Appendix G. SR-1/Lincoln Bridge Feasibility Study

Lincoln Bridge Feasibility Study

December 2013

WESTSIDE MOBILITY PLAN

Lincoln Bridge Feasibility Study

Draft Report

December 2013

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1. INTRODUCTION

WESTSIDE MOBILITY PLAN OVERIVEW

The Westside of Los Angeles is among the densest areas in the region, containing roughly 6 percent of the population and 12 percent of the employment in Los Angeles County in less than 5 percent of the County's land area. Major employment and activity centers include the University of California, Los Angeles (UCLA), Century City, and the Los Angeles International Airport (LAX). The Westside is also home to a cluster of entertainment and creative industry companies. Employees and visitors from throughout the Los Angeles region and beyond are drawn to these employment and activity centers, exacerbating traffic congestion on most major arterials and freeways throughout much of the day. The study area for the Westside Mobility Plan is shown in Figure 1.

While there is an extensive street network on the Westside, with approximately 1,000 miles of local and arterial roadways, personal vehicle and transit mobility is impacted by bottlenecks within the system and spillover traffic from freeways operating at oversaturated conditions during peak travel periods. Most east-west corridors on the Westside, including the I-10 freeway, operate over capacity during peak travel periods, and corridor throughput is limited by major bottlenecks at the I-405 freeway connections. The Westside has limited north-south arterial connections resulting in these routes being mostly saturated during peak periods, such as Lincoln Boulevard.

Bus transit service operates on the majority of minor and major arterials within the Westside. Service is more robust along the east-west roadways than in the north-south direction. Although service frequency is high, especially during peak commute periods, bus travel speeds are slowed by the severity of traffic congestion. In addition, transit connections between most activity centers within the Westside require at least one transfer, reducing the convenience and effectiveness of the transit network. In the southern portion of the Westside, the LAX area is served by light rail transit. No other rail options are currently available, although Phase 1 of the Expo Line from Downtown Los Angeles to Culver City has opened, Phase 2 is under construction, and the Westside Subway Extension is currently nearing Final Design.

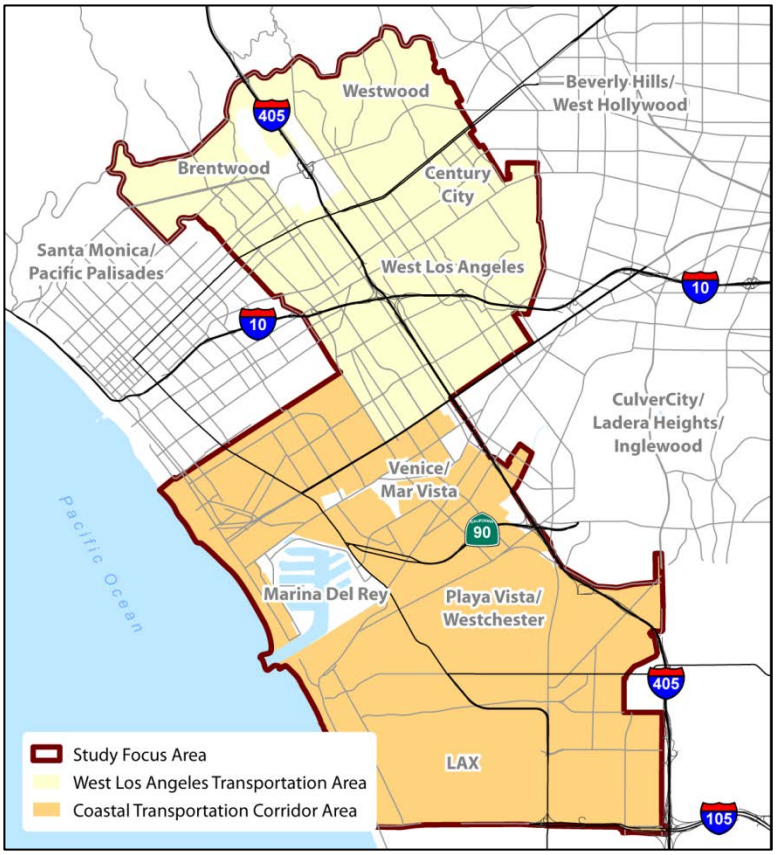


Figure 1. Westside Mobility Plan Study Area

The Westside Mobility Plan is addressing these unique transportation challenges through the development of the following six project components:

1. Westside Transportation Demand Model
2. Westside Mobility and Rail Connectivity Study
3. Westside Parking Study

4. Coastal Transportation Corridor Specific Plan Update
5. West Los Angeles Transportation Specific Plan Update
6. Livable Boulevards Study

FEASIBILITY STUDY OVERVIEW

Lincoln Boulevard is an essential north-south route in West Los Angeles and one of the primary study corridors in Westside Mobility Plan. To implement the improvements envisioned in the Mobility Plan, the current bottleneck at the Lincoln Bridge will need to be removed and Lincoln Boulevard will need to be widened between Jefferson Boulevard and Fiji Way to serve as a multi-modal facility.

In 2001, a Draft Project Report (DPR) was completed by Caltrans District 7 for widening Lincoln Boulevard (Route 1) from Jefferson Boulevard to Fiji Way in Los Angeles. At that time, the project was to widen Lincoln Boulevard to four travel lanes in each direction and did not include the construction of rail transit or bicycle lanes. The project did not progress to the Plans, Specifications & Estimate (PS&E) phase primarily due to the Coastal Commission's concerns with the bridge design over Ballona Creek and Caltrans' funding constraints.

This feasibility study serves as the first phase in defining the design for the widening of Lincoln Boulevard, and addresses the following:

- Purpose & Need: Improving Coastal Access
- Preliminary Lincoln Bridge Design: Focus on piers in Ballona Creek
- Lincoln Widening: Alignment of Lincoln Blvd between Jefferson Boulevard and Fiji Way
- Preliminary Culver Bridge Design: Vertical clearance requirements in consideration of Lincoln Light Rail Transit and Culver Bridge over Ballona Creek

REPORT OUTLINE

The purpose of this Draft Report is to provide background on the planned mobility improvements along Lincoln Boulevard and present the preliminary design for Lincoln Bridge. The report is organized as follows:

- Chapter 1: Introduction
- Chapter 2: Purpose & Need
- Chapter 3: Lincoln Boulevard Transit Improvements
- Chapter 4: LADOT Memorandum of Understanding
- Chapter 5: Preliminary Design
- Chapter 6: Next Steps

2. PURPOSE & NEED

Lincoln Boulevard serves as a critical north-south connection on the Westside. Few arterial connections provide continuous access through the Westside, which results in Lincoln Boulevard being oversaturated during peak commute periods. The average vehicle travel speeds along Lincoln Boulevard are 15 mph during peak periods when measured between the City of Santa Monica and Sepulveda Boulevard; however, travel times are greatly impacted by key bottlenecks resulting in slower speeds along much of the corridor.

At its crossing of Ballona Creek, Lincoln Boulevard narrows from three to two lanes in the southbound direction and from four to three lanes in the northbound direction. In addition, pedestrian facilities are discontinuous north and south of the bridge with no sidewalks provided on the bridge. Lincoln Boulevard also lacks bicycle facilities across the bridge despite its connection to the east-west Ballona Creek Bicycle Path that runs just under the Lincoln Bridge parallel to Ballona Creek.

IMPROVING ACCESS TO THE COAST

The widening of Lincoln Boulevard in the vicinity of Ballona Creek, include the bridge widening, would improve connectivity and accessibility to the coastal areas of the Westside for all modes of travel. The high capacity transit line would connect the Green Line at LAX to the Expo LRT line in Santa Monica to provide a continuous north-south transit connection on the Westside. As shown in Figure 2 below, Lincoln Boulevard is envisioned as a multi-modal corridor with median running transit, three vehicle lanes in each direction, Class II bicycle lanes and sidewalks on both sides of the bridge.

Figure 2. Lincoln Bridge Multi-Modal Corridor: Improving Access to the Coast

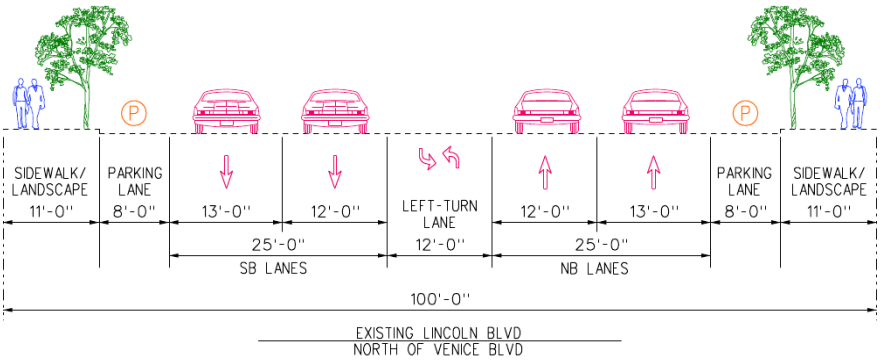
3. LINCOLN BOULEVARD TRANSIT IMPROVEMENTS

The Westside Mobility Plan has identified transit improvements along Lincoln Boulevard between the City of Santa Monica and LAX. Transit service on Lincoln Boulevard will improve north-south connectivity on the Westside and connect to planned transit investments by Metro. The transit concepts are presented below.

EXISTING CONDITIONS

The cross-section shown in Figure 3 is representative of existing conditions on Lincoln Boulevard north of Venice Boulevard, which is the narrowest section of the study corridor. This section of Lincoln Boulevard has two travel lanes in each direction, street parking on both sides of the street, a center left-turn lane and 11-foot sidewalks on both sides of the street.

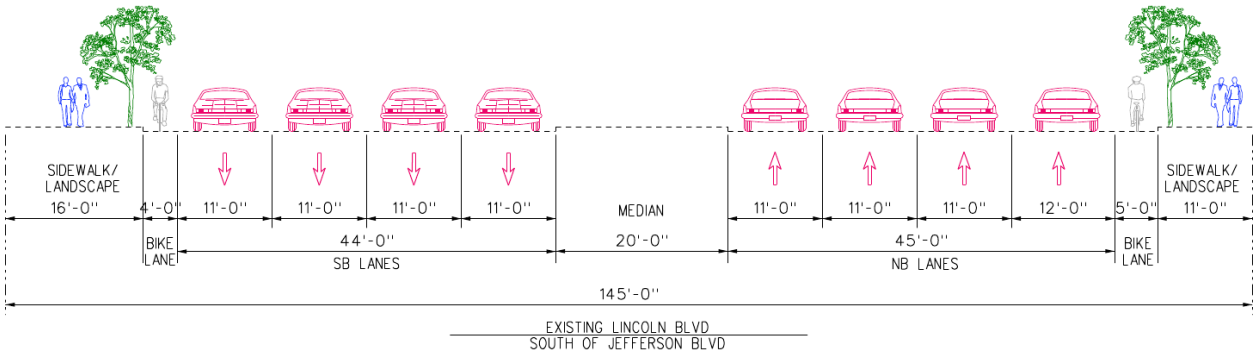
Figure 3. Lincoln Blvd Existing Conditions – North of Venice Blvd



Source: STV, 2012

The cross-section shown in Figure 4 is representative of existing conditions on Lincoln Boulevard south of Jefferson Boulevard, which is much less space-constrained than the section north of Venice Boulevard. This section of Lincoln Boulevard has four travel lanes in each direction, dedicated bicycle lanes on both sides of the street, a fixed median and 11 to 16-foot sidewalks on both sides of the street.

Figure 4. Lincoln Blvd Existing Conditions – South of Jefferson Blvd



Source: STV, 2012

Lincoln Boulevard is currently served by the Santa Monica Big Blue Bus 3 and Rapid 3. Both lines operate along most of Lincoln Boulevard from Pico Boulevard to the Metro Green Line Aviation Station located just east of LAX at Aviation Boulevard / Imperial Highway. Existing transit service is summarized in Table 1.

TABLE 1. LINCOLN BLVD – EXISTING WEEKDAY TRANSIT SERVICE

Route	Corridor Location	Peak Headways	Off-Peak Headways	Operational Hours
*Big Blue Bus 3	Pico Blvd – Green Line Aviation Station	15 minutes	30 minutes	5 AM to 12 AM
*Big Blue Bus Rapid 3	Pico Blvd – Green Line Aviation Station	15 minutes	20 minutes	5:30 AM 10:30 AM and 2:30 PM to 9 PM

Source: Santa Monica Big Blue Bus, 2012
*Indicates primary routes

LINCOLN BOULEVARD AT-GRADE LRT

Lincoln Boulevard is a key regional connector between Santa Monica in the north and LAX in the south. Although Lincoln Boulevard is currently served by both a Local and Rapid line for most of its length, higher quality transit service envisioned through the Westside Mobility Plan would improve travel times and reliability.

Lincoln Boulevard is envisioned as a light rail transit (LRT) corridor. LRT service would be implemented mainly at-grade along Lincoln Boulevard between downtown Santa Monica and the LAX area. An overview of the proposed Lincoln Boulevard At-Grade LRT line is shown in Figure 5.

