and risk management plans for each of the Eligible Projects identified in the seismic or long range plan programs.
2. To cooperate with the AUTHORITY, in all actions necessary for the defeasance of the existing bonds issued on behalf of the DEPARTMENT and secured by the toll bridge seismic retrofit surcharge imposed under subdivision (a) of SHC section 31010.
3. To cooperate fully with the Toll Bridge Seismic Retrofit Account close out audit to be conducted subsequent to the defeasance of the bonds, retirement of the commercial paper, and any other outstanding seismic obligations of the California Infrastructure and Economic Development Bank.
4. Upon defeasance of the Bonds, retirement of the commercial paper, and any other outstanding seismic financial obligations of the California Infrastructure and Economic Development Bank and after satisfying the immediate cash flow requirements of the Toll Bridge Seismic Retrofit Program projects, transfer the revenues and fund balances in the Toll Bridge Seismic Retrofit Account to the AUTHORITY for deposit in the bay area toll account.
5. To work in consultation with the AUTHORITY and the CTC to adopt a schedule for the payment of the remaining state contributions identified in SHC sections 188.5 and 188.6 for the Toll Bridge Seismic Retrofit Program projects identified in SHC section 188.5.
6. To develop procedures for the timely allocation and payment of all toll bridge seismic retrofit funds due to the Toll Bridge Seismic Retrofit Program, including, but not limited to: 1) approving invoices as submitted by BATA that are consistent with CTC allocations; 2) providing best efforts to ensure that the state budget includes any necessary provisions to allow for the transfer of funds to BATA for the Toll Bridge Seismic Retrofit Program; 3) confirming that the Controller makes payments into BATA accounts in accordance with the CTC adopted allocation schedule; and 4) cooperating with the CTC in the scheduling and allocation of funds committed to the Toll Bridge Seismic Retrofit Program.

**AUTHORITY AGREES:**

7. To manage all of the toll revenues, including, but not limited to, keeping full and complete accounts for toll revenues and expenses and preparing balance sheets on an annual fiscal year basis showing the financial condition of the BRIDGES. If and when

necessary and at the AUTHORITY's discretion: (1) to increase the amount of the seismic surcharge, pursuant to SHC section 31011 for the purpose of completing the Toll Bridge Seismic Retrofit Program projects; (2) to issue toll bridge revenue bonds pursuant to SHC section 30920; and, (3) pursuant to SHC 30916(c), to increase the base toll in order to meet its obligations on any such bonds or to satisfy bond covenants.

8. To work in consultation with the DEPARTMENT and the CTC to adopt a schedule for the payment of the remaining state contributions identified in SHC Sections 188.5 and 188.6 for the Toll Bridge Seismic Retrofit Program projects in SHC section 188.5.
  9. To work cooperatively with the DEPARTMENT and CTC on the schedule and allocation of seismic retrofit funds due to the Toll Bridge Seismic Retrofit Program funds, utilizing all funds designated in AB 144 and allocated by the CTC exclusively for the Toll Bridge Seismic Retrofit Program, as defined in state law, and to establish appropriate accounts and accounting procedures for management of toll the bridge seismic retrofit funds.
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**SECTION VI - TOLL PROGRAM PROJECT FUNDING**

**DEPARTMENT AGREES:**

1. To continue to budget to fund tow truck services on the BRIDGES from state-funded source until directed otherwise.
2. To continue to fund from state-funded sources the Category A BRIDGES expenditures that are part of the seismic retrofit and replacement program specified in SHC section 188.5 until the seismic retrofit or replacement work is complete on those BRIDGES and the AUTHORITY undertakes that duty using toll revenues.

**AUTHORITY AGREES:**

3. To allocate toll revenues consistent with AUTHORITY's annual operations and capital budget for Eligible Projects conforming with AUTHORITY-approved Long Range Plans, and to pay for the DEPARTMENT's toll related costs incurred pursuant to this AGREEMENT consistent with the AUTHORITY's adopted budgets.
4. To pay for maintenance and operations of the current Transbay Transit Terminal as long as it is owned and operated by the DEPARTMENT, (a statutory part of the San Francisco-Oakland Bay Bridge, located in downtown San Francisco) from toll bridge revenues. Said costs are subject to the annual BATA budget process.
5. To fund Category A maintenance expenditures on the BRIDGES from toll revenues, except for those toll bridges that are part of the seismic retrofit program specified in SHC section 188.5 for which the seismic retrofit or replacement work is not complete. Such maintenance expenditures shall be funded by AUTHORITY from toll revenues upon completion of the seismic retrofit or replacement work.
6. To maintain self insurance of not less than \$50 million as an extraordinary loss account solely for the purpose of funding major emergency reconstruction, repair and operations of any of the BRIDGES.



## **SECTION VII – PROGRAM/PROJECT BUDGETING AND INVOICING**

### **DEPARTMENT AGREES:**

1. To provide AUTHORITY, consistent with the schedule for developing DEPARTMENT's annual fiscal year budget, information necessary for AUTHORITY to adopt an annual operations and capital budget for operations, maintenance, repairs and construction of Eligible Projects on the BRIDGES which is, to the extent possible, consistent with DEPARTMENT's statutory and contractual obligations assumed herein and AUTHORITY's approved Long Range Plans.
2. To report to the AUTHORITY the level of services that the DEPARTMENT will be able to provide if, in the judgment of the DEPARTMENT, the AUTHORITY's adopted annual operations and capital budget does not provide funding adequate for the DEPARTMENT's services as defined in this AGREEMENT.
3. To cooperate fully with AUTHORITY in the annual auditing and reporting process, as well as any other audit, financial, or internal control reports that may be undertaken by AUTHORITY or DEPARTMENT relating to the bay area toll accounts and the BRIDGES. AUTHORITY shall issue these audit reports relative to the bay area toll accounts and the BRIDGES to AUTHORITY and DEPARTMENT.

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4. To provide AUTHORITY a monthly request for thirty (30) days advance funding based upon the DEPARTMENT'S estimate of the anticipated costs that it will incur by the DEPARTMENT in performance of this AGREEMENT. DEPARTMENT will provide the AUTHORITY, along with the estimate, the DEPARTMENT's published electronic fund transfer (EFT) invoice schedule. The DEPARTMENT will submit, within thirty (30) days after submission of each funding advance request, a detailed expenditure report for the charges contained therein, including project closeout adjustments within the adopted budget. Each succeeding monthly estimate will be adjusted to reflect actual costs expended and any reallocation or additional costs anticipated over that succeeding month.
5. Upon receipt of a notice of invoice discrepancy from AUTHORITY, DEPARTMENT shall review the notice and credit undisputed claims to AUTHORITY in its following invoice. If DEPARTMENT disputes any discrepancy claim, in whole, or in part, DEPARTMENT shall endeavor to notify AUTHORITY in writing within seven (7) working days of receipt of the notice of invoice discrepancy. Upon final resolution of a disputed claim, STATE shall make the appropriate credit or debit to AUTHORITY's account and notify AUTHORITY in writing of any such action.
6. To provide to AUTHORITY a detailed fiscal year-end accounting of expended and accrued costs within sixty (60) days of the end of the fiscal year with supporting information.