Figure 5. Lincoln Blvd At-Grade LRT

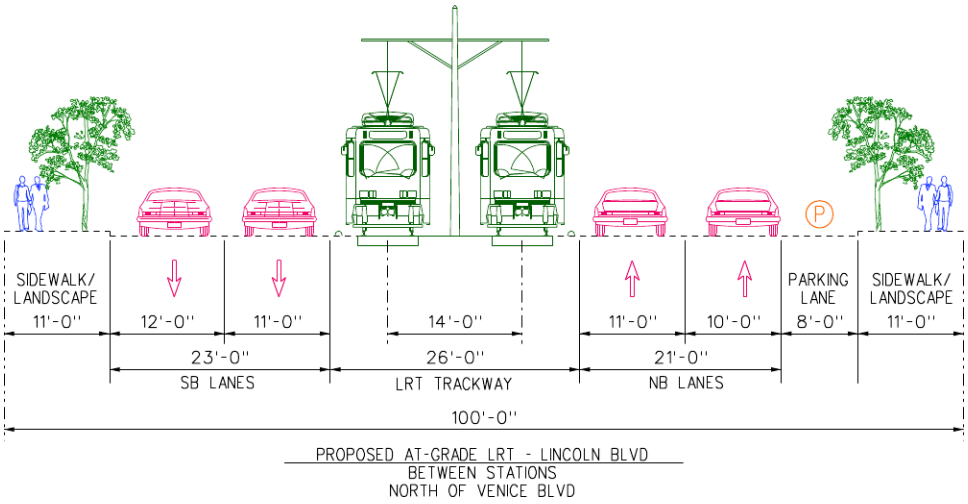
Source: STV, 2012

Route/Configuration

The Lincoln Boulevard At-Grade LRT line would begin in an at-grade configuration in the vicinity of the Expo Phase II line in the City of Santa Monica on or near Lincoln Boulevard. The line would travel the length of Lincoln Boulevard in an at-grade configuration until reaching the Playa Vista / Westchester area south of Jefferson Boulevard where the line would be trenched to reduce the slope for LRT vehicles. The line would return to grade north of Manchester Avenue but then resume in a below grade configuration in a cut and cover tunnel north of LAX to avoid the runway protection zones. (The LAX runway protection zones prohibit LRT technology in close proximity since the OCS could potentially interfere with airport communications.) The line would come back to grade east of Sepulveda Boulevard and then return to an aerial configuration along 96th Street to connect with the planned Metro Crenshaw/LAX line and Metro Green Line along the Harbor Subdivision ROW. The LRT line would terminate at Century Boulevard/Aviation Boulevard.

The cross-section shown in Figure 6 is representative of the reallocation of street facilities with the proposed at-grade LRT on Lincoln Boulevard north of Venice Boulevard. The two existing travel lanes would be maintained in both directions; however, in order to accommodate the 30 foot LRT trackway in the center of the roadway, street parking would be removed from one side of the street and lane widths would be narrowed. Additionally, the center left-turn lane would be removed, which would eliminate left turns except at major intersections (where a turn lane could be fit at the expense of parking).

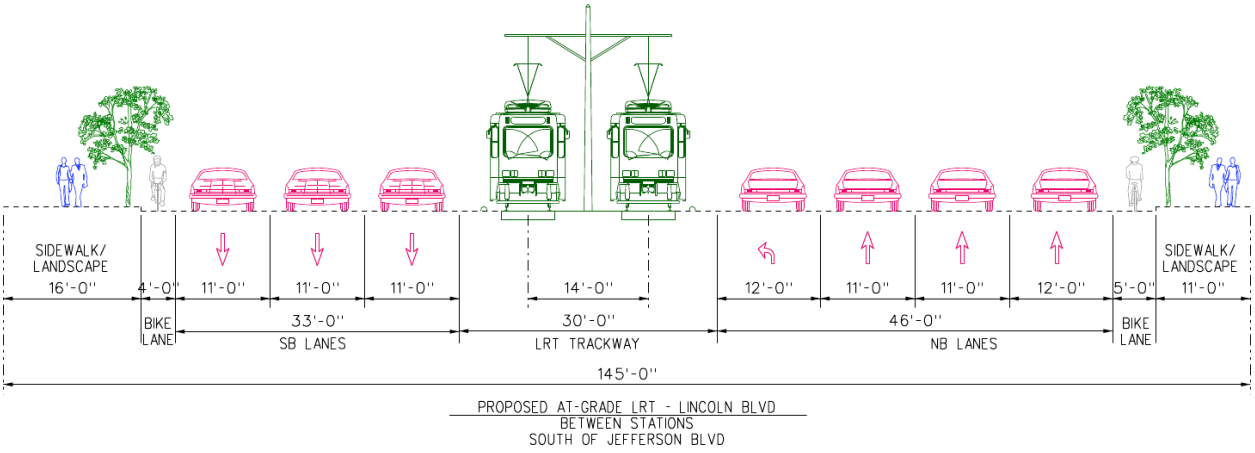
Figure 6. Lincoln Blvd Proposed At-Grade LRT Configuration – North of Venice Blvd



Source: STV, 2012

The cross-section shown Figure 7 is representative of the reallocation of street facilities with the proposed at-grade LRT on Lincoln Boulevard south of Jefferson Boulevard. One of the four existing travel lanes would be removed in both directions in order to accommodate the LRT trackway. The median would also be removed; however, left-turn pockets could still be accommodated at major intersections.

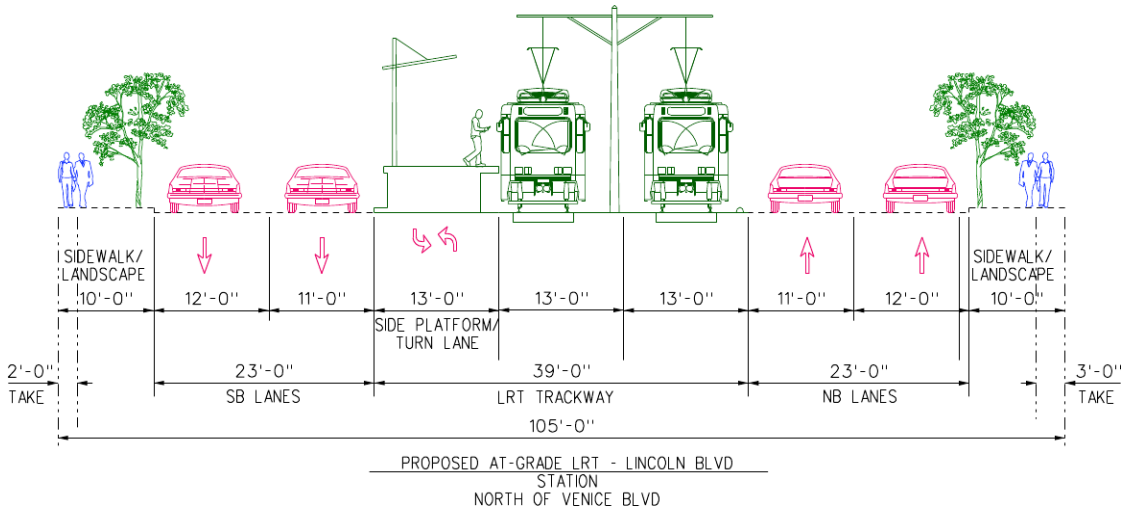
Figure 7. Lincoln Blvd At-Grade LRT Alignment – South of Jefferson Blvd



Source: STV, 2012

The cross-section shown in Figure 8 illustrates the proposed reallocation of street facilities at a representative at-grade LRT station on Lincoln Boulevard north of Venice Boulevard. The two existing travel lanes would be maintained in both directions; however, in order to accommodate the LRT trackway and platform in the center of the roadway, street parking would be removed from both sides of the street, sidewalks would be narrowed from 11 feet to 10 feet, and sliver ROW takes would be needed on both sides of the street. Station platforms would be split on either side of the intersection, which would allow enough space for left-turn pockets.

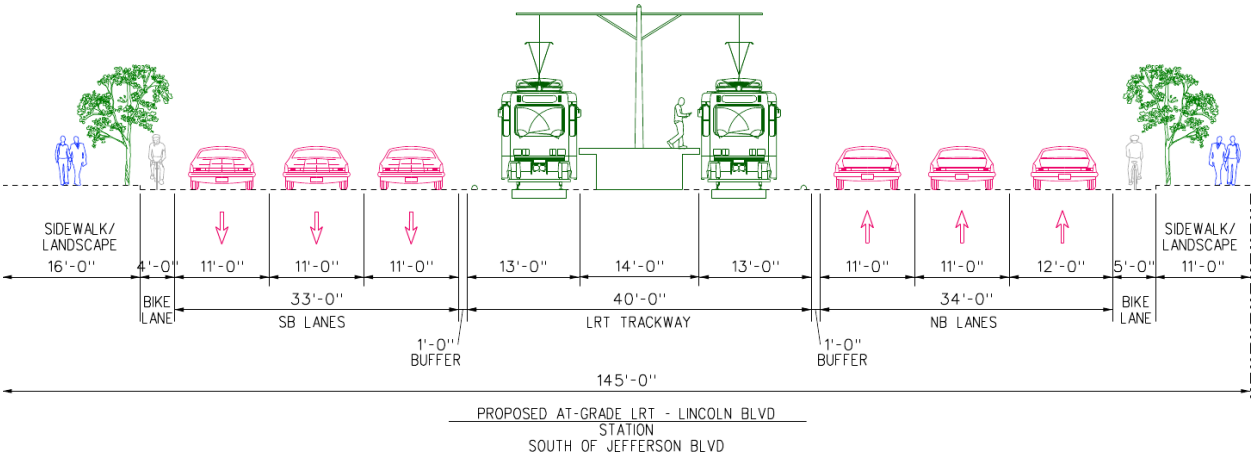
Figure 8. Lincoln Blvd At-Grade LRT Station – North of Venice Blvd



Source: STV, 2012

The cross-section shown in Figure 9 illustrates the proposed reallocation of street facilities at a representative at-grade LRT station on Lincoln Boulevard south of Jefferson Boulevard. One of the four existing travel lanes would be removed in both directions in order to accommodate the LRT trackway. The median would also be removed and left turns would be eliminated in the vicinity of the station.

Figure 9. Lincoln Blvd At-Grade LRT Station – South of Jefferson Blvd



Source: STV, 2012

Operations

It is likely that trains from the Metro Green Line in the southern portion of the Study Area would operate north along Lincoln Boulevard so that the service would essentially act as a Metro Green Line North Extension. However, the operational characteristics of a potential LRT line along Lincoln Boulevard will be influenced by the transit mode and service type selected in the Airport Metro Connector study that is currently underway. Additionally, the existing Santa Monica Big Blue Bus Rapid 3 would likely be discontinued with implementation of LRT along Lincoln Boulevard.

The Lincoln Boulevard At-Grade LRT service would operate at five-minute peak headways and 10-minute off-peak headways with average speeds of 15 to 20 miles per hour along the at-grade portions of the route. Speeds along the aerial and underground portions of the route could reach up to 30 miles per hour.

Station Locations

Stations would be located approximately every mile and are proposed at the following intersections:

- Colorado Boulevard & 4th Street
- Lincoln Boulevard & Ocean Park Boulevard
- Lincoln Boulevard & Venice Boulevard
- Lincoln Boulevard & State Highway 90
- Lincoln Boulevard & Jefferson Boulevard
- Lincoln Boulevard & Manchester Avenue
- Lincoln Boulevard & Sepulveda Boulevard
- Century Boulevard & Aviation Boulevard

Connections

The northern terminus of the Lincoln Boulevard At-Grade LRT line would be close to the Expo Phase II line , but the lines would not connect due to operational constraints in this area. The Expo Line station, however, would be within close walking distance of the Lincoln Boulevard At-Grade LRT station. The southern terminus of the Lincoln Boulevard At-Grade LRT line would directly connect with the planned Metro Crenshaw/LAX and Green lines at the Century Boulevard/ Aviation Boulevard Station, allowing through service to Norwalk.

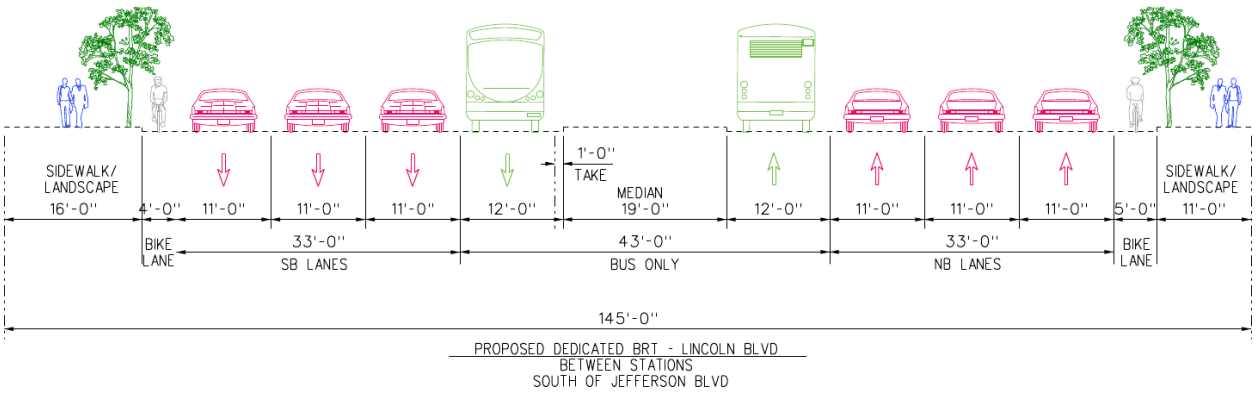
LINCOLN BOULEVARD BRT

As a first phase to LRT, bus rapid transit (BRT) is proposed along the corridor. A median running BRT system would be implemented with all-day bus-only lanes along Lincoln Boulevard from downtown Santa Monica to the LAX area. BRT improvements would include, but would not be limited to, the extension of service hours to all-day (5 AM to 9 PM), higher frequency (a minimum of 10-minute) peak headways, and station improvements such as improved shelters and real-time bus arrival information. The implementation of BRT along Lincoln Boulevard would preserve the future right-of-way needed for LRT once funding is available.

Rapid improvements to operating hours, headways and stations would be implemented along the entire corridor from 4th Street/Wilshire Boulevard in Santa Monica to Century Boulevard/Aviation Boulevard in the LAX area. Bus-only lanes would be implemented for a shorter distance, from 4th Street/Colorado Boulevard in Santa Monica to Sepulveda Boulevard/96th Street in the LAX area. The bus-only lanes would be at-grade for the entire length of the route, and would be center-running.

The cross-section shown on Figure 10 is representative of the reallocation of street facilities with the proposed bus-only lanes operating in the center of Lincoln Boulevard south of Jefferson Boulevard. One of the four existing travel lanes would be removed in both directions in order to accommodate the bus-only lane. The median would also need to be narrowed slightly from 20 feet to 19 feet.

Figure 10. Lincoln Blvd All-Day Bus-Only Lanes – South of Jefferson Blvd



Source: STV, 2012

4. LADOT MEMORANDUM OF UNDERSTANDING

The Westside Mobility Plan team entered into a Memorandum of Understanding (MOU) with LADOT to document the scope of work that would be provided for the initial Lincoln Bridge Feasibility Study.

SCOPE OF WORK FOR PRELIMINARY REVIEW OF BRIDGE DESIGN

A key component of this initial Phase 1 study was to identify the preliminary bridge design that would not add additional piers (or concrete) to Ballona Creek. This task was based on the following key assumptions:

1. Phase 1 will encompass a Feasibility Study. There will be no formal report created for Phase 1[1]. Detailed design analysis and construction cost estimates will not be performed for Phase 1. In addition, no surveying will be performed for Phase 1. Preliminary design concepts will be based on an aerial background.

2. The main components of the feasibility study include:

    a. Initial meeting with LADOT, Caltrans, Coastal Commission and other stakeholders to discuss the project's purpose and need and ascertain project design constraints and desired bridge design features. *(Note: Caltrans meeting will occur in 2014 following Coastal Commission briefing.)*

    b. Field review of the existing facilities. The field review will also include visual inspection of pavement conditions, bridge deck and piers.

    c. Research, compile and study of available documents including the DPR, as-builts, bridge maintenance log, bridge sufficiency rating, bridge inspection reports, geotechnical reports, utility maps, right of way maps, log of test borings, hydrology and hydraulics reports, traffic reports, accident reports, pavement condition reports.

    d. Meet with LA County Flood Control. *(Note: Meeting with LA County Flood Control has not yet been needed; however, we have obtained information from their public records for as-builts.)*

    e. Review of the transit component on Lincoln Boulevard from the Westside Mobility Study.

    f. Prepare conceptual design approach and elements. Conceptual plan, profile, typical section, bridge general plan, column layout plan are anticipated to be included.

    g. Evaluation/confirmation of the need to replace the existing structures (as opposed to building a new second bridge next to the existing one) based on current Caltrans design standards including seismic criteria.

    h. Evaluation to minimize the footprint of the bridge substructure in Ballona Creek.

[1] Note: Although a formal report was not included in the scope of work for the feasibility study, this report has been prepared to document the methodology, preliminary design and next steps for use by LADOT in the Lincoln Bridge project.

i. Interim meeting with LADOT to provide a draft working design approach update.

j. Presentation of the conceptual design to the stakeholders, using PowerPoint, boards and handouts.

k. Finalize the design concept based on comments received from stakeholders and concurrence from LADOT, Caltrans and the Coastal Commission.

Deliverable: PowerPoint presentation, boards and handouts for use at project team and stakeholder meetings (*up to 5 meetings with key stakeholders*).

5. PRELIMINARY DESIGN

This chapter presents the preliminary design conducted for the Lincoln Bridge Feasibility Study.

DESIGN HISTORY

In 2001, Caltrans approved a Draft Project Report to widen Lincoln Boulevard between Jefferson Boulevard and Fiji Way. The project was approximately 3,200 feet in length and located in the City of Los Angeles. Jefferson Boulevard is a major intersection at the southern limit of the project. Further north Lincoln Boulevard crosses over Ballona Creek. Culver Boulevard crosses over Lincoln Boulevard north of Ballona Creek. The intersection of Fiji Way is the northern limit of the project. The Playa Vista development is along the east side of Lincoln Boulevard. North of Ballona Creek, Marina Del Ray abuts Lincoln Boulevard along the west side. The Caltrans project planned to widen the roadway to eight lanes- four in each direction, and included the replacement of the Culver Boulevard overcrossing and widening the Lincoln Boulevard Bridge over Ballona Creek. Due to the California Coastal Commission's concerns about additional impacts to Ballona Creek and subsequent loss of funding, the project was not further developed.

Figure 11 displays the Location Map of the preliminary design for the project.

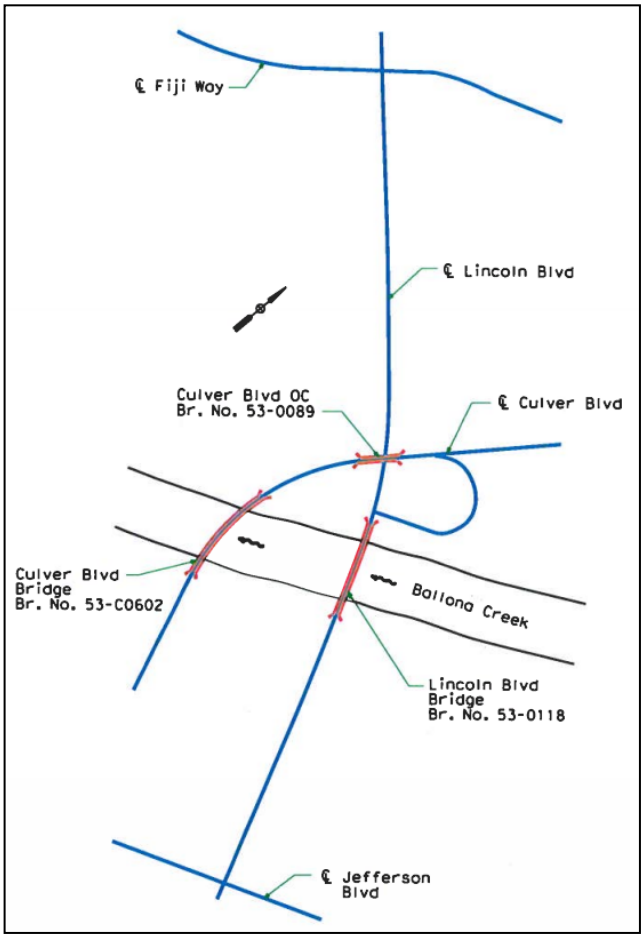


Figure 11. Preliminary Design Location Map

DESIGN OBJECTIVES & CONSTRAINTS

The Project objectives and constraints of this initial feasibility study are as follows:

1. Replace the Lincoln Boulevard bridge over Ballona Creek with a new bridge for the widened section, while minimizing the impact to the creek
2. Create a new multi-modal corridor to serve high capacity transit, bicyclists and pedestrians
3. Maximize Lincoln Boulevard widening to the east to minimize potential wetland impacts along the west side
4. Avoid impacting the property at the southeast quadrant of Lincoln Boulevard/Fiji Way
5. Minimize right-of-way impacts
6. Replace the Culver Boulevard overcrossing over Lincoln Boulevard to accommodate the widened Lincoln Boulevard

7. Match the existing alignment (vertical and horizontal) of Culver Boulevard west of Lincoln Boulevard to avoid impacting Culver Boulevard Bridge over Ballona Creek

DESIGN CRITERIA

Lincoln Boulevard is State Route 1 and is currently under Caltrans jurisdiction. The roadway design for both Lincoln Boulevard and Culver Boulevard primarily follows Caltrans design standards. Design relating to the proposed future LRT in the median of Lincoln Boulevard follows Los Angeles Metro design standards. The horizontal LRT curvature on Lincoln Boulevard supports a design speed of 50 mph (45 mph posted speed limit for vehicular traffic).

The design standard for the vertical clearance of Lincoln Boulevard at the Culver Boulevard overcrossing is 15 feet 6 inches. This complies with minimum standards that LA Metro has for LRT and is consistent with several other LRT segments in California operating in mixed flow traffic.

CONCEPTUAL DESIGN

The conceptual design of Lincoln Bridge over Ballona Creek, the Lincoln Boulevard alignment between Jefferson Boulevard to Fiji Way, and the preliminary design of Culver Bridge are presented below.

Lincoln Boulevard Bridge over Ballona Creek

Existing Bridge

From the 1937 design plans obtained from Caltrans, the existing Lincoln Boulevard Bridge over Ballona Creek, (Bridge No. 53-0118) originally known as Roosevelt Highway Bridge, is a 334.5 foot long four-span (77.25'-90'-90'-77.25') reinforced concrete deck supported on haunched (variable depth) steel plate girders. The bridge girders are supported by concrete abutments and pier walls founded on timber pile foundations. Ballona Creek has concrete lined slopes with a soft bottom channel[2]. The 64 foot roadway width is comprised of five total lanes; two southbound and three northbound with 2'-6" curbs on either side that include aesthetically designed concrete barriers for a total width of 69 feet (see Photo 1).

Photo 1. Existing Lincoln Boulevard Bridge over Ballona Creek

[2] Per 2003 California Coastal Commission Staff Report and 2011 Caltrans Bridge Inspection Records.

Existing pier walls are fixed at the base, leading to large piers and wide foundations, as shown in Figure 12.

Three quantities were calculated for the piers:

1. Existing pier wall footprint in the creek
2. Existing volume of pier footing concrete
3. Existing pier wall cross-section area

The summaries of these quantities are shown in the following table.

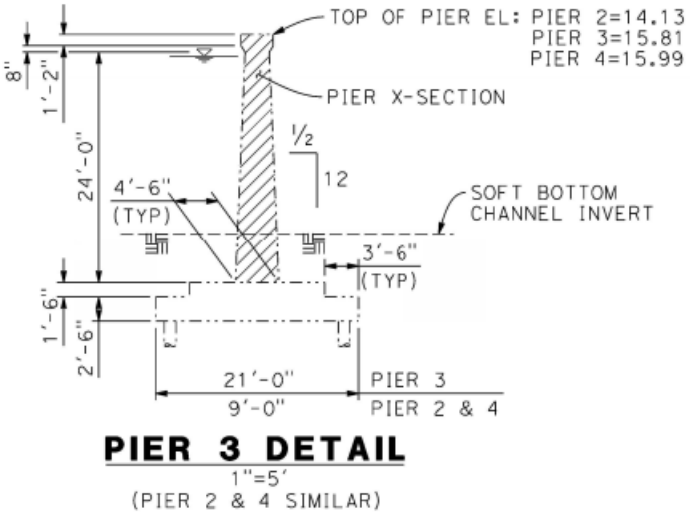


Figure 12. Pier Detail, Existing Lincoln Boulevard Bridge over the Ballona Creek

TABLE 2: EXISTING LINCOLN BOULEVARD BRIDGE PIER DIMENSIONS

LOCATION	EXISTING FOOT PRINT IN WATER (SQFT)	VOL OF FOOTING (CF/CY)	EXISTING PIER X-SECTION (SQFT)
PIER 2	73' X 4'-6"=329	22.5 SF X 75' = 1688/63	23'-11 3/8" X 3'-7"(AVE)=86
PIER 3	73' X 4'-6"=329	73.5 SF X 78' = 5733/212	25'-10" X 3'-6"(AVE)=91
PIER 4	73' X 4'-6"=329	22.5 SF X 75' = 1688/63	25'-10" X 3'-6"(AVE)=91
TOTAL	987 SF	9110 CF / 338 CY	268 SF

Bridge Design Goal

The goal for the bridge design was to develop a bridge replacement to meet the ultimate multi-modal roadway needs for the project, and have equal or less concrete in Ballona Creek.

Prior to recommending the proposed bridge design, STV reviewed the sub-structure of the existing bridge from as-built design plans (included as Appendix A). The existing bridge piers are founded on driven 30-foot long treated timber piles and have an allowable axial load capacity of 22 tons. Based on current bridge engineering practice for conceptual level bridge design, STV has assumed that the new bridge will be founded on driven 45-ton piles. These new piles will be driven between the existing timber piles in undisturbed soil, which is normal bridge geotechnical practice.