AUTHORITY AGREES:

7. To adopt an annual operations and capital budget by July 1st of each fiscal year, which includes DEPARTMENT's costs associated with operations, maintenance, toll collection, and the support and capital costs of Eligible Projects relating to the BRIDGES, which costs are funded from the bay area toll accounts and consistent with AUTHORITY approved Long Range Plans. Costs are defined as including all documented direct and indirect charges together with functional and administrative overhead charges authorized by the State Administrative Manual as part of DEPARTMENT's standard accounting practice, except that administrative overhead cost assessments will not be included for the Toll Bridge Seismic Retrofit Program pursuant to SHC, section 31021. Each budget shall be subject to regular review and revision during the year as appropriate and shall contain funds to cover unanticipated efforts to be undertaken by DEPARTMENT as may be required for the continued operation, maintenance, repair, protection and improvement of the BRIDGES.
8. To act promptly on requests by DEPARTMENT for actions necessary to implement Eligible Projects contained in the Long Range Plans and for urgent unbudgeted operating or maintenance requirements affecting the annual operations maintenance and capital budgets adopted by AUTHORITY.
9. On a monthly basis, and within four (4) working days of the receipt of DEPARTMENT's request for advance funding as described in Article 4 of this Section VII above, to electronically transfer (wire) to DEPARTMENT funds equal to the amount of eligible costs incurred or anticipated, subject to provisions of Articles 10 and 11 of Section VII of this AGREEMENT below.
10. Upon receipt of DEPARTMENT's detailed expenditure report, AUTHORITY will endeavor to notify DEPARTMENT in writing within thirty (30) days of those charges with which AUTHORITY disagrees by issuing a specific notice of discrepancy.
11. To adopt formal resolutions and any supplemental documents necessary to implement the requirements of SHC section 30950 *et seq.* and to establish detailed AUTHORITY policies and procedures applicable to the BRIDGES and the bay area toll accounts consistent with the terms and conditions of this AGREEMENT.
12. To act promptly on requests by DEPARTMENT for the expenditure of bay area toll account funds by DEPARTMENT in response to emergency occurrences, subject to the notification requirements of Article 5 in Section III of this AGREEMENT above.
13. To contract for annual financial audits, to be conducted by an outside independent auditor, of the bay area toll accounts, toll receipts collected on the BRIDGES, and all expenses of DEPARTMENT and AUTHORITY funded by the bay area toll accounts; and to submit all required financial statements to the Legislature in accordance with SHC section 30961(b).

## SECTION VIII – MUTUAL PROVISIONS

### IT IS MUTUALLY AGREED:

1. Nothing in this AGREEMENT is intended to affect the legal liability of either party to the AGREEMENT by imposing any standard of care with respect to the BRIDGES different from the standard of care imposed by law.
2. Neither DEPARTMENT nor any officer or employee thereof is responsible for any damage or liability occurring by reason of anything done or omitted to be done by AUTHORITY under or in connection with any work, authority or jurisdiction delegated to AUTHORITY under this AGREEMENT. It is understood and agreed that AUTHORITY shall fully defend, indemnify and save harmless DEPARTMENT, its officers and employees from all claims, suits or actions of every name, kind and description brought for or on account of injury, or any other damage sustained by a third party, occurring by reason of anything done or omitted to be done by AUTHORITY under or in connection with any work, authority or jurisdiction delegated to AUTHORITY under this AGREEMENT.
3. Neither AUTHORITY nor any Commissioner, officer or employee thereof is responsible for any damage or liability occurring by reason of anything done or omitted to be done by DEPARTMENT under or in connection with any work, authority or jurisdiction delegated to DEPARTMENT under this AGREEMENT. It is understood and agreed that, DEPARTMENT shall defend, indemnify and save harmless AUTHORITY, its Commissioners, officers and employees from all claims, suits or actions of every name, kind and description brought for or on account of injury, or any other damage sustained by a third party, occurring by reason of anything done or omitted to be done by DEPARTMENT under or in connection with any work, authority or jurisdiction delegated to DEPARTMENT under this AGREEMENT.
4. This AGREEMENT shall be amended or superseded by another agreement as necessary with the enactment of future legislation or by mutual agreement.
5. Regular meetings will be held to fulfill the intent of this AGREEMENT. More detailed working agreements and procedures may be developed and documented in operating memoranda to establish mutually supportive policies.
6. This AGREEMENT shall be subject to re-adoption as amended by the parties effective July 1, 2015, and every ten (10) years thereafter. This AGREEMENT may also be amended in writing at any time by mutual consent. Each amendment must be in writing and no alteration or variation to the terms of this AGREEMENT shall be valid unless made in writing and signed by both parties. No oral understanding or agreement not incorporated herein shall be binding on any of the parties hereto.
7. No State, DEPARTMENT, or AUTHORITY funds are encumbered or allocated under this AGREEMENT.

8. The transfer of funds by AUTHORITY to DEPARTMENT as advance payments for support and capital outlay for the BRIDGES shall in no way be construed as an unconditional acceptance of such actual and proposed charges. Approval of DEPARTMENT charges by AUTHORITY will occur only after complete review of detailed program and project expenditure information in a format mutually acceptable to both DEPARTMENT and AUTHORITY.
  9. In the event of an emergency and/or unforeseen difficulty where DEPARTMENT is unable to obtain a construction progress payment on time, DEPARTMENT will include an estimate of such charges in DEPARTMENT's next monthly invoice, submitted pursuant to Article 4 of Section VII above and AUTHORITY agrees to pay that estimated amount subject to subsequent adjustment.
  10. The AUTHORITY, upon request by the DEPARTMENT, and following review and consultation with the DEPARTMENT, will provide funds to the DEPARTMENT using toll revenues, to the extent permitted by law, for the payment of any and all costs incurred by the DEPARTMENT to indemnify the California Infrastructure and Economic Development Bank, the State Treasurer and all other indemnified parties, as such costs are required by the DEPARTMENT'S obligations set forth in the Second Amendment to the Financing Agreement dated April 25, 2006, following defeasance of the Infrastructure Bank Debt as it is defined in the Second Amendment to the Financing Agreement.
- 
11. That the AUTHORITY and the DEPARTMENT will enter into a Fund Transfer Agreement contemporaneously herewith, for the transfer of funds from the DEPARTEMNT to the AUTHORITY in accordance with a schedule adopted by the CTC in its resolution of December 15, 2005.
  12. Subject to the CTC's concurrence, if necessary, and to the Authority's acceptance, parcels of real property acquired and held by the DEPARTMENT are to be transferred by Director's Deed, or as the parties shall agree, to the AUTHORITY for its management and control as part of the BRIDGES or as needed for the support of the BRIDGES until such time as the AUTHORITY shall dispose of them by public sale at their fair market value. The costs of the DEPARTMENT to comply herewith are to be paid from toll revenues and the net proceeds of any sale or transfer to the AUTHORITY are to be deposited in the bay area toll account for use on the BRIDGES.

IN WITNESS WHEREOF, the Agreement has been executed by the parties hereto as of the day and year first written above.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

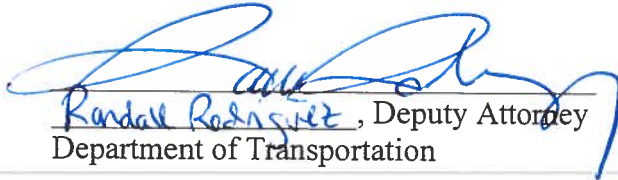
BAY AREA TOLL AUTHORITY


By:   
Bijan Sartipi, District Director

By:   
Steve Heninger, Executive Director

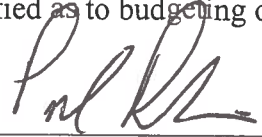
Approved as to form and procedure:

Approved as to form and procedure:

  
Randal Rodriguez, Deputy Attorney  
Department of Transportation

  
Adrienne D. Weil, General Counsel  
Bay Area Toll Authority

Certified as to budgeting of funds:

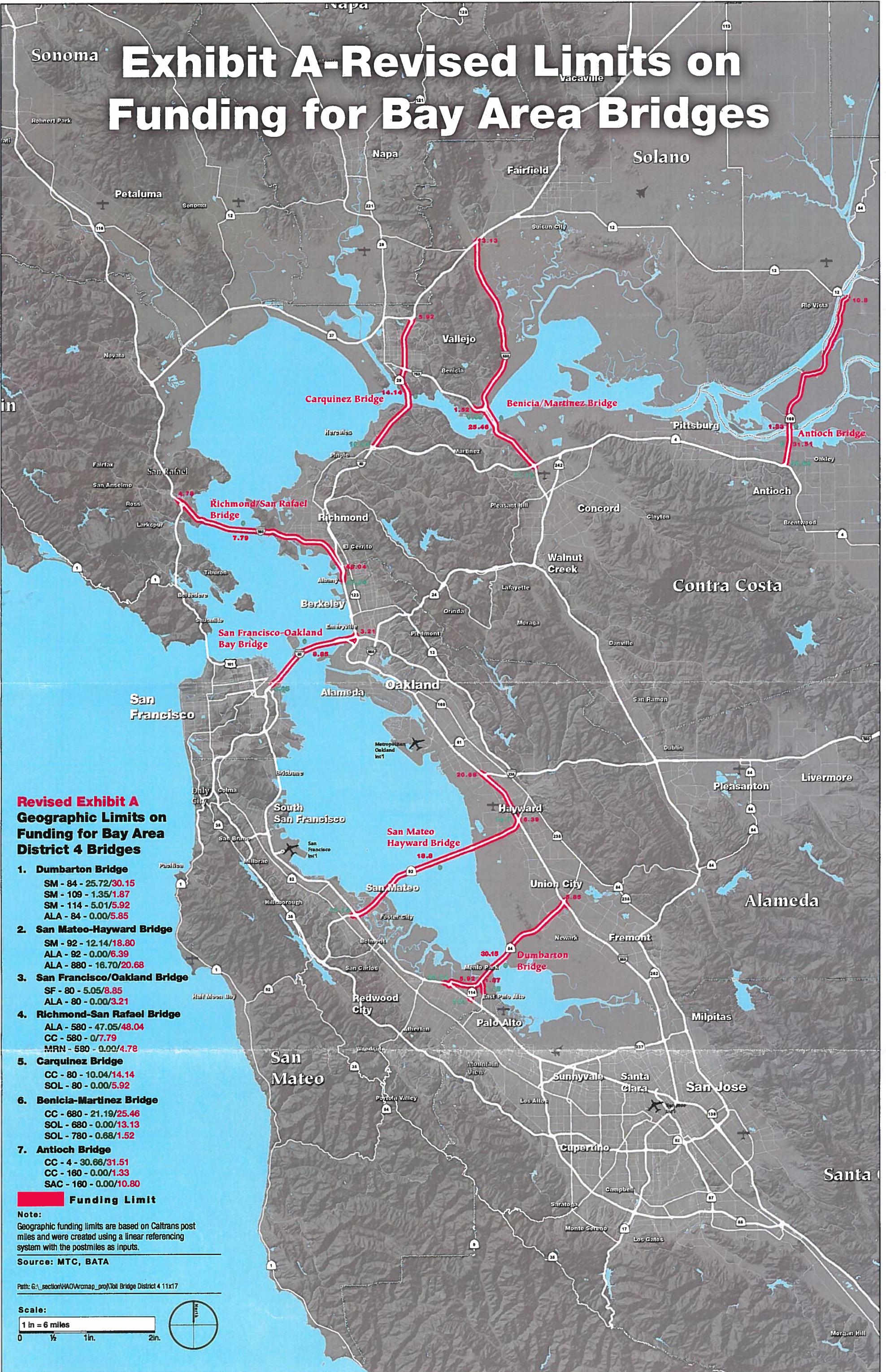
  
District Budget Manager  
Department of Transportation

Certified as to financial terms and  
Conditions:

  
HQ Accounting Administrator  
Department of Transportation



# Exhibit A-Revised Limits on Funding for Bay Area Bridges



## Revised Exhibit A Geographic Limits on Funding for Bay Area District 4 Bridges

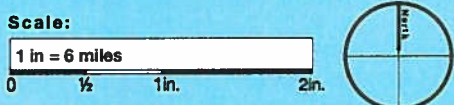
1. **Dumbarton Bridge**  
 SM - 84 - 25.72/30.15  
 SM - 109 - 1.35/1.87  
 SM - 114 - 5.01/5.92  
 ALA - 84 - 0.00/5.85
2. **San Mateo-Hayward Bridge**  
 SM - 92 - 12.14/18.80  
 ALA - 92 - 0.00/6.39  
 ALA - 880 - 16.70/20.68
3. **San Francisco-Oakland Bay Bridge**  
 SF - 80 - 5.05/8.85  
 ALA - 80 - 0.00/3.21
4. **Richmond-San Rafael Bridge**  
 ALA - 580 - 47.05/48.04  
 CC - 580 - 0/7.79  
 MRN - 580 - 0.00/4.78
5. **Carquinez Bridge**  
 CC - 80 - 10.04/14.14  
 SOL - 80 - 0.00/5.92
6. **Benicia-Martinez Bridge**  
 CC - 680 - 21.19/25.46  
 SOL - 680 - 0.00/13.13  
 SOL - 780 - 0.68/1.52
7. **Antioch Bridge**  
 CC - 4 - 30.66/31.51  
 CC - 160 - 0.00/1.33  
 SAC - 160 - 0.00/10.80

**Funding Limit**

**Note:**  
 Geographic funding limits are based on Caltrans post miles and were created using a linear referencing system with the postmiles as inputs.

**Source:** MTC, BATA

Path: G:\section\VAO\Arcmap\_proj\Toll Bridge District 4 11x17





Date: March 22, 2006  
Revised: April 27, 2011  
W.I.: 1253

ABSTRACT

BATA Resolution No. 62, Revised

This resolution authorizes the Bay Area Toll Authority (BATA) to enter into a cooperative agreement with the California Department of Transportation for the management and operation of the state-owned toll bridges in the Bay Area.

This resolution was revised on April 27, 2011, to revise the identification of the geographical limits of the bridges.

Further discussion of this resolution is contained in the Executive Director's memorandum to the BATA Oversight Committee dated April 6, 2011 and the Bay Area Toll Authority dated March 15, 2006.

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Date: March 22, 2006  
Revised: April 27, 2011  
W.I.: 1253

RE: Authorizing a Cooperative Agreement with the State Department of Transportation

BAY AREA TOLL AUTHORITY

RESOLUTION NO. 62, REVISED

WHEREAS, Streets and Highways Code Section 30950 creates the Bay Area Toll Authority (BATA) that is the same as the Metropolitan Transportation Commission (MTC); and

WHEREAS, Streets and Highways Code Sections 30950 *et seq.* transfers to BATA certain current California Transportation Commission and California Department of Transportation (DEPARTMENT) duties and responsibilities for the bridges owned and operated by the DEPARTMENT in the San Francisco Bay Area; and

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WHEREAS, the bridges subject to this agreement as defined in Streets and Highways Code Section 30910 are the Antioch, Benicia-Martinez, Carquinez, Richmond-San Rafael, San Francisco-Oakland, San Mateo-Hayward, and Dumbarton Bridges, and

WHEREAS, Streets and Highways Code Section 30952 provides that BATA and the DEPARTMENT shall enter into a cooperative agreement, upon mutually agreed terms and conditions, setting forth the methodology by which the DEPARTMENT shall operate the bridges and be responsible for the planning, design and construction of improvements, repairs or alterations to the bridges; and

WHEREAS, Streets and Highways Code Section 30950.2, gives BATA the responsibility for administering all toll revenues from the state-owned toll bridges within the jurisdiction of the Metropolitan Transportation Commission, once the obligations of the California Infrastructure and Economic Development Bank secured by the seismic retrofit surcharge imposed pursuant to subdivision (a) of SHC section 31010 are no longer outstanding (as defined by the constituent instruments), currently the Bay Area Toll Bridges Seismic Retrofit Revenue Bonds Series 2003A First Lien Bonds and Seismic Retrofit Revenue Notes Series 2005A Second Lien Commercial Paper.

WHEREAS, BATA now wishes to enter into a cooperative agreement with the DEPARTMENT; now, therefore, be it

RESOLVED, that the BATA authorizes the Executive Director, or his designee, to enter into a cooperative agreement with the DEPARTMENT, substantially as set forth in Attachment A, attached hereto and incorporated herein as though set forth at length; and, be it further

RESOLVED, that the Executive Director is delegated the authority to make modifications to Attachment A prior to its execution without further review by BATA, as long as such changes do not materially amend the terms of the cooperative agreement.

RESOLVED, that the agreement as set forth in Attachment A, supercedes and replaces all previous Cooperative Agreements between BATA and DEPARTMENT pertaining to the management and operations of the state owned toll bridges in the Bay Area.

BAY AREA TOLL AUTHORITY



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Jon Rubin, Chair

The above resolution was entered into by the Bay Area Toll Authority at a regular meeting of the Authority held in Oakland, California on March 22, 2006.

**AMENDMENT NO. 1 TO  
RESTATED AND AMENDED COOPERATIVE AGREEMENT BETWEEN  
THE CALIFORNIA DEPARTMENT OF TRANSPORTATION  
AND THE BAY AREA TOLL AUTHORITY  
RELATING TO THE BRIDGES**

THIS AMENDMENT NO. 1 TO THE RESTATED AND AMENDED COOPERATIVE AGREEMENT BETWEEN THE CALIFORNIA DEPARTMENT OF TRANSPORTATION AND THE BAY AREA TOLL AUTHORITY RELATED TO THE BRIDGES, IS MADE, ENTERED INTO AND EFFECTIVE ON July 1, 2015 by and between the STATE OF CALIFORNIA, acting by and through its Department of Transportation, hereinafter referred to as "DEPARTMENT," and the BAY AREA TOLL AUTHORITY (BATA), hereinafter referred to as "AUTHORITY."