The existing bridge is 75 years old, and the 2011 Caltrans Bridge Maintenance Report (included as Appendix B) gives the existing bridge a sufficiency rating of over 90 (out of a 100), which is extremely good. Normally, a bridge will not be eligible for HBP (Highway Bridge Program) funds for replacement based on such a high sufficiency

rating, which is likely the reason that the original Caltrans design approach (over 10 years ago) was to keep the existing bridge and build a second bridge next to it since the existing bridge is in very good condition and did not required upgrades. Consequently, since the current bridge structure foundation type is adequate for the in-situ soil conditions, STV can be confident that the proposed structure will also be adequate for the existing soil conditions.

Geotechnical studies are not usually completed for the preliminary feasibility level of design on Caltrans bridge projects. Even at the next stage of design, which is the PSR level required by Caltrans, the Geotechnical report, called a Preliminary Foundation Report (PFR), is typically very preliminary and is based on existing local geotechnical information from nearby projects.

Proposed Replacement Bridge

Upon reviewing the bridge parameters it was determined that the most efficient way to minimize pier size was to pin the bottom of the pier to the footing, which required creating a monolithic connection between the top of the pier and the superstructure, as shown in Figure 13. A cast-in-place prestressed box girder bridge was chosen for being historically cost effective and seismically efficient.

The 130' wide replacement bridge will add an additional southbound lane, a median running transit way, bike lanes and sidewalks for increased safety and capacity for all modes of travel, as shown in Figure 14. The proposed replacement monolithic cast-in-place prestressed concrete box girder bridge will match the existing span configurations and concrete barrier's aesthetic appeal.

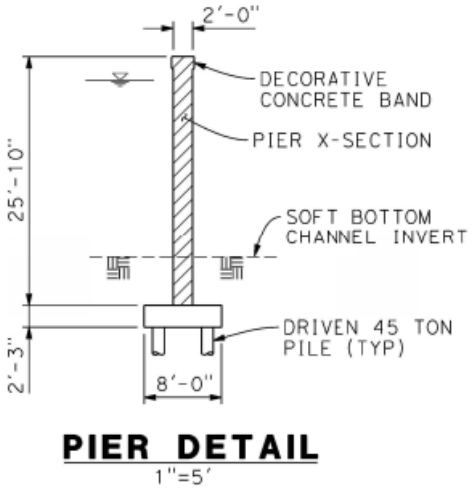


Figure 13. Pier Detail, Proposed Lincoln Boulevard Bridge over the Ballona Creek

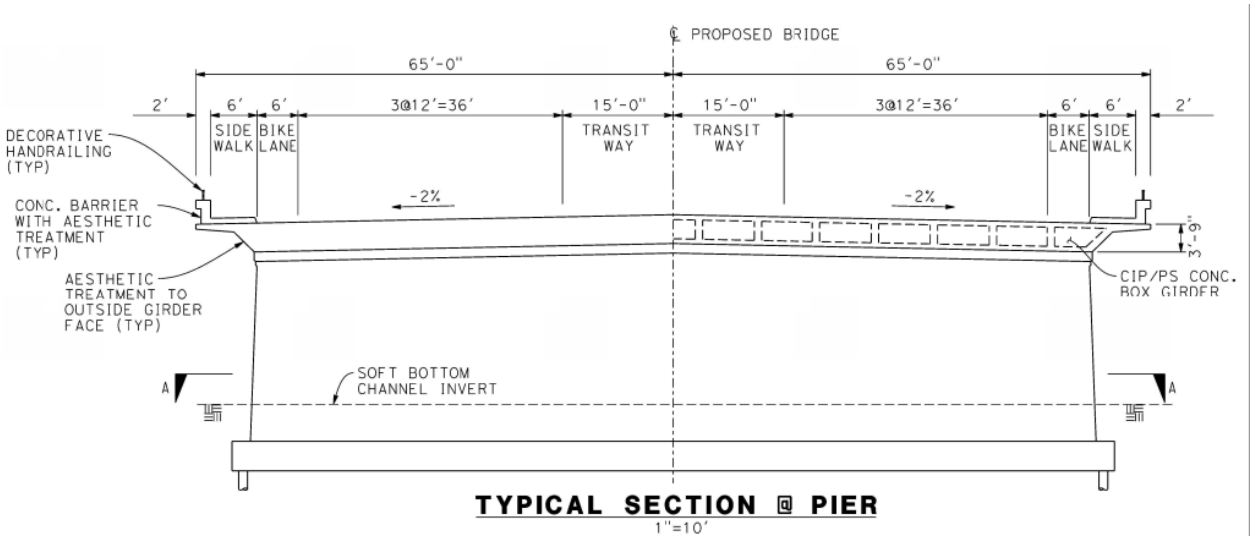


Figure 14: Typical Section of the Proposed Lincoln Boulevard Bridge over the Ballona Creek

As mentioned, the new pier wall foundations will be pinned at the base, allowing smaller pier walls and footings. This will reduce the pier foot print in the water by almost 30% while increasing the overall bridge width approximately 1.5 times from 69 feet to 130 feet. In addition, reductions in the pier footing volume and pier wall cross-section area are 30% and 40%, respectively, as shown in Table 3.

TABLE 3: IMPACTS TO THE BALLONA CREEK, PROPOSED LINCOLN BOULEVARD BRIDGE

LOCATION	PROPOSED FOOT PRINT IN WATER (SQFT)	VOL OF FOOTING (CF/CY)	PROPOSED PIER X-SECTION (SQFT)
PIER 2	116' X 2'-0" = 232	8' X 2'-3" X 121' = 2178/81	23'-11⅜" X 2'-0' = 48
PIER 3	116' X 2'-0" = 232	8' X 2'-3" X 121' = 2178/81	25'-10" X 2'-0" = 52
PIER 4	116' X 2'-0" = 232	8' X 2'-3" X 121' = 2178/81	25'-10" X 2'-0" = 52
TOTAL	696 SF	6534 CF / 243 CY	152 SF
% PROPOSED / EXISTING	696 / 987 = 71%	6534 / 9110 = 72%	152 / 268 = 57%

The developed General Plans of the existing bridge and the proposed bridge concept are included in Appendix C.

Bridge Construction

It is anticipated that the new bridge will be constructed in two stages while maintaining traffic on the existing bridge.

1. ***Stage 1*** bridge construction will occur just north of the existing bridge while traffic continues to travel on the existing bridge. It is anticipated that precast concrete piles (to be finalized during final design) will be driven into the soft bottom channel. Temporary coffer dams will be used to isolate and allow for excavation and forming the new concrete pile caps in the existing soft bottom invert of Ballona Creek. Once Stage 1 bridge construction is complete the traffic will be shifted off the existing bridge and onto the newly constructed northerly portion.

2. ***Stage 2*** bridge construction will start with the removal of the existing Lincoln Boulevard Bridge. Concrete, reinforcing steel and steel girders will be salvaged and recycled following current sustainability practice. Temporary coffer dams will be constructed around the existing pile footings in the existing mud bottom creek invert. The existing footings will be demolished and removed. The existing 30 foot long timber piles at each pier will be left in place consistent with normal bridge construction practice. New precast concrete piles will be driven between the existing timber piles. Concrete pile caps will be formed and the new concrete piers constructed. Temporary falsework will be erected in the channel to facilitate construction of the cast-in-place concrete bridge superstructure. Once the stage 2 concrete is cured, a concrete closure pour will be cast to tie the two bridge halves together.

Lincoln Boulevard Alignment

Appendix D presents the proposed horizontal and vertical alignments of Lincoln Boulevard. The design is based on a 50 mph design speed. A LRT station north of the intersection of Lincoln Boulevard and Jefferson Boulevard has been incorporated into the preliminary design. Currently, the intersection of Lincoln Boulevard and Jefferson Boulevard has two southbound left-turn lanes. In order to accommodate the LRT station and reduce right-of-way impacts, the conceptual plan shows one southbound left-turn lane.

Currently, eight through vehicular lanes are provided at the intersection of Lincoln Boulevard and Jefferson Boulevard. To the north, one lane in the northbound direction drops prior to the Lincoln Boulevard Bridge over Ballona Creek, and the two southbound lanes over the bridge widen to four lanes at the intersection. The existing bridge has five lanes (three northbound lanes and two southbound lanes), with no sidewalks, median or bicycle lanes (see Photo 2).

Photo 2. Existing Lincoln Boulevard Bridge over the Ballona Creek

The proposed design widens the roadway to six lanes, adds sidewalk and Class II bike lanes on both sides as well as accommodates a future median running LRT system. The widening is along the east side of Lincoln Boulevard.

North of the new widened bridge over Ballona Creek, the existing loop ramp connecting Lincoln Boulevard to Culver Boulevard is realigned to accommodate widened Lincoln Boulevard.

There is an existing Class I bike path that crosses under Lincoln Boulevard running along the north bank of Ballona Creek. (see Photo 3).

The profile of the bike lane may need minor adjustments to meet desired vertical clearances under the new widened Lincoln Boulevard Bridge over Ballona Creek.

Photo 3. Existing Ballona Creek Bicycle Path

North of the Lincoln Boulevard Bridge over Ballona Creek, Culver Boulevard crosses over Lincoln Boulevard (Bridge No. 53-0089). This bridge will be replaced to accommodate the widened Lincoln Boulevard (see Photo 4 for the existing bridge).

Photo 4. Existing Culver Boulevard Overcrossing

North of the Culver Boulevard overcrossing, the proposed Class II bike lanes will connect to the bicycle paths proposed by the Santa Monica Bay Restoration Commission. This bicycle path will connect to Marina del Rey and the Marvin Braude Bike Trail that continues north along the coast.

North of the Culver Boulevard overcrossing, the number one northbound lane will become a "trap" left-turn lane at the Lincoln Boulevard and Fiji Way intersection. The resulting lane configuration at Lincoln Boulevard and Fiji Way intersection is as follows:

Existing

- Two northbound left-turn lanes
- Three northbound through lanes
- Three southbound through lanes

Proposed

- One northbound left-turn lane
- Two northbound through lanes
- Two southbound through lanes (widens to three southbound lanes just past intersection)

The proposed Lincoln Boulevard alignment will require additional right-of-way. Most of the additional right-of-way will occur along the east side of Lincoln Boulevard. Right-of-way impacts along the west side of Lincoln Boulevard will be minimal excepting at the north end of the project. Maintaining the southbound left-turn lane at the Lincoln Boulevard and Fiji Way intersection results in an impact to the property on the northwest corner of the intersection. The conceptual design indicates that the building itself would not be directly impacted; however, the landscaping set-back would be reduced.

Culver Boulevard Alignment

Appendix E contains figures displaying the horizontal and vertical alignments for Culver Boulevard. The design is based on a 40 mph design speed. The Culver Boulevard overcrossing will be replaced by a new bridge to accommodate the widened Lincoln Boulevard. Culver Boulevard will not be widened. The new overcrossing will have a vertical clearance of 15'-6" over Lincoln Boulevard, based on a 2-span Reinforced Concrete Box bridge with a structure depth to maximum span ratio of 0.055. As the profile indicates, the new alignment will match with the existing roadway grade prior to the Culver Boulevard Bridge over the Ballona Creek (Bridge No. 53-C0602). As a result, the proposed design will not impact this bridge.

The existing ground elevations for both the Lincoln and Culver Boulevard alignment were based on topographic data provided by the Santa Monica Bay Restoration Commission consulting team. Electronic files from the Caltrans 2001 study were not available; therefore, spot checks were made with the Caltrans hard copy profile sheets and elevations were estimated by graphical scaling. The estimated elevations were consistent with the data provided by the Restoration Commission.

OTHER DESIGN CONSIDERATIONS

As discussed previously, the purpose of this project was to conduct an initial feasibility study for the Lincoln Bridge design. A number of other design considerations will need to be incorporated into future plans for the bridge replacement and widening project as outline below.

Utilities

Both the Lincoln Boulevard Bridge over the Ballona Creek and the Culver Boulevard Overcrossing carry a number of utility lines (see Photos 5 and 6). There are overhead power lines and street lighting in the project area. Utility adjustments and relocation will be a key design component and early pro-active utility research, coordination and design is strongly recommended as the project development process progresses.

Photos 5 & 6: Utility lines under the existing Lincoln Boulevard Bridge and Culver Boulevard Overcrossing

Wetlands

Based on the preliminary delineation of potential wetland areas provided by the California Coastal Commission, the following areas within the influence of the proposed project may have wetlands:

- Vicinity of the existing loop ramp connecting Culver Boulevard and Lincoln Boulevard
- West of Lincoln Boulevard, from Jefferson Boulevard to the Ballona Creek
- Southeast quadrant of the Lincoln Boulevard & Fiji Way intersection
- Southwest quadrant of the Lincoln Boulevard & Fiji Way intersection

Appendix F contains the Preliminary Delineation of California Coastal Commission Jurisdictional Areas.

Ballona Wetlands Project

The Santa Monica Bay Restoration Commission has a project that expands the network of bicycle paths surrounding the area. Currently, the bike lane project has various options (current concepts are contained in Appendix G). The Project Development Team for Lincoln Boulevard/Culver Boulevard project should have continued communication with the Restoration Commission and their team for the Bike Lane project to ensure design consistency between the two projects.

Aesthetics

The aesthetics of the bridge will be addressed through future design efforts. Aesthetics are typically explored as part of the detailed design preparation, and are often based on input from the community. Aesthetic considerations will include preserving the view sheds from the bridge and incorporating artistic design features into the bridge design.

Sea-Level Rise

The Coastal Commission recently released the *California Coastal Commission Draft Sea-Level Rise Policy Guidance* with a Public Review Draft Comment Period from October 13, 2013 through January 15, 2014. The report outlines guidance for California's coastal communities in preparation for the effects of sea-level rise in response to climate change. Specifically, guidance is provided on addressing sea-level rise in Local Coastal Programs (LCPs) and Coastal Development Permits (CDPs). As the design of the Lincoln Bridge progresses, the City will work with the Coastal Commission to determine the appropriate design requirements to account for sea-level rise.

CONCEPTUAL PROJECT COSTS

The estimated construction cost done at this early conceptual stage in 2013 dollars is shown below, which includes contingencies. The estimate does not include future light rail elements including track, station or systems.

Lincoln Boulevard Bridge Replacement	$10,887,500
Culver Boulevard Bridge Replacement	$ 1,716,000
Roadway Engineering Elements	$ 9,375,000
Total	$21,978,500

6. NEXT STEPS

The scope of work for the feasibility study outlined the need to identify next steps required for project approval based on the outcome of the preliminary design plans and meetings with key stakeholders. Based on the outcome of the feasibility study, Fehr & Peers will work with LADOT to determine the next steps of the Lincoln Boulevard widening project and additional work necessary for Caltrans and Coastal Commission approval. We anticipate that Phase 2 of this study will entail updating the 2001 Draft Project Report prepared by Caltrans.

Many of the additional studies outlined below would typically be done at the PSR level or later in the Caltrans project development process. This feasibility study is at a pre-PSR level, although much of the engineering already done can be used in the PSR/PR.

1. Developing at least two build alternatives (typically required by Caltrans)
2. Environmental Determination (typically PEAR)
3. Traffic Studies
4. Advanced Planning Studies (Bridges)
5. Preliminary Foundation Report (PFR)
6. Storm Water Data Report (SWDR)
7. Preliminary Hydrology/Hydraulic Study
8. Right of Way Data Sheet
9. Community Involvement (Plan)
10. Schedule
11. Funding
12. Costs
13. Typical Sections/Typical Cross Sections
14. Initial Site Assessment (Hazardous Material)

Aesthetics typically occurs further into the design process unless it is desired to include it at the PSR level.

APPENDIX A:

CALIFORNIA DEPARTMENT OF TRANSPORTATION AS-BUILT PLANS

California Department of Transportation
Division of Maintenance

Structure Maintenance and Investigations

BRIDGE

INSPECTION

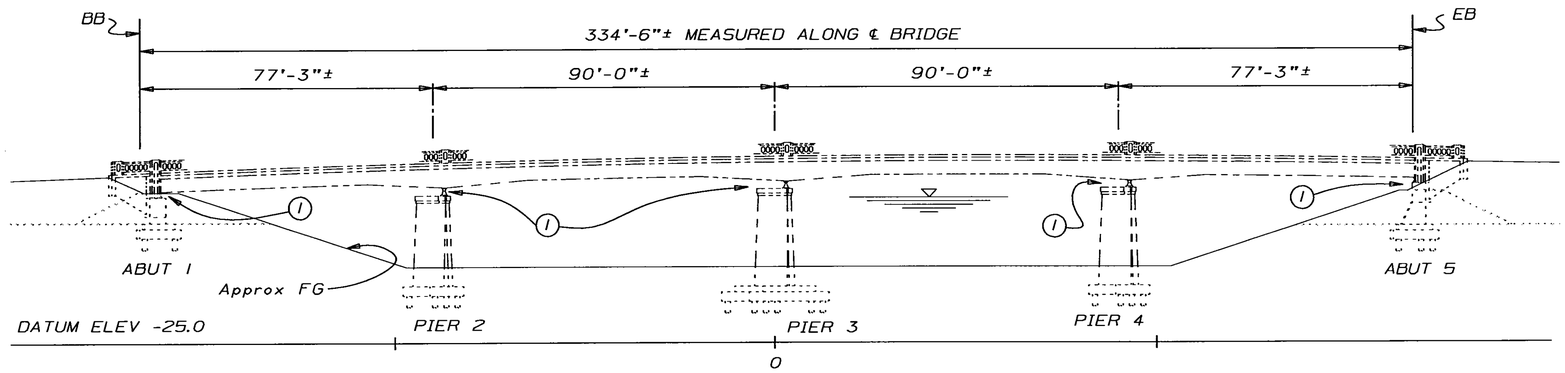
RECORDS

INFORMATION

SYSTEM

The requested documents have been generated by BIRIS.

Records for “Confidential” bridges may only be released outside the Department of Transportation upon execution of a confidentiality agreement.



ELEVATION

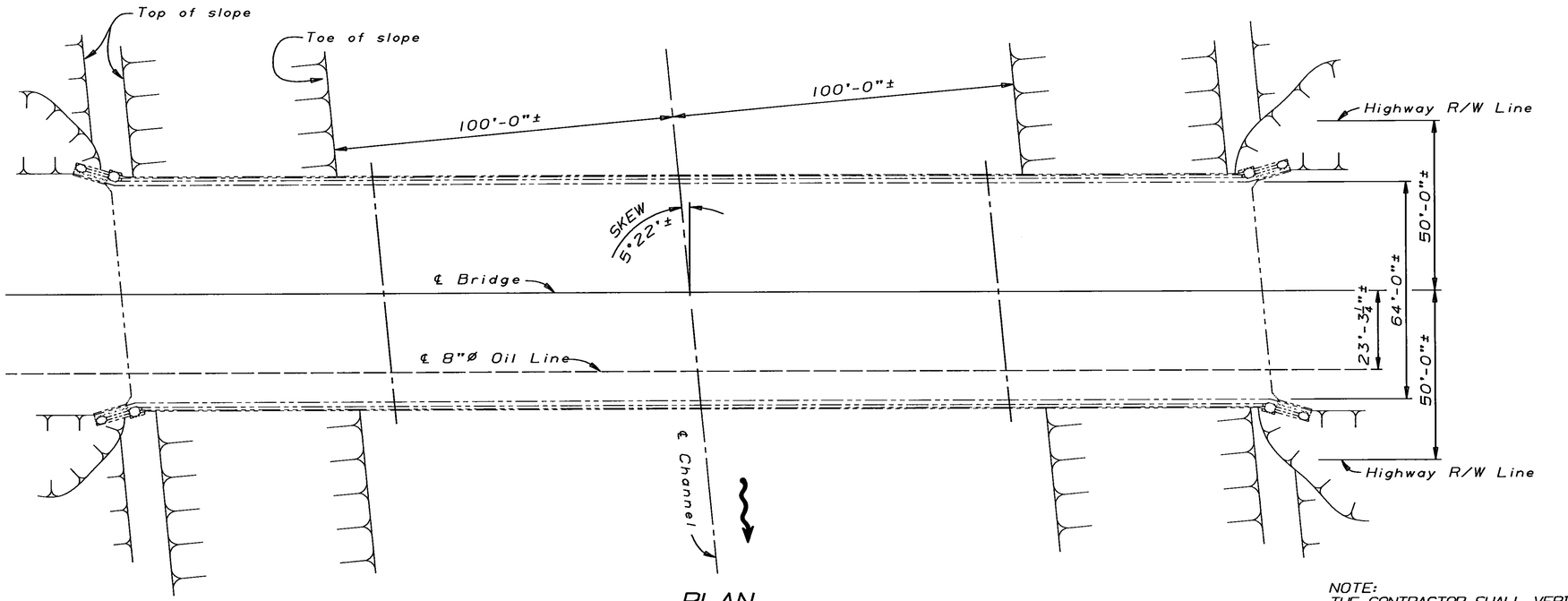
1"=20'

(1) Concrete Pedestals to be placed between existing bearing assemblies. Typical at Abutments and Piers.

- BALLONA CREEK BR. 53-118

QUANTITIES

STRUCTURAL CONCRETE, BRIDGE	26	CY
DRILL AND BOND DOWEL	175	LF
BAR REINFORCING STEEL (BRIDGE)	3,140	LB



PLAN

1"=20'

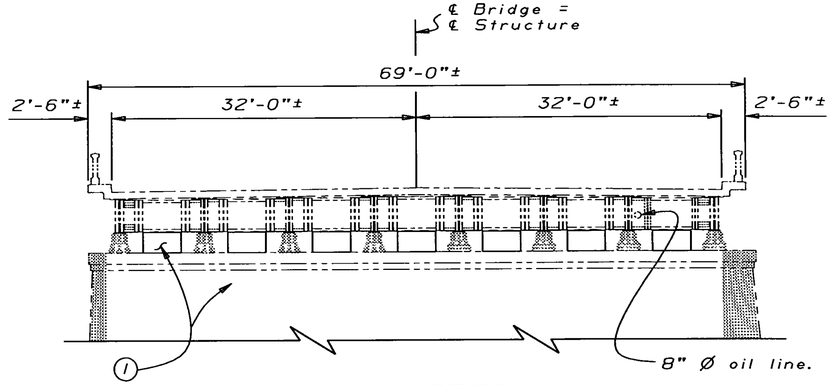
NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	1,90,405	Var	137	167

M. Z. Haleem
REGISTERED ENGINEER - CIVIL

REGISTERED PROFESSIONAL ENGINEER
M. Z. HALEEM
No. 24743
Exp. 12-31-97
CIVIL
STATE OF CALIFORNIA

9-19-94
PLANS APPROVAL DATE



TYPICAL SECTION

⅛"=1'-0"

Note:
Pier shown, Abutments similar

INDEX TO PLANS

GENERAL NOTES
LOAD FACTOR DESIGN

DESIGN: BRIDGE DESIGN SPECIFICATIONS (1983 AASHTO with Interims and Revisions by CALTRANS)

SEISMIC LOADING: Peak Rock Acceleration = 0.7 g
Depth of Alluvium ≥ 150 ft.

REINFORCED CONCRETE: (EXIST)
f_y = 40,000 psi
f'_c = 5,000 psi
n = 9

(NEW CONST)
f_s = 60,000 psi
f_c = 4,000 psi
n = 9

NO CORRECTIONS THIS SHEET

AS BUILT

CORRECTIONS BY H.O. WILL / BJE

CONTRACT NO. 07-199G4

DATE 6-12-96/9-9-97

Ramin Rashedi
DESIGN ENGINEER

DESIGN	BY Zak Haleem/B. Wu	CHECKED Kien T. Le	LOAD FACTOR DESIGN		
DETAILS	BY Dale Kubochi 2-92	CHECKED Kien T Le	LAYOUT	BY Zack Haleem	CHECKED Kien T Le
QUANTITIES	BY Lai Fong	CHECKED Dae Yoo	SPECIFICATIONS	BY 8/94	PLANS AND SPECS COMPARED

DS OSD 2138 (CADD 4/89)

ORIGINAL-SCALE-IN INCHES FOR REDUCED PLANS 0 1 2 3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES
STRUCTURE DESIGN 11

CU 07
EA 119961

BRIDGE NO.	POST MILE
53-118	30.36

EARTHQUAKE RETROFIT PROJECT NO. 198

BALLONA CREEK BRIDGE
GENERAL PLAN

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 2-20-92 | 11-3-92 | 8-12-93 | 8-17-93 | 12-9-93 | 12-18-93 | 8-9-94 | 8-11-94

SHEET	OF
1	3

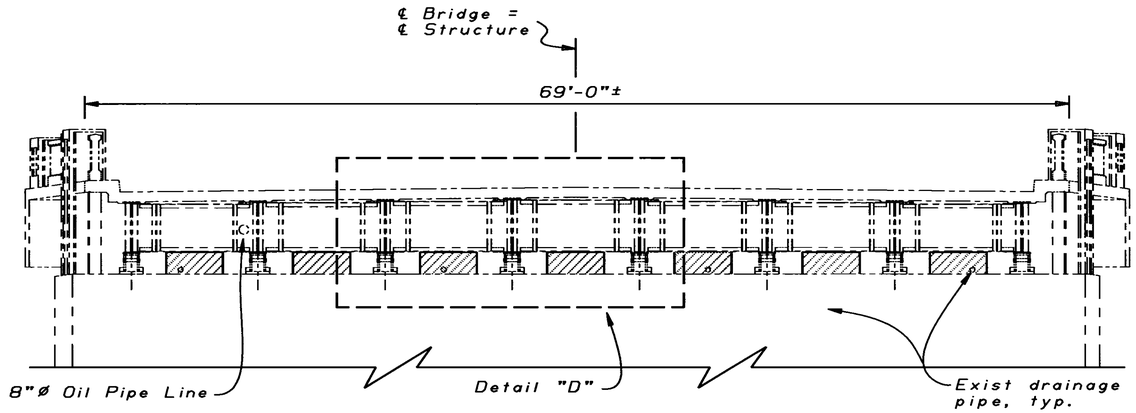
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	1,90,405	Var	138	167