RECITALS

1. AUTHORITY was created pursuant to Section 30950, *et seq.* of the California Streets and Highways Code (SHC), which transferred certain California Transportation Commission (CTC) and DEPARTMENT responsibilities for the disposition of toll revenues collected from toll bridges owned and operated by DEPARTMENT in the San Francisco Bay Area.
2. STATE and AUTHORITY entered into an Agreement (Master Cooperative Agreement 4-2078-A1) on April 25, 2006, as amended and restated on June 13, 2011, hereinafter referred to as "AGREEMENT" to cooperatively maintain, operate, construct, rehabilitate, and retrofit the toll bridges owned and operated by DEPARTMENT in the San Francisco Bay Area.
3. Section VIII, Article 6 of AGREEMENT provides that AGREEMENT shall be subject to re-adoption as amended by the parties effective July 1, 2015, and every ten (10) years thereafter.
4. The parties hereto now intend to enter into this Amendment No. 1 to re-adopt the AGREEMENT and reduce the subsequent periods for re-adoption to five-year terms.

IT IS THEREFORE MUTUALLY AGREED:

1. The first sentence of Article 6 of Section VIII – Mutual Provisions, is deleted and replaced by the following: "This AGREEMENT shall be subject to re-adoption as amended by the parties effective July 1, 2020, and every five (5) years thereafter."
2. As hereby amended, the terms and conditions of the AGREEMENT shall remain in full force and effect.
3. This Amendment No. 1 to the AGREEMENT is hereby deemed to be part of Master Cooperative Agreement 4-2078-A1.

IN WITNESS WHEREOF, this Amendment No. 1 has been executed by the parties hereto as of the day and year first written above.

STATE OF CALIFORNIA  
Department of Transportation

BAY AREA TOLL AUTHORITY

By:   
Deputy District Director

By:   
Steve Heminger, Executive Director

Approved as to form:

  
Adrienne D. Weil, General Counsel  
Bay Area Toll Authority

Certified as to budgeting of funds:

  
District Budget Manager

Date: March 22, 2006  
W.I.: 1253  
Revised: 04/27/11-BATA  
06/24/15-BATA

ABSTRACT

BATA Resolution No. 62, Revised

This resolution authorizes the Bay Area Toll Authority (BATA) to enter into a cooperative agreement with the California Department of Transportation for the management and operation of the state-owned toll bridges in the Bay Area.

This resolution was revised on April 27, 2011, to revise the identification of the geographical limits of the bridges.

This resolution was revised on June 24, 2015, to re-adopt the cooperative agreement and to reduce subsequent periods for re-adoption from ten years to five-year terms.

Further discussion of this resolution is contained in the Executive Director's memorandum to the BATA Oversight Committee dated April 6, 2011 and June 3, 2015 and the Bay Area Toll Authority dated March 15, 2006.

Date: March 22, 2006  
Revised: April 27, 2011  
W.L.: 1253

RE: Authorizing a Cooperative Agreement with the State Department of Transportation

BAY AREA TOLL AUTHORITY

RESOLUTION NO. 62, REVISED

WHEREAS, Streets and Highways Code Section 30950 creates the Bay Area Toll Authority (BATA) that is the same as the Metropolitan Transportation Commission (MTC); and

WHEREAS, Streets and Highways Code Sections 30950 *et seq.* transfers to BATA certain current California Transportation Commission and California Department of Transportation (DEPARTMENT) duties and responsibilities for the bridges owned and operated by the DEPARTMENT in the San Francisco Bay Area; and

WHEREAS, the bridges subject to this agreement as defined in Streets and Highways Code Section 30910 are the Antioch, Benicia-Martinez, Carquinez, Richmond-San Rafael, San Francisco-Oakland, San Mateo-Hayward, and Dumbarton Bridges, and

WHEREAS, Streets and Highways Code Section 30952 provides that BATA and the DEPARTMENT shall enter into a cooperative agreement, upon mutually agreed terms and conditions, setting forth the methodology by which the DEPARTMENT shall operate the bridges and be responsible for the planning, design and construction of improvements, repairs or alterations to the bridges; and

WHEREAS, Streets and Highways Code Section 30950.2, gives BATA the responsibility for administering all toll revenues from the state-owned toll bridges within the jurisdiction of the Metropolitan Transportation Commission, once the obligations of the California Infrastructure and Economic Development Bank secured by the seismic retrofit surcharge imposed pursuant to subdivision (a) of SHC section 31010 are no longer outstanding (as defined by the constituent instruments), currently the Bay Area Toll Bridges Seismic Retrofit Revenue Bonds Series 2003A First Lien Bonds and Seismic Retrofit Revenue Notes Series 2005A Second Lien Commercial Paper.

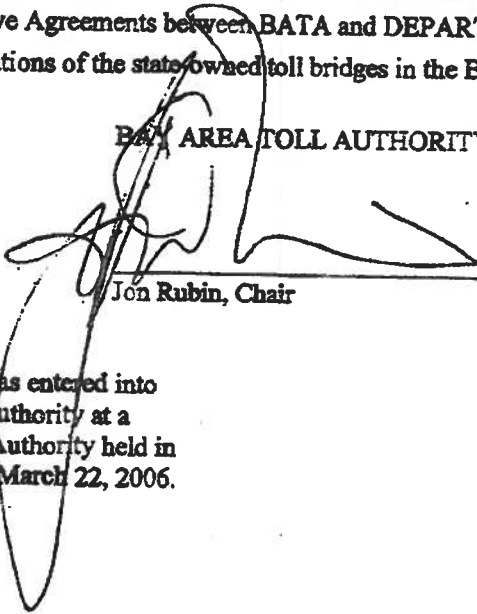
WHEREAS, BATA now wishes to enter into a cooperative agreement with the DEPARTMENT; now, therefore, be it

RESOLVED, that the BATA authorizes the Executive Director, or his designee, to enter into a cooperative agreement with the DEPARTMENT, substantially as set forth in Attachment A, attached hereto and incorporated herein as though set forth at length; and, be it further

RESOLVED, that the Executive Director is delegated the authority to make modifications to Attachment A prior to its execution without further review by BATA, as long as such changes do not materially amend the terms of the cooperative agreement.

RESOLVED, that the agreement as set forth in Attachment A, supercedes and replaces all previous Cooperative Agreements between BATA and DEPARTMENT pertaining to the management and operations of the state owned toll bridges in the Bay Area.

BAY AREA TOLL AUTHORITY



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Jon Rubin, Chair

The above resolution was entered into by the Bay Area Toll Authority at a regular meeting of the Authority held in Oakland, California on March 22, 2006.



## **COOPERATIVE AGREEMENT (8/9/16, AH)**

### State Independent Quality Assurance

This AGREEMENT, effective on \_\_\_\_\_, is between the State of California, acting through its Department of Transportation, referred to as CALTRANS, and:

Bay Area Toll Authority, referred to hereinafter as BATA.

### **RECITALS**

1. PARTNERS are authorized to enter into a cooperative agreement for improvements to the state highway system (SHS) per the California Streets and Highways Code sections 114 and 130.
2. For the purpose of this AGREEMENT, , *converting the shoulder on eastbound I-580 to a peak-period use lane between Sir Francis Drake Boulevard and Marine Street; installing a bi-directional bicycle and pedestrian facility on westbound I-580 from Marine Street to Stenmark Drive; and installing a bi-directional bicycle and pedestrian facility on westbound I-580 from the Richmond-San Rafael Bridge (RSRB) Toll Plaza to the Grange Avenue/Francisco Boulevard intersection* will be referred to hereinafter as PROJECT. The project scope of work is defined in the PROJECT initiation and approval documents (e.g. Project Study Report and Project Report).
3. All responsibilities assigned in this AGREEMENT to complete the following PROJECT COMPONENTS will be referred to hereinafter as OBLIGATIONS:
  - CONSTRUCTION SUPPORT
  - CONSTRUCTION CAPITAL
4. This AGREEMENT is separate from and does not modify or replace any other cooperative agreement or memorandum of understanding between PARTNERS regarding the PROJECT.