M.Z. Haleem
REGISTERED ENGINEER - CIVIL

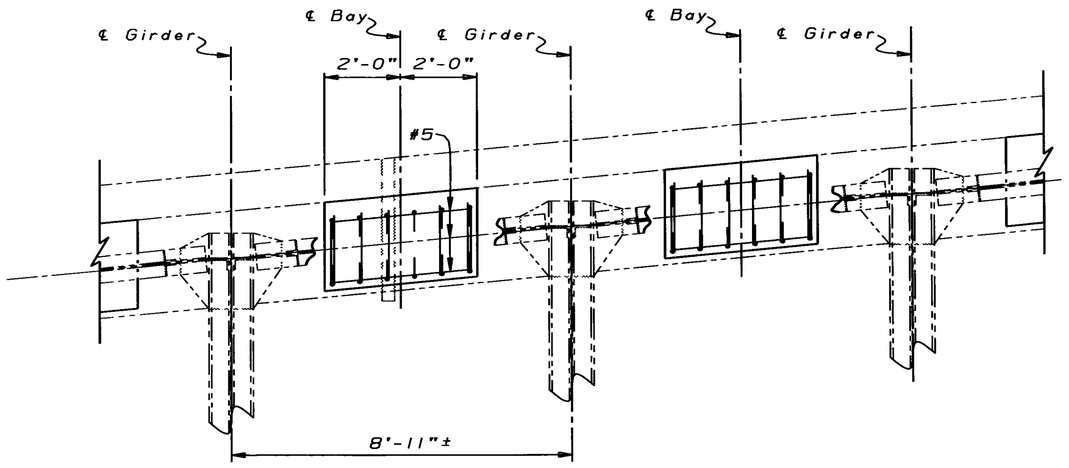
REGISTERED PROFESSIONAL ENGINEER
M.Z. HALEEM
No. 24743
Exp. 12-31-97
CIVIL
STATE OF CALIFORNIA

9-19-94
PLANS APPROVAL DATE

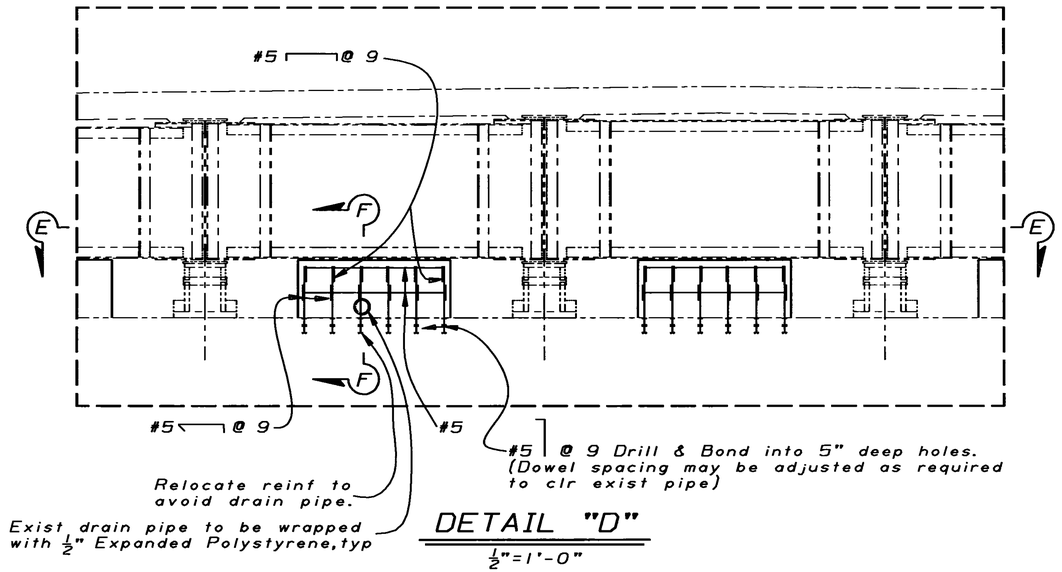
Note:
Details shown are similar for Abut 1 and Abut 5
New concrete pedestal, tot 7 per Abut



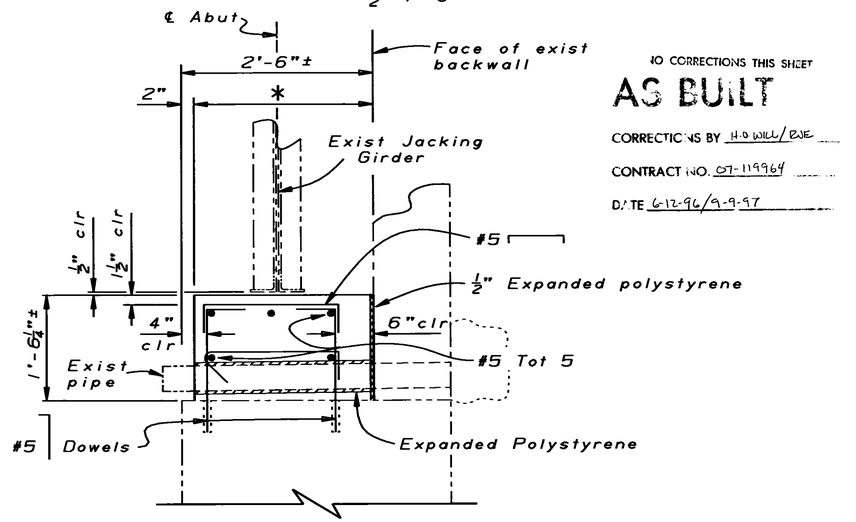
ELEVATION
3/16"=1'-0"



SECTION E-E
1/2"=1'-0"



DETAIL "D"
1/2"=1'-0"



SECTION F-F
1"=1'-0"

* Slope to drain 1/4" max vert drop

NO CORRECTIONS THIS SHEET
AS BUILT
CORRECTIONS BY H.O WILL/ BJE
CONTRACT NO. 07-119964
DATE 6-12-96/9-9-97

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

DESIGN	BY Zak Haleem/B. Wu	CHECKED Kien T. Le	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN 11	BRIDGE NO. 53-118
DETAILS	BY Dale Kubochi 8-93	CHECKED Kien T Le			POST MILE 30.36
QUANTITIES	BY Lai Fong	CHECKED Dae Yoo			

EARTHQUAKE RETROFIT PROJECT NO. 198

BOLLONA CREEK BRIDGE

ABUTMENT DETAILS

05 OSD 2139 (CADD 4/99)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 07
EA 119961

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 8-19-93 | 12-9-93 | 12-13-93 | 7-5-94 | 8-8-94

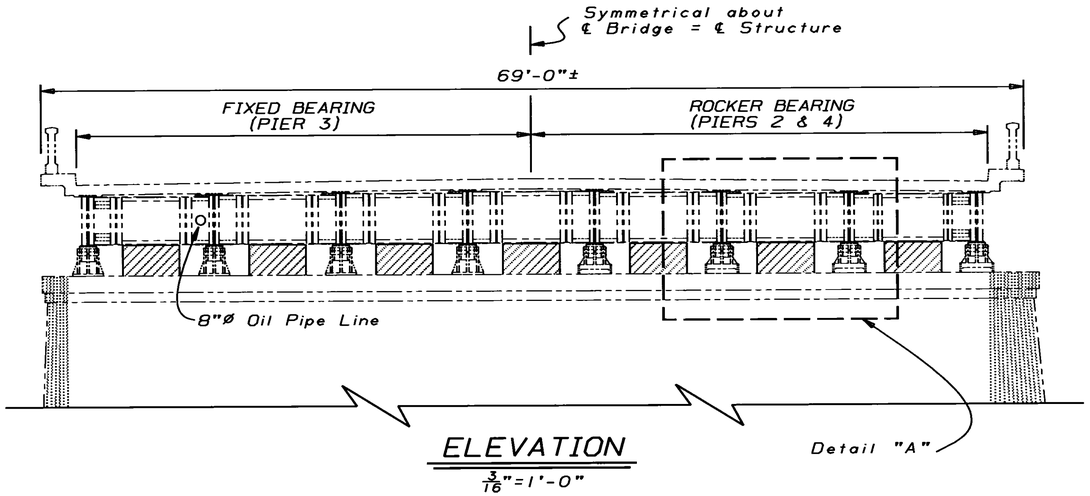
SHEET 2 OF 3

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	1,90,405	Var	139	167

M.Z. Haleem
REGISTERED ENGINEER - CIVIL

REGISTERED PROFESSIONAL ENGINEER
M.Z. HALEEM
No. 24743
Exp. 12-31-97
CIVIL
STATE OF CALIFORNIA

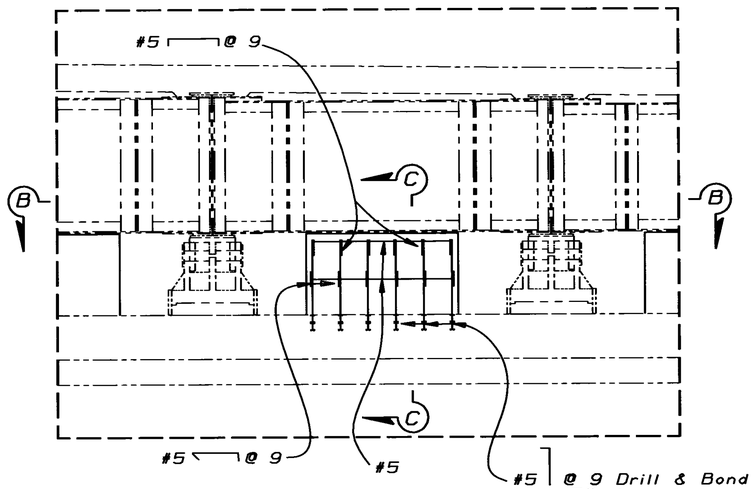
9-19-94
PLANS APPROVAL DATE



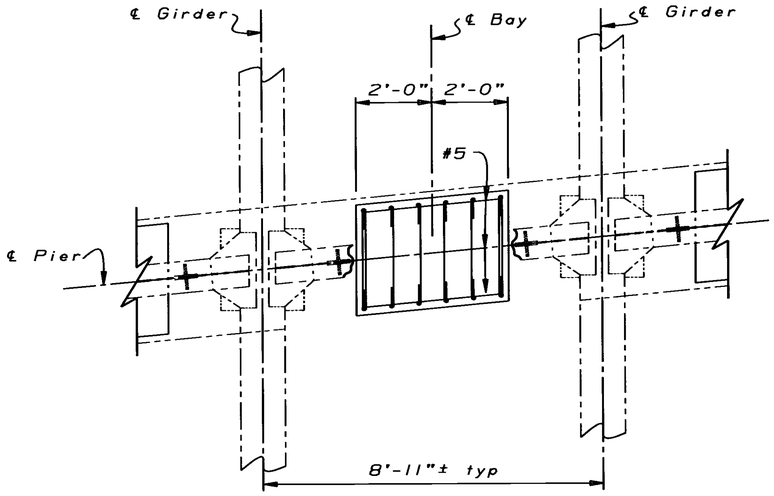
ELEVATION
$\frac{3}{16}$"=1'-0"

Note:
Details shown are similar for Piers 2, 3, and 4

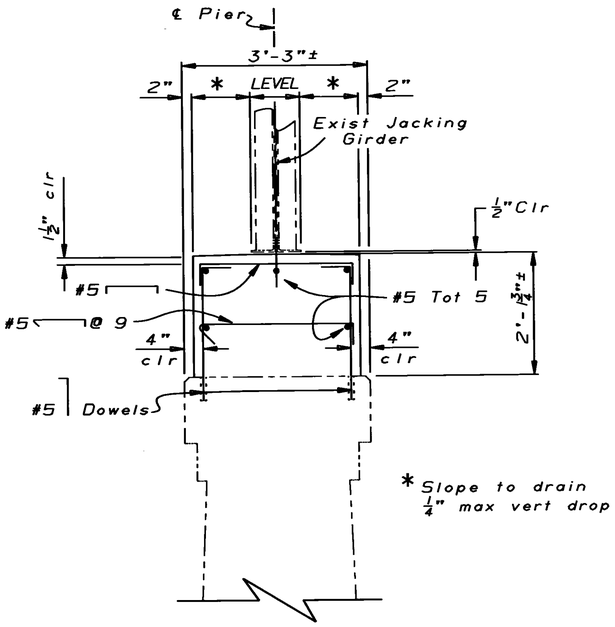
New concrete pedestals, tot 7 per pier



DETAIL "A"
$\frac{1}{2}$"=1'-0"



SECTION B-B
$\frac{1}{2}$"=1'-0"



SECTION C-C
$\frac{3}{4}$"=1'-0"

NO CORRECTIONS THIS SHEET
AS BUILT
CORRECTIONS BY MO WU/RJE
CONTRACT NO. 07-119964
DATE 6-12-96/9-9-97

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

EARTHQUAKE RETROFIT PROJECT NO. 198

BALLONA CREEK BRIDGE

PIER DETAILS

DESIGN	BY Zak Haleem/B. Wu	CHECKED Kien T. Le	
DETAILS	BY Dale Kubochi 8-93	CHECKED Kien T Le	
QUANTITIES	BY Lai Fong	CHECKED Dae Yoo	

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES
STRUCTURE DESIGN 11

CU 07
EA 119961

BRIDGE NO. 53-118
POST MILE 30.36

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 8-17-93 | 12-9-93 | 12-13-93 | 7-5-94 | 8-8-94

SHEET 3 OF 3

DS OSD 2139 (CADD 4/89)

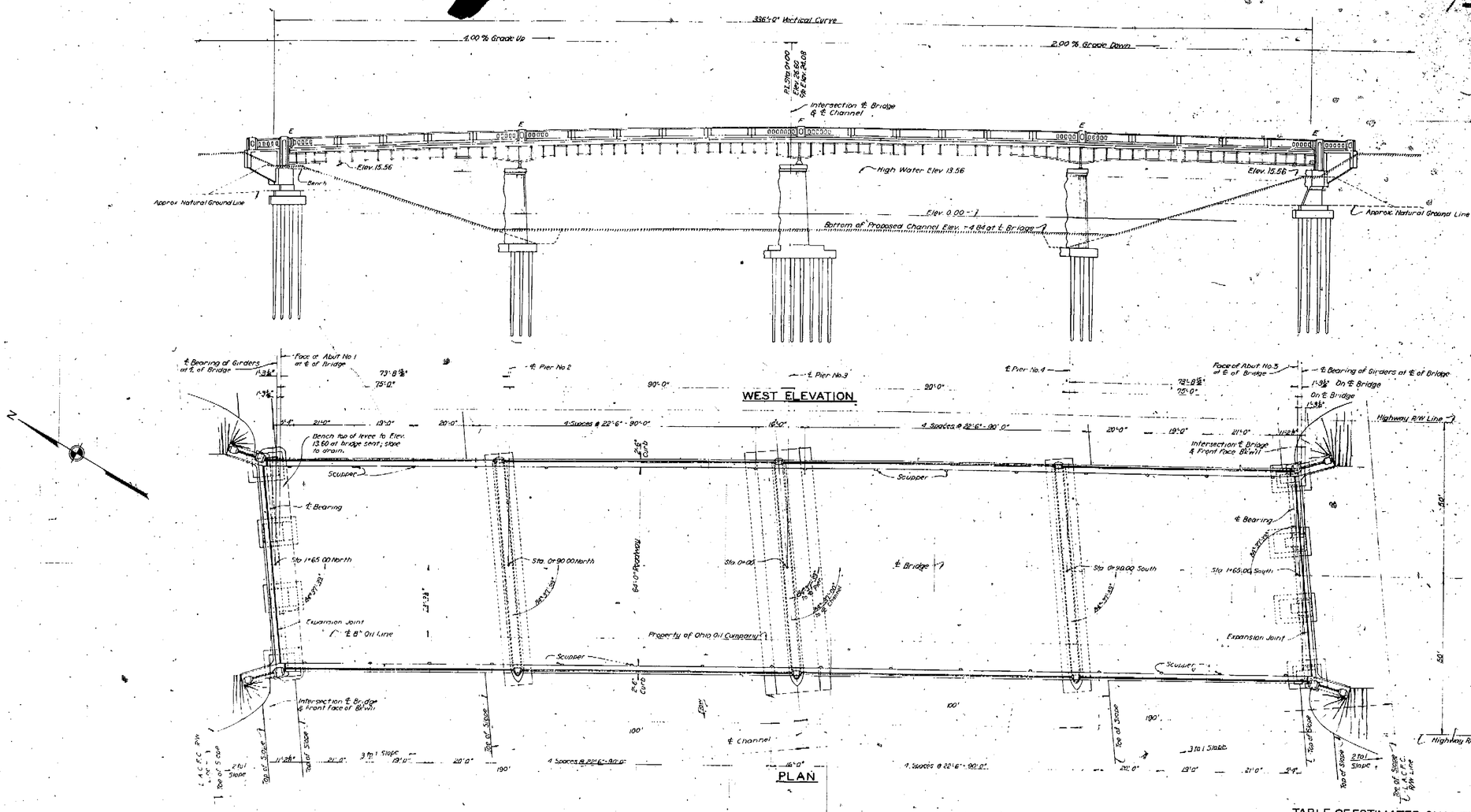
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

WAR DEPARTMENT

CORPS OF ENGINEERS, U.S. ARMY

7-LA-1

1



GENERAL NOTES

All design is based on the use of concrete having an ultimate strength of 3000 lbs. per sq. in.

Floor slab shall be poured as shown on slab details, sheet No 9

Provide substantial keys at all construction joints.

Exposed edges of concrete shall be beveled ¾" where no other bevel is noted.

PAINT: Shop - All structural metal shall be thoroughly cleaned at the shop and shall receive one shop coat of red lead paint, except metal to be galvanized or encased in concrete, which shall not be painted. Finished surfaces of pins, castings and base plates shall be protected by a coat of white lead and tallow.

Field - All structural metal not encased in concrete shall receive the second and third coats of paint in the field. For surfaces inaccessible after erection, both field coats shall be red lead. For all other surfaces both field coats shall be aluminum.

Payment for shop cleaning and painting shall be included in the unit price bid for the item so cleaned and painted.

Detail shop drawings for all Structural Steel, Cast Steel and Wrought Iron, shall be submitted to the Corps of Engineers, U.S. Army, in duplicate and shall be approved before material is ordered or work started.

Quantity of "Bridge Excavation" given is based on assumption that proposed channel excavation is not made.

Quantity of "Bridge Excavation" is estimated at the quantity removed from within vertical planes which are 1 ft. outside the neat lines of footings or walls.

Quantity of "Treated Timber Piles" is based on an estimated length of 40 ft. per pile for abutments and 30 ft. for piers.

Where bituminous felt is specified on plans for use in partition or expansion joints, it shall be securely stitched to one face of concrete with copper wire.

Unless otherwise noted, all reinforcing bars shall be lapped a minimum of 50 diameters.

8" oil line to be relocated and erected on bridge by owner.

DESIGN DATA

DESIGN SPECIFICATIONS: A.A.S.H.O. Standard Specifications for Highway Bridges of 1935, modified as indicated on this sheet and the stress sheet.

LIVE LOAD: Highway H-20 A.A.S.H.O. 1935.

FUTURE SIDEWALKS: Structure is designed to support two future 5 ft. Sidewalks. See stress Sheet.

PILE LOADS: Design of foundations is based upon a maximum pile pressure of 22 tons per pile for vertical loads and a maximum pressure of 25 tons per pile for combinations of vertical and horizontal loads.

SEISMIC FORCE: In addition to the horizontal forces specified in the A.A.S.H.O. Specifications, the structure is designed to withstand a horizontal force in any direction equal to 8% of the vertical load. This force is applied in combination with dead load plus ℄ live load.

CONTRACT PLANS
Contract No. _____
Document No. 70001934

Note: This drawing is not to scale, follow dimensions.

TABLE OF ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Bridge Excavation	Cu. Yds.	3,500
Treated Timber Piles	Lin. Ft.	12,400
Concrete in Piers and Abutments.	Cu. Yds.	1,310.3
Concrete in Roadway Slab and Curb	Cu. Yds.	709.7
Concrete in Handrail	Cu. Yds.	43.0
Reinforcing Steel	Lbs.	209,350
Fabricated Structural Steel	Lbs.	854,000
Cast Steel in Bridge Shoes	Lbs.	30,400
Wrought Iron Scuppers	Lbs.	1,870

See Sheet No 12 for estimated quantities for temporary bridge; this table does not include any quantities for temporary bridge.

* Includes anchor bolts, pins, load blocks under shoes and expansion shields in under-run to structural steel in girder spans.

† Concrete in handrail on abutments is included in this item.

#53-118

DATE	REVISION	REV.	CHK.	APP.
Feb. 6, 1937	Revised quantity of cast steel	H.E.C.	L.F.	B.P.S.

DESIGNED BY
SVERDRUP AND PARCEL
CONSULTING ENGINEERS
ST. LOUIS, MO. LOS ANGELES, CALIF.

FEDERAL PROJ. NO. 13-130 (L.A.C.F.C.D. NO. 1)

LOS ANGELES COUNTY FLOOD CONTROL

BALLONA CREEK

ROOSEVELT HIGHWAY BRIDGE

GENERAL PLAN AND ELEVATION

SHEET NO. 1 OF 13 SHEETS — SCALE AS SHOWN

DATUM IS MEAN SEA LEVEL

U.S. ENGINEER OFFICE · LOS ANGELES, CALIF. JAN. 9, 1937

SUBMITTED BY: _____ APPROVED BY: _____

CAPTAIN, CORPS OF ENGINEERS, U.S. ARMY, CHIEF ENGINEERING DIVISION — MAJOR, CORPS OF ENGINEERS, U.S. ARMY, DISTRICT ENGINEER

DRAWN	TRACED	CHECKED	TO ACCOMPANY SPECIFICATIO
H.E.C.	H.E.C.	L.F.	DATED

SERIAL NO. 2677 — FILE NO. 5/52

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATED _____ SIGNATURE _____ TITLE _____

A-350

WAR DEPARTMENT

CORPS OF ENGINEERS, U.S. ARMY

(2)

SECTION T-T

VIEW B-B
(Showing reinforcing in front face of wall)

SOUTH ELEVATION

VIEW C-C
(Showing reinforcing in front face of wall)

SECTION U-U

DIAGRAM SHOWING CONTOUR OF BACKWALL

SECTION D-D
(Showing reinforcing in rear face of wall)

PLAN G-G
(Showing curb reinforcing)

SECTION E-E
(Showing reinforcing in rear face of wall).

PLAN H-H

EXPANS. JOINT IN BACKWALL

SECTION M-M

COPPER FLASHING

SECTION Q-Q

SECTION A-A
(Reinforcing in backwall not shown)

SECTION V-V

SECTION F-F

SECTION Y-Y

SECTION N-N

SECTION P-P

ANCHOR BOLT PLAN

SECTION J-J
SECTION K-K SIMILAR

HAND RAIL DETAIL OF BOTH ABUTMENTS
(Bars marked E are for Abut. 1, those marked B are for Abut. 5
Note: This drawing is not to scale. Follow dimensions

NOTE: ALL DIMENSIONS FOR REINFORCING STEEL ARE GIVEN TO ℄ OF BAR.

NOTES

See Sheet No. 1 for General Notes.
See Sheet No 3 for detail of Anchor Bolt Wells.
The area under, and for a distance of 3' around all shoes, shall be constructed to an elevation 0.02' above the elevation shown on details for top of Abut. These areas shall be ground down to a finished elevation 0.02' above the detailed elevation of top of Abut. The raised areas shall be dressed to a uniform level bearing with a carborundum brick or power grinder after concrete has set sufficiently to fix the larger particles of sand.
All reinforcing bars of splices shall be lapped a minimum of 50 diameters unless otherwise shown.
East and West wingwalls must be supported until backwall of abutment has been constructed at least 10 days.
Backwall between vertical canst joints adjoining wings shall not be constructed before structural steel for superstructure is in place and riveted.

DATE	REVISION	REV	CHK	APP

FEDERAL PROJ. NO. 13-130 (L.A.C.F.C.D. NO. 1)

LOS ANGELES COUNTY FLOOD CONTROL

53-118 BALLONA CREEK

ROOSEVELT HIGHWAY BRIDGE

DETAILS OF ABUTMENT 1

SHEET NO. 2 OF 13 SHEETS — SCALE AS SHOWN

DATUM IS MEAN SEA LEVEL

U.S. ENGINEER OFFICE LOS ANGELES, CALIF. JAN. 9, 1937

SUBMITTED BY: J. S. Cruse, CAPTAIN, CORPS OF ENGINEERS U.S. ARMY, CHIEF ENGINEERING DIVISION

APPROVED BY: [illegible], MAJOR, CORPS OF ENGINEERS, U.S. ARMY, DISTRICT ENGINEER

DESIGNED BY SVERDRUP AND PARCEL, CONSULTING ENGINEERS, ST. LOUIS, MO. LOS ANGELES, CALIF.

DRAWN	TRACED	CHECKED
F.H.P.	W.L.W.	J.A.J.