5. The following work associated with this PROJECT has been completed or is in progress:
  - CALTRANS approved the Project Study Report-Project Development Support (PSR-PDS) on November 6, 2015 (Cooperative Agreement No. 04-2078).
  - CALTRANS approved the Categorical Exemption on May 27, 2016 (Cooperative Agreement No. 04-2078).
  - CALTRANS approved the Categorical Exclusion on May 27, 2016 (Cooperative Agreement No. 04-2078).
  - CALTRANS approved the Project Report on August 3, 2016 (Cooperative Agreement No. 04-2078).
  - BATA completion of the R/W Certification is in progress (Cooperative Agreement No. 04-2078).
  - BATA completion of the PS&E is in progress (Cooperative Agreement No. 04-2078).
6. In this AGREEMENT capitalized words represent defined terms, initialisms, or acronyms.
7. PARTNERS hereby set forth the terms, covenants, and conditions of this AGREEMENT, under which they will accomplish OBLIGATIONS.

## **RESPONSIBILITIES**

### **Sponsorship**

8. BATA is the SPONSOR for the PROJECT COMPONENTS in this AGREEMENT.

### **Funding**

9. Funding sources, funding amounts, and invoicing/payment details are documented in the FUNDING SUMMARY. The FUNDING SUMMARY is incorporated and made an express part of this AGREEMENT.

PARTNERS will execute a new FUNDING SUMMARY each time the funding details change. The FUNDING SUMMARY will be executed by a legally authorized representative of the respective PARTNERS. The most current fully executed FUNDING SUMMARY supersedes any previous FUNDING SUMMARY created for this AGREEMENT.

Replacement of the FUNDING SUMMARY will not require an amendment to the body of this AGREEMENT unless the funding changes require it.

10. Each PARTNER is responsible for the costs they incur in performing the OBLIGATIONS of this AGREEMENT unless otherwise stated in this AGREEMENT.

### **Implementing Agency**

11. BATA is the IMPLEMENTING AGENCY for CONSTRUCTION.
12. The IMPLEMENTING AGENCY for a PROJECT COMPONENT will provide a Quality Management Plan (QMP) for that component as part of the PROJECT MANAGEMENT PLAN. The Quality Management Plan describes the IMPLEMENTING AGENCY's quality policy and how it will be used. The Quality Management Plan is subject to CALTRANS review and approval.
13. Any PARTNER responsible for completing WORK shall make its personnel and consultants that prepare WORK available to help resolve WORK-related problems and changes for the entire duration of the PROJECT including PROJECT COMPONENT work that may occur under separate agreements.

### **Independent Quality Assurance**

14. CALTRANS will provide Independent Quality Assurance for the portions of WORK within the existing and proposed SHS right-of-way.

CALTRANS' Independent Quality Assurance efforts are to ensure that BATA's quality assurance activities result in WORK being developed in accordance with the applicable standards and within an established Quality Management Plan. Independent Quality Assurance does not include any efforts necessary to develop or deliver WORK or any validation by verifying or rechecking work performed by another party.

When CALTRANS performs Independent Quality Assurance it does so for its own benefit. No one can assign liability to CALTRANS due to its Independent Quality Assurance.

### **CEQA/NEPA Lead Agency**

15. CALTRANS is the CEQA Lead Agency for the PROJECT.
16. CALTRANS is the NEPA Lead Agency for the PROJECT.

### **Environmental Permits, Approvals and Agreements**

17. PARTNERS will comply with the commitments and conditions set forth in the environmental documentation, environmental permits, approvals, and applicable agreements as those commitments and conditions apply to each PARTNER's responsibilities in this AGREEMENT.

18. Unless otherwise assigned in this AGREEMENT, the IMPLEMENTING AGENCY for a PROJECT COMPONENT is responsible for all PROJECT COMPONENT WORK associated with coordinating, obtaining, implementing, renewing, and amending the PROJECT permits, agreements, and approvals whether they are identified in the planned project scope of work or become necessary in the course of completing the PROJECT. CALTRANS is required to obtain amendment to the existing permit for the Richmond-San Rafael Bridge with San Francisco Bay Conservation and Development Commission, referred to as BCDC, to authorize PROJECT. IMPLEMENTING AGENCY is responsible for any permitting fees, preparing permit amendment request package and compliance with permit amendment requirements.
19. The PROJECT requires the following environmental requirements/approvals:

<b>ENVIRONMENTAL PERMITS/REQUIREMENTS</b>
National Pollutant Discharge Elimination System (NPDES), State Water Resources Control Board
State Waste Discharge Requirements (Porter Cologne), Regional Water Quality Control Board
San Francisco Bay Conservation and Development Commission (BCDC)

**Construction**

20. As IMPLEMENTING AGENCY for CONSTRUCTION, BATA is responsible for all CONSTRUCTION SUPPORT WORK except those CONSTRUCTION SUPPORT activities and responsibilities that are assigned to another PARTNER in this AGREEMENT and those activities that may be specifically excluded.
21. CALTRANS will be responsible for completing the following CONSTRUCTION SUPPORT activities:

CALTRANS Work Breakdown Structure Identifier (If Applicable)
Independent Quality Assurance
285.05.15.xx Change Order Acceptance as required in this Agreement
270.20.45.xx SWPPP/WPCP Review & Approval

22. Physical and legal possession of right-of-way must be completed prior to construction contract award, unless PARTNERS mutually agree to other arrangements in writing. Right of way conveyances must be completed prior to OBLIGATION COMPLETION, unless PARTNERS mutually agree to other arrangements in writing.

23. CALTRANS will not issue an Encroachment Permit to BATA for construction work until CALTRANS accepts:
  - The final Plans, Specifications, and Estimate
  - The Right-of-Way Certification
24. BATA will require the construction contractor to furnish payment and performance bonds naming BATA as obligee, and CALTRANS as additional obligee, and to carry liability insurance in accordance with CALTRANS Standard Specifications.
25. BATA will advertise, open bids, award, and approve the construction contract in accordance with the California Public Contract Code and the California Labor Code. By accepting responsibility to advertise and award the construction contract, BATA also accepts responsibility to administer the construction contract.
26. CALTRANS will not issue an Encroachment Permit to BATA's construction contractor until CALTRANS accepts:
  - The payment and performance bonds
  - The CONSTRUCTION Quality Management Plan
27. BATA will provide a Resident Engineer and CONSTRUCTION SUPPORT staff that are independent of the construction contractor. The Resident Engineer will be a Civil Engineer, licensed in the State of California, who is responsible for construction contract administration activities.
28. BATA will implement changes to the construction contract through Change Orders. PARTNERS will review and concur on all Change Orders over \$250,000.
29. BATA will provide a landscape architect who will be responsible for all landscaping activities within the SHS.
30. The CONSTRUCTION Quality Management Plan will describe how construction material verification and workmanship inspections will be performed at manufacturing sources and the PROJECT job-site. The construction material and source inspection Quality Management Plan is subject to review and approval by the State Materials Engineer.
31. The CONSTRUCTION Quality Management Plan will address the radiation safety requirements of the California Code of Regulations 17 CCR § 30346 when the work will require Gamma-Gamma Logging acceptance testing for CIDH pile or whenever else it is applicable. In accordance with these regulations BATA, as the "well operator", will have a written agreement with any consultant or external entity performing these tests.

32. CALTRANS will review and concur with:
- Change Orders affecting public safety, public convenience, protected environmental resources, the preservation of property, all design and specification changes, and all major changes as defined in the CALTRANS Construction Manual. These Change Orders must receive written concurrence by CALTRANS prior to implementation.
  - The Stormwater Pollution Prevention Plan (SWPPP) or the Water Pollution Control Plan (WPCP).
33. If CONSTRUCTION CAPITAL is funded with state or federal funds then BATA will administer and process all construction contract claims using a CALTRANS-approved process. CALTRANS will provide Independent Quality Assurance for the claims process.
34. BATA is designated as the Legally Responsible Person pursuant to the Construction General Permit, State Water Resources Control Board (SWRCB) Order Number 2009-0009-DWQ, as defined in Appendix 5, Glossary, and assumes all roles and responsibilities assigned to the Legally Responsible Person as mandated by the Construction General Permit. BATA is required to comply with the CALTRANS MS4 National Pollutant Discharge Elimination System (NPDES) permit for all work within the State Highway System.

35. As the CONSTRUCTION IMPLEMENTING AGENCY, BATA is responsible for maintenance of the State Highway System within the PROJECT limits as part of the construction contract until the following conditions are met:
- Any required Maintenance Agreements are executed for the portions of SHS for which relief of maintenance is to be granted.
  - CALTRANS approves a request from BATA for relief from maintenance of the PROJECT or a portion thereof.
36. Within one hundred eighty (180) calendar days following the completion and acceptance of the PROJECT construction contract, BATA shall furnish CALTRANS with a complete set of “As-Built” plans and Change Orders, including any changes authorized by CALTRANS, on a CD ROM and in accordance with CALTRANS’ then current CADD User’s Manual (Section 4.3), Plans Preparation Manual, and CALTRANS practice. The plans will have the Resident Engineer’s name, contract number, and construction contract acceptance date printed on each plan sheet, and with the Resident Engineer’s signature only on the title sheet. The As-Built plans will be in Microstation DGN format, version 7.0 or later. In addition, BATA will provide one set of As-Built plans and addenda in TIFF format.

The submittal must also include all CALTRANS requested contract records, and land survey documents. The land survey documents include monument preservation documents and Records of Surveys prepared to satisfy the requirements of the California Land Surveyors Act (Business and Professions Code sections 8700 – 8805). Copies of survey documents and Records of Surveys filed in accordance with Business & Professions Code, including sections 8762 and 8771, shall contain the filing information provided by the county in which filed.

37. Upon OBLIGATION COMPLETION, ownership or title to all materials and equipment constructed or installed for the operations and/or maintenance of the SHS within SHS right-of-way as part of WORK become the property of CALTRANS except the Movable Barrier System installed on the upper deck of the Richmond San Rafael Bridge and bridge approaches. The Movable Barrier System consists of Concrete Barrier Segments, Variable Length Barriers and Barrier Transfer Machine. The Movable Barrier System will remain the property of BATA.

### **Schedule**

38. PARTNERS will manage the schedule for OBLIGATIONS through the work plan included in the PROJECT MANAGEMENT PLAN.



### **Additional Provisions**

39. PARTNERS will perform all OBLIGATIONS in accordance with federal and California laws, regulations, and standards; FHWA STANDARDS; and CALTRANS STANDARDS.
40. CALTRANS retains the right to reject noncompliant WORK, protect public safety, preserve property rights, and ensure that all WORK is in the best interest of the SHS.
41. Each PARTNER will ensure that personnel participating in OBLIGATIONS are appropriately qualified or licensed to perform the tasks assigned to them.
42. PARTNERS will invite each other to participate in the selection of any consultants who participate in OBLIGATIONS.
43. CALTRANS will issue, upon proper application, the encroachment permits required for WORK within SHS right-of-way. Contractors and/or agents, and utility owners will not work within the SHS right-of-way without an encroachment permit issued in their name. CALTRANS will provide encroachment permits to PARTNERS, their contractors, consultants and agents, and utility owners at no cost. If the encroachment permit and this AGREEMENT conflict, the requirements of this AGREEMENT shall prevail.
44. The IMPLEMENTING AGENCY for a PROJECT COMPONENT will coordinate, prepare, obtain, implement, renew, and amend any encroachment permits needed to complete the PROJECT COMPONENT WORK.
45. If any PARTNER discovers unanticipated cultural, archaeological, paleontological, or other protected resources during WORK, all WORK in that area will stop and that PARTNER will notify all PARTNERS within twenty-four (24) hours of discovery. WORK may only resume after a qualified professional has evaluated the nature and significance of the discovery and a plan is approved for its removal or protection.
46. PARTNERS will hold all administrative drafts and administrative final reports, studies, materials, and documentation relied upon, produced, created, or utilized for the PROJECT in confidence to the extent permitted by law and where applicable, the provisions of California Government Code section 6254.5(e) shall protect the confidentiality of such documents in the event that said documents are shared between PARTNERS.

PARTNERS will not distribute, release, or share said documents with anyone other than employees, agents, and consultants who require access to complete the PROJECT without the written consent of the PARTNER authorized to release them, unless required or authorized to do so by law.

47. If a PARTNER receives a public records request pertaining to OBLIGATIONS, that PARTNER will notify PARTNERS within five (5) working days of receipt and make PARTNERS aware of any disclosed public documents. PARTNERS will consult with each other prior to the release of any public documents related to the PROJECT.
48. If HM-1 or HM-2 is found during a PROJECT COMPONENT, the IMPLEMENTING AGENCY for that PROJECT COMPONENT will immediately notify PARTNERS.
49. CALTRANS, independent of the PROJECT, is responsible for any HM-1 found within the existing SHS right-of-way. CALTRANS will undertake, or cause to be undertaken, HM MANAGEMENT ACTIVITIES related to HM-1 with minimum impact to the PROJECT schedule.

CALTRANS, independent of the PROJECT will pay, or cause to be paid, the cost of HM MANAGEMENT ACTIVITIES related to HM-1 found within the existing SHS right-of-way.

50. If HM-1 is found within the PROJECT limits and outside the existing SHS right-of-way, responsibility for such HM-1 rests with the owner(s) of the parcel(s) on which the HM-1 is found. BATA, in concert with the local agency having land use jurisdiction over the parcel(s), will ensure that HM MANAGEMENT ACTIVITIES related to HM-1 are undertaken with minimum impact to PROJECT schedule.

The costs for HM MANAGEMENT ACTIVITIES related to HM-1 found within the PROJECT limits and outside the existing SHS right-of-way will be the responsibility of the owner(s) of the parcel(s) where the HM-1 is located.

51. If HM-2 is found within the PROJECT limits, the public agency responsible for the advertisement, award, and administration (AAA) of the PROJECT construction contract will be responsible for HM MANAGEMENT ACTIVITIES related to HM-2.
52. CALTRANS' acquisition or acceptance of title to any property on which any HM-1 or HM-2 is found will proceed in accordance with CALTRANS' policy on such acquisition.
53. BATA will accept, reject, compromise, settle, or litigate claims of any non-AGREEMENT parties hired to complete OBLIGATIONS.
54. PARTNERS will confer on any claim that may affect OBLIGATIONS or PARTNERS' liability or responsibility under this AGREEMENT in order to retain resolution possibilities for potential future claims. No PARTNER will prejudice the rights of another PARTNER until after PARTNERS confer on the claim.

55. If the PROJECT expends state or federal funds, each PARTNER will comply with the federal Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards of 2 CFR, Part 200. PARTNERS will ensure that any for-profit party hired to participate in the OBLIGATIONS will comply with the requirements in 48 CFR, Chapter 1, Part 31. When state or federal funds are expended on the PROJECT these principles and requirements apply to all funding types included in this AGREEMENT.
56. If the PROJECT expends state or federal funds, each PARTNER will undergo an annual audit in accordance with the Single Audit Act and the federal Office of Management and Budget (OMB) Circular A-133.
57. If the PROJECT expends federal funds, any PARTNER that hires an A&E consultant to perform WORK on any part of the PROJECT will ensure that the procurement of the consultant and the consultant overhead costs are in accordance with Chapter 10 of the *Local Assistance Procedures Manual*.
58. If WORK stops for any reason, IMPLEMENTING AGENCY will place the PROJECT right-of-way in a safe and operable condition acceptable to CALTRANS.
59. If WORK stops for any reason, each PARTNER will continue to implement all of its applicable commitments and conditions included in the PROJECT environmental documentation, permits, agreements, or approvals that are in effect at the time that WORK stops, as they apply to each PARTNER's responsibilities in this AGREEMENT, in order to keep the PROJECT in environmental compliance until WORK resumes.
60. Fines, interest, or penalties levied against a PARTNER will be paid by the PARTNER whose action or lack of action caused the levy.
61. If there are insufficient funds available in this AGREEMENT to place PROJECT right-of-way in a safe and operable condition, the appropriate IMPLEMENTING AGENCY will fund these activities until such time as PARTNERS amend this AGREEMENT.

That IMPLEMENTING AGENCY may request reimbursement for these costs during the amendment process.

62. BATA will furnish CALTRANS with the Project History Files related to the PROJECT facilities on SHS within sixty (60) days following the completion of each PROJECT COMPONENT. BATA will prepare the Project History File in accordance with the Project Development Procedures Manual, Chapter 7. All material will be submitted neatly in a three-ring binder and on a CD ROM in PDF format.

## **GENERAL CONDITIONS**

63. PARTNERS understand that this AGREEMENT is in accordance with and governed by the Constitution and laws of the State of California. This AGREEMENT will be enforceable in the State of California. Any PARTNER initiating legal action arising from this AGREEMENT will file and maintain that legal action in the Superior Court of the county in which the CALTRANS district office that is signatory to this AGREEMENT resides, or in the Superior Court of the county in which the PROJECT is physically located.
64. All CALTRANS' OBLIGATIONS under this AGREEMENT are subject to the appropriation of resources by the Legislature, the State Budget Act authority, and the allocation of funds by the California Transportation Commission.
65. Neither BATA nor any officer or employee thereof is responsible for any injury, damage or liability occurring by reason of anything done or omitted to be done by CALTRANS, its contractors, sub-contractors, and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon CALTRANS under this AGREEMENT. It is understood and agreed that CALTRANS, to the extent permitted by law, will defend, indemnify, and save harmless BATA and all of its officers and employees from all claims, suits, or actions of every name, kind, and description brought forth under, but not limited to, tortious, contractual, inverse condemnation, or other theories and assertions of liability occurring by reason of anything done or omitted to be done by CALTRANS, its contractors, sub-contractors, and/or its agents under this AGREEMENT.
66. Neither CALTRANS nor any officer or employee thereof is responsible for any injury, damage, or liability occurring by reason of anything done or omitted to be done by BATA, its contractors, sub-contractors, and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon BATA under this AGREEMENT. It is understood and agreed that BATA, to the extent permitted by law, will defend, indemnify, and save harmless CALTRANS and all of its officers and employees from all claims, suits, or actions of every name, kind, and description brought forth under, but not limited to, tortious, contractual, inverse condemnation, or other theories and assertions of liability occurring by reason of anything done or omitted to be done by BATA, its contractors, sub-contractors, and/or its agents under this AGREEMENT.
67. PARTNERS do not intend this AGREEMENT to create a third party beneficiary or define duties, obligations, or rights in parties not signatory to this AGREEMENT. PARTNERS do not intend this AGREEMENT to affect their legal liability by imposing any standard of care for fulfilling OBLIGATIONS different from the standards imposed by law.
68. PARTNERS will not assign or attempt to assign OBLIGATIONS to parties not signatory to this AGREEMENT without an amendment to this AGREEMENT.

69. BATA will not interpret any ambiguity contained in this AGREEMENT against CALTRANS. BATA waives the provisions of California Civil Code section 1654.

A waiver of a PARTNER's performance under this AGREEMENT will not constitute a continuous waiver of any other provision.

70. A delay or omission to exercise a right or power due to a default does not negate the use of that right or power in the future when deemed necessary.
71. If any PARTNER defaults in its OBLIGATIONS, a non-defaulting PARTNER will request in writing that the default be remedied within thirty (30) calendar days. If the defaulting PARTNER fails to do so, the non-defaulting PARTNER may initiate dispute resolution.
72. PARTNERS will first attempt to resolve AGREEMENT disputes at the PROJECT team level. If they cannot resolve the dispute themselves, the CALTRANS district director and the executive officer of BATA will attempt to negotiate a resolution. If PARTNERS do not reach a resolution, PARTNERS' legal counsel will initiate mediation. PARTNERS agree to participate in mediation in good faith and will share equally in its costs.

Neither the dispute nor the mediation process relieves PARTNERS from full and timely performance of OBLIGATIONS in accordance with the terms of this AGREEMENT. However, if any PARTNER stops fulfilling OBLIGATIONS, any other PARTNER may seek equitable relief to ensure that OBLIGATIONS continue.

Except for equitable relief, no PARTNER may file a civil complaint until after mediation, or forty-five (45) calendar days after filing the written mediation request, whichever occurs first.

PARTNERS will file any civil complaints in the Superior Court of the county in which the CALTRANS district office signatory to this AGREEMENT resides or in the Superior Court of the county in which the PROJECT is physically located.

73. PARTNERS maintain the ability to pursue alternative or additional dispute remedies if a previously selected remedy does not achieve resolution.
74. If any provisions in this AGREEMENT are found by a court of competent jurisdiction to be, or are in fact, illegal, inoperative, or unenforceable, those provisions do not render any or all other AGREEMENT provisions invalid, inoperative, or unenforceable, and those provisions will be automatically severed from this AGREEMENT.
75. If during performance of WORK additional activities or environmental documentation is necessary to keep the PROJECT in environmental compliance, PARTNERS will amend this AGREEMENT to include completion of those additional tasks.

76. Except as otherwise provided in the AGREEMENT, PARTNERS will execute a formal written amendment if there are any changes to OBLIGATIONS.
77. When WORK performed on the PROJECT is done under contract and falls within the Labor Code section 1720(a)(1) definition of "public works" in that it is construction, alteration, demolition, installation, or repair; or maintenance work under Labor Code section 1771, PARTNERS shall conform to the provisions of Labor Code sections 1720 through 1815, and all applicable provisions of California Code of Regulations found in Title 8, Division 1, Chapter 8, Subchapter 3, Articles 1-7. PARTNERS shall include prevailing wage requirements in contracts for public work and require contractors to include the same prevailing wage requirements in all subcontracts. Work performed by a PARTNER's own employees is exempt from the Labor Code's Prevailing Wage requirements.
78. If WORK is paid for, in whole or part, with federal funds and is of the type of work subject to federal prevailing wage requirements, PARTNERS shall conform to the provisions of the Davis-Bacon and Related Acts, 40 U.S.C. § 276(a).

When applicable, PARTNERS shall include federal prevailing wage requirements in contracts for public work. WORK performed by a PARTNER's employees is exempt from federal prevailing wage requirements.

79. PARTNERS agree to sign a CLOSURE STATEMENT to terminate this AGREEMENT. However, all indemnification, document retention, audit, claims, environmental commitment, legal challenge, maintenance and ownership articles will remain in effect until terminated or modified in writing by mutual agreement or expire by the statute of limitations.
80. PARTNERS intend this AGREEMENT to be their final expression that supersedes any oral understanding or writings pertaining to the OBLIGATIONS. The requirements of this AGREEMENT shall preside over any conflicting requirements in any documents that are made an express part of this AGREEMENT.

## **DEFINITIONS**

**AGREEMENT** – This agreement including any attachments, exhibits, and amendments.

**CALTRANS STANDARDS** – CALTRANS policies and procedures, including, but not limited to, the guidance provided in the Project Development Procedures Manual (PDPM) and the CALTRANS Workplan Standards Guide for the Delivery of Capital Projects (WSG) [which contains the CALTRANS Work Breakdown Structure (WBS) and was previously known as the WBS Guide] and is available at <http://www.dot.ca.gov/hq/projmgmt/guidance.htm>.

**CEQA (California Environmental Quality Act)** – The act (California Public Resources Code, sections 21000 et seq.) that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those significant impacts, if feasible.

**CFR (Code of Federal Regulations)** – The general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government.

**CONSTRUCTION** – See PROJECT COMPONENT.

**CONSTRUCTION CAPITAL** – See PROJECT COMPONENT.

**CONSTRUCTION SUPPORT** – See PROJECT COMPONENT.

**CLOSURE STATEMENT** – A document signed by PARTNERS that verifies the completion of all OBLIGATIONS included in this AGREEMENT and in all amendments to this AGREEMENT.

**FHWA** – Federal Highway Administration.

**FHWA STANDARDS** – FHWA regulations, policies and procedures, including, but not limited to, the guidance provided at [www.fhwa.dot.gov/topics.htm](http://www.fhwa.dot.gov/topics.htm).

**FUNDING PARTNER** – A PARTNER that commits funds in this AGREEMENT to fulfill OBLIGATIONS. A FUNDING PARTNER accepts the responsibility to provide the funds it commits in this Agreement.

**FUNDING SUMMARY** – An executed document that includes a FUNDING TABLE and invoicing and payment methods.

**FUNDING TABLE** – The table that designates funding sources, types of funds, and the PROJECT COMPONENT in which the funds are to be spent. Funds listed on the FUNDING TABLE are “not-to-exceed” amounts for each FUNDING PARTNER.



GAAP (Generally Accepted Accounting Principles) – Uniform minimum standards and guidelines for financial accounting and reporting issued by the Federal Accounting Standards Advisory Board that serve to achieve some level of standardization. See <http://www.fasab.gov/accepted.html>.

HM-1 – Hazardous material (including, but not limited to, hazardous waste) that may require removal and disposal pursuant to federal or state law whether it is disturbed by the PROJECT or not.

HM-2 – Hazardous material (including, but not limited to, hazardous waste) that may require removal and disposal pursuant to federal or state law only if disturbed by the PROJECT.

HM MANAGEMENT ACTIVITIES – Management activities related to either HM-1 or HM-2 including, without limitation, any necessary manifest requirements and disposal facility designations.

IMPLEMENTING AGENCY – The PARTNER responsible for managing the scope, cost, and schedule of a PROJECT COMPONENT to ensure the completion of that component.

IQA (Independent Quality Assurance) – CALTRANS' efforts to ensure that another PARTNER's quality assurance activities are in accordance with the applicable standards and the PROJECT's Quality Management Plan (QMP). When CALTRANS performs Independent Quality Assurance it does not develop, produce, validate, verify, re-check, or quality control another PARTNER's work products.

NEPA (National Environmental Policy Act of 1969) – This federal act establishes a national policy for the environment and a process to disclose the adverse impacts of projects with a federal nexus.

OBLIGATIONS – All WORK responsibilities and their associated costs.

OBLIGATION COMPLETION – PARTNERS have fulfilled all OBLIGATIONS included in this AGREEMENT and have signed a CLOSURE STATEMENT.

PARTNER – Any individual signatory party to this AGREEMENT.

PARTNERS – The term that collectively references all of the signatory agencies to this AGREEMENT. This term only describes the relationship between these agencies to work together to achieve a mutually beneficial goal. It is not used in the traditional legal sense in which one PARTNER's individual actions legally bind the other PARTNER.

**PROJECT COMPONENT** – A distinct portion of the planning and project development process of a capital project as outlined in California Government Code, section 14529(b).

- **PID (Project Initiation Document)** – The work required to deliver the project initiation document for the **PROJECT** in accordance with **CALTRANS STANDARDS**.
- **PA&ED (Project Approval and Environmental Document)** – The work required to deliver the project approval and environmental documentation for the **PROJECT** in accordance with **CALTRANS STANDARDS**.
- **PS&E (Plans, Specifications, and Estimate)** – The work required to deliver the plans, specifications, and estimate for the **PROJECT** in accordance with **CALTRANS STANDARDS**.
- **R/W (Right of Way)** – The project components for the purpose of acquiring real property interests for the **PROJECT** in accordance with **CALTRANS STANDARDS**.
  - **R/W (Right of Way) SUPPORT** – The work required to obtain all property interests for the **PROJECT**.
  - **R/W (Right of Way) CAPITAL** – The funds for acquisition of property rights for the **PROJECT**.
- **CONSTRUCTION** – The project components for the purpose of completing the construction of the **PROJECT** in accordance with **CALTRANS STANDARDS**.
  - **CONSTRUCTION SUPPORT** – The work required for the administration, acceptance, and final documentation of the construction contract for the **PROJECT**.
  - **CONSTRUCTION CAPITAL** – The funds for the construction contract.

**PROJECT MANAGEMENT PLAN** – A group of documents used to guide the **PROJECT**'s execution and control throughout that project's lifecycle.

**QMP (Quality Management Plan)** – An integral part of the **PROJECT MANAGEMENT PLAN** that describes **IMPLEMENTING AGENCY**'s quality policy and how it will be used.

**SHS (State Highway System)** – All highways, right-of-way, and related facilities acquired, laid out, constructed, improved, or maintained as a state highway pursuant to constitutional or legislative authorization.

**SPONSOR** – Any **PARTNER** that accepts the responsibility to establish scope of the **PROJECT** and the obligation to secure financial resources to fund the **PROJECT COMPONENTS** in this **AGREEMENT**. A **SPONSOR** is responsible for adjusting the **PROJECT** scope to match committed funds or securing additional funds to fully fund the **PROJECT COMPONENTS** in this **AGREEMENT**. If this **AGREEMENT** has more than one **SPONSOR**, funding adjustments will be made by percentage (as outlined in Responsibilities). Scope adjustments must be developed through the project development process and must be approved by **CALTRANS** as the owner/operator of the **SHS**.

**WORK** – All efforts to complete the **OBLIGATIONS** included in this **AGREEMENT** as described by the activities in the **CALTRANS** Workplan Standards Guide for the Delivery of Capital Projects (**WSG**).

**SIGNATURES**

PARTNERS are empowered by California Streets and Highways Code section 114 and 130 to enter into this AGREEMENT and have delegated to the undersigned the authority to execute this AGREEMENT on behalf of the respective agencies and covenants to have followed all the necessary legal requirements to validly execute this AGREEMENT.

Signatories may execute this AGREEMENT through individual signature pages provided that each signature is an original. This AGREEMENT is not fully executed until all original signatures are attached.

**STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION**

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Lenka (Helena) Culik-Caro  
Deputy District Director, Design

Certified as to funds:

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Jeffrey Armstrong  
District Budget Director

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HQ Accounting

**BAY AREA TOLL AUTHORITY**

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Steve Heminger  
Executive Director

Attest:

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Andrew B. Fremier  
Deputy Executive Director

Approved as to form and procedure:

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Matthew Lavrinets  
Senior Counsel

**FUNDING SUMMARY NO. 01**

v. 2					
<b><u>FUNDING TABLE</u></b>					
<u>IMPLEMENTING AGENCY</u> →			<u>BATA</u>		
Source	FUNDING PARTNER	Fund Type	CONST. SUPPORT	CONST. CAPITAL	Totals
Local	BATA	Local *	6,100,000	46,100,000	52,200,000
Totals			6,100,000	46,100,000	52,200,000

\* This fund type includes federal funds

v 21				
<b><u>SPENDING SUMMARY</u></b>				
Fund Type	<u>CONST. SUPPORT</u>		<u>CONST. CAPITAL</u>	Totals
	<u>CALTRANS</u>	<u>BATA</u>	<u>BATA</u>	
<b>Local Funds</b>				
Local (BATA)	610,000	5,490,000	46,100,000	52,200,000
Totals	610,000	5,490,000	46,100,000	52,200,000

**Funding**

1. In accordance with the Caltrans Federal-Aid Project Funding Guidelines, BATA must obtain approval from the Federal Highway Administration prior to any PROJECT funding changes that that will change the federal share of funds.

**Invoicing and Payment**

1. PARTNERS will invoice for funds where the SPENDING SUMMARY shows that one PARTNER provides funds for use by another PARTNER. PARTNERS will pay invoices within forty-five (45) calendar days of receipt of invoice when not paying with Electronic Funds Transfer (EFT). When paying with EFT, BATA will pay invoices within five (5) calendar days of receipt of invoice.
2. If BATA has received EFT certification from CALTRANS then BATA will use the EFT mechanism and follow all EFT procedures to pay all invoices issued from CALTRANS.
3. CALTRANS will draw from state and federal funds that are provided by BATA without invoicing BATA when CALTRANS administers those funds and CALTRANS has been allocated those funds by the CTC and whenever else possible.
4. When a PARTNER is reimbursed for actual costs from funds administered by another PARTNER, invoices will be submitted each month for the prior month's expenditures.

**CONSTRUCTION SUPPORT**

- CALTRANS will invoice BATA for a \$50,000 initial deposit after execution of this AGREEMENT and thirty (30) working days prior to the commencement of CONSTRUCTION SUPPORT expenditures. This deposit represents two (2) months' estimated costs.

Thereafter, CALTRANS will invoice and BATA will reimburse for actual costs.

2. No invoicing or reimbursement will occur for the CONSTRUCTION SUPPORT PROJECT COMPONENT beyond the limits in the SPENDING SUMMARY without prior amendment to said SPENDING SUMMARY.

**CONSTRUCTION CAPITAL**

3. No invoicing or reimbursement will occur for the CONSTRUCTION CAPITAL PROJECT COMPONENT.

**Signatures**

**STATE OF CALIFORNIA  
DEPARTMENT OF  
TRANSPORTATION**

\_\_\_\_\_  
Mo Pazooki  
Project Manager

Date \_\_\_\_\_

\_\_\_\_\_  
District Budget Manager

\_\_\_\_\_  
HQ Accounting

**BAY AREA TOLL AUTHORITY**

\_\_\_\_\_  
Steve Heminger, Executive Director

Date: \_\_\_\_\_