TO ACCOMPANY SPECIFICATIONS DATED

SERIAL NO. 2078 V 477 FILE NO. 5/53 52-11

CONTRACT PLANS

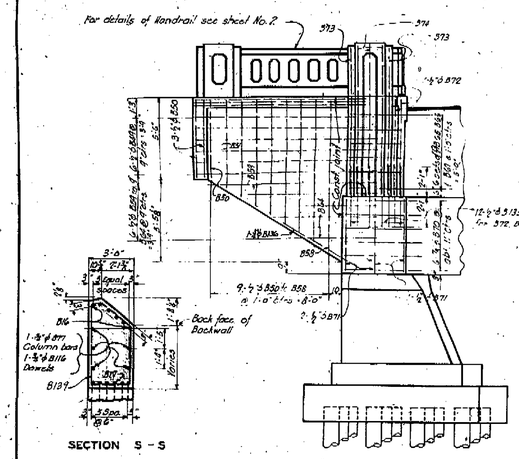
I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE _____ SIGNATURE _____ TITLE _____

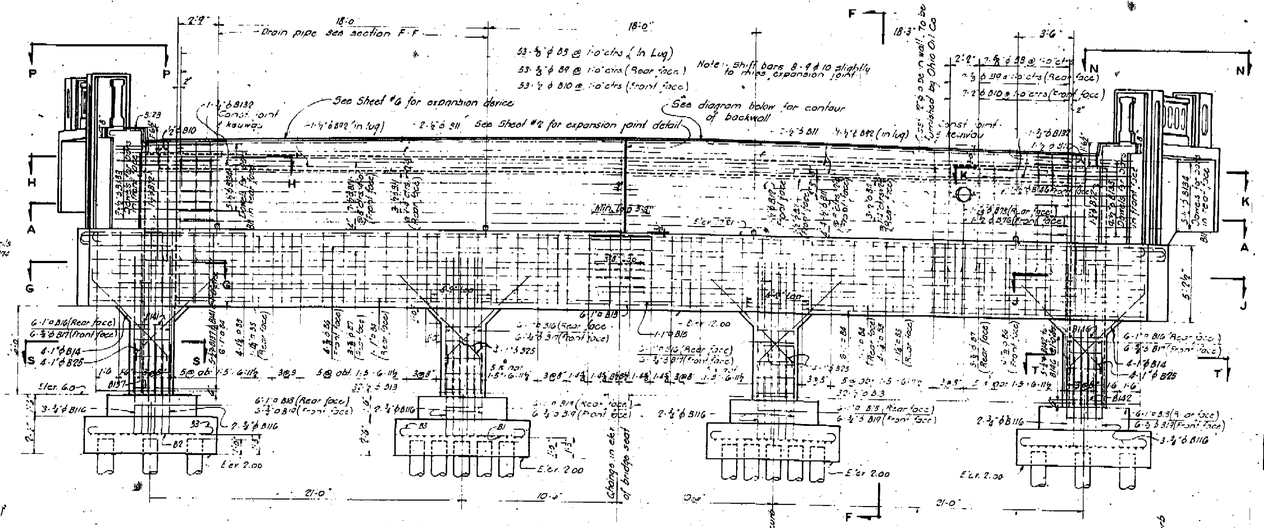
WAR DEPARTMENT

CORPS OF ENGINEERS, U. S. ARMY

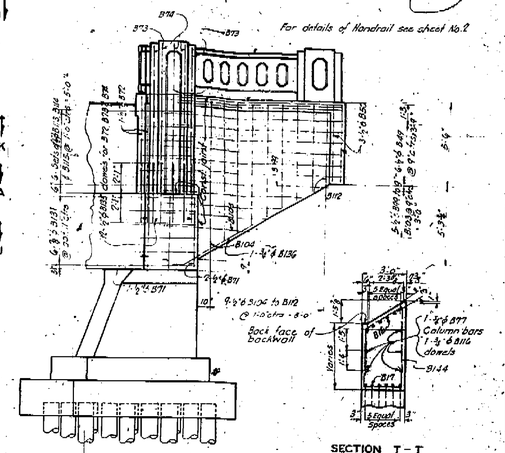
(3)



SECTION S - S



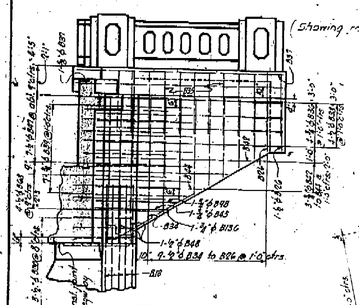
NORTH ELEVATION



VIEW E - E

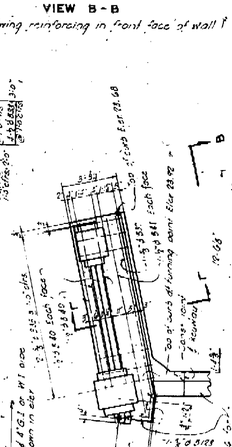
(Showing reinforcing in front face of wall)

SECTION T - T



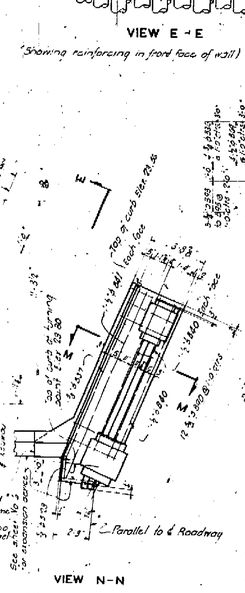
SECTION C - C

(Showing reinforcing in rear face of wall)



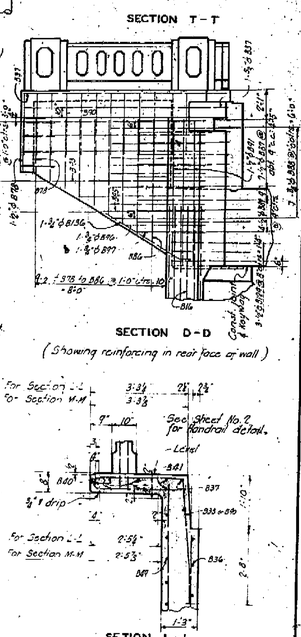
VIEW P - P

(Showing curb reinforcing)



VIEW N - N

(Showing curb reinforcing)



SECTION D - D

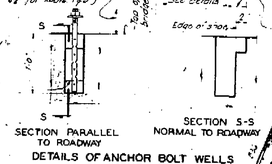
(Showing reinforcing in rear face of wall)

SECTION L - L

SECTION M - M SIMILAR

SECTION A - A

(Reinforcement in backwall not shown.)

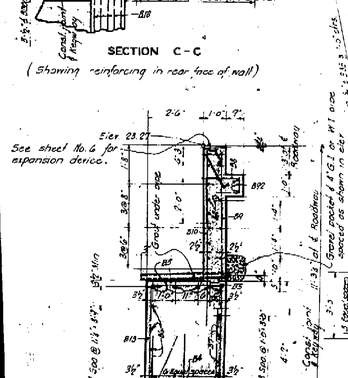


SECTION PARALLEL TO ROADWAY

SECTION S-S NORMAL TO ROADWAY

DETAILS OF ANCHOR BOLT WELLS

DIAGRAM SHOWING CONTOUR OF BACKWALL



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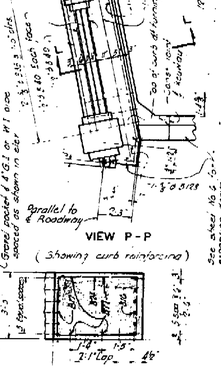
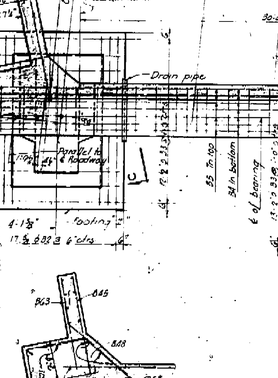
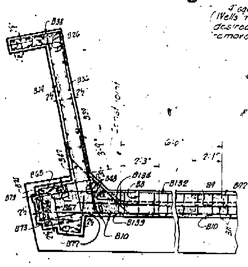


SECTION R - R

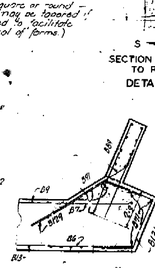


ANCHOR BOLT PLAN

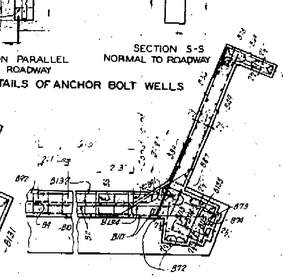
SECTION G - G



SECTION H - H



SECTION J - J



SECTION K - K

NOTE:- ALL DIMENSIONS FOR REINFORCING STEEL ARE GIVEN TO ℄ OF BAR.

Note: This drawing is not to scale. Follow dimensions

NOTES

The area under and for a distance of 3' around all shoes, shall be constructed to an elevation 0.04 above the elevation shown on details for top of shoe. These areas shall be ground down to a finished elevation 0.02 above the detailed elevation of top of shoe. The raised areas shall be dressed to a uniform level bearing with a carborundum brick or power grinder after concrete has set sufficiently to fix the larger particles of sand.

East and West wingwalls must be supported until backwall of Abutment has been constructed at least 10 days.

Backwall between vertical construction joints adjoining wings shall not be constructed before structural steel for superstructure is in place, and riveted.

FEDERAL PROJ. NO. 13-130 (L.A.C.F.C.D. NO. 1)

DATE	REVISION	REV.	CHK	APP

DESIGNED BY SVERDRUP AND PARCEL CONSULTING ENGINEERS ST LOUIS, MO. LOS ANGELES, CALIF.

53-118

LOS ANGELES COUNTY FLOOD CONTROL

BALLONA CREEK

ROOSEVELT HIGHWAY BRIDGE

DETAILS OF ABUTMENT 5

SHEET NO 3 OF 13 SHEETS SCALE: AS SHOWN

DATUM IS MEAN SEA LEVEL

U.S. ENGINEER OFFICE LOS ANGELES, CALIF. JAN. 9, 1937

SUBMITTED BY: CAPTAIN, CORPS OF ENGINEERS, U.S. ARMY, CHIEF ENGINEERING DIVISION

APPROVED BY: MAJOR, CORPS OF ENGINEERS, U.S. ARMY, DISTRICT ENGINEER

DRAWN	TRACED	CHECKED
W.L.W.	W.L.W.	J.A.J.

TO ACCOMPANY SPECIFICATIONS DATED

SERIAL NO. 2879 V-991 FILE NO. 5/54 53-118

See sheet No.1 for General Notes. Handrail reinforcement not shown, see sheet No.2.

All reinforcing bars of splices shall be lapped a minimum of 60 diameters unless otherwise shown.

For detail of expansion joint see sheet No.2

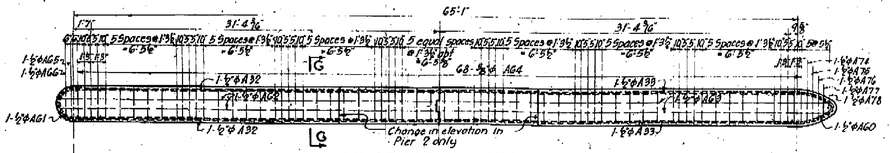
CONTRACT PLANS
Contract No.
Document No. 7000/1934

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DRAWING TAKEN UNDER MY DIRECTION AND CONTROL AT THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

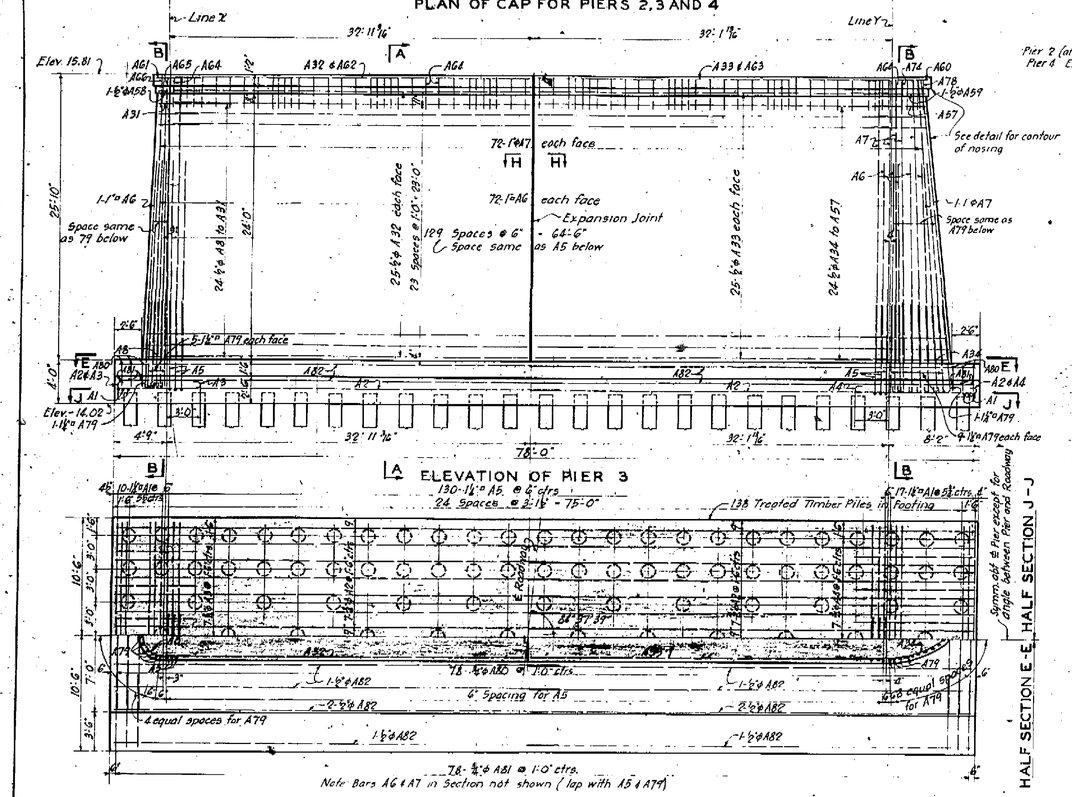
DATE _____ SIGNATURE _____ TITLE _____

WAR DEPARTMENT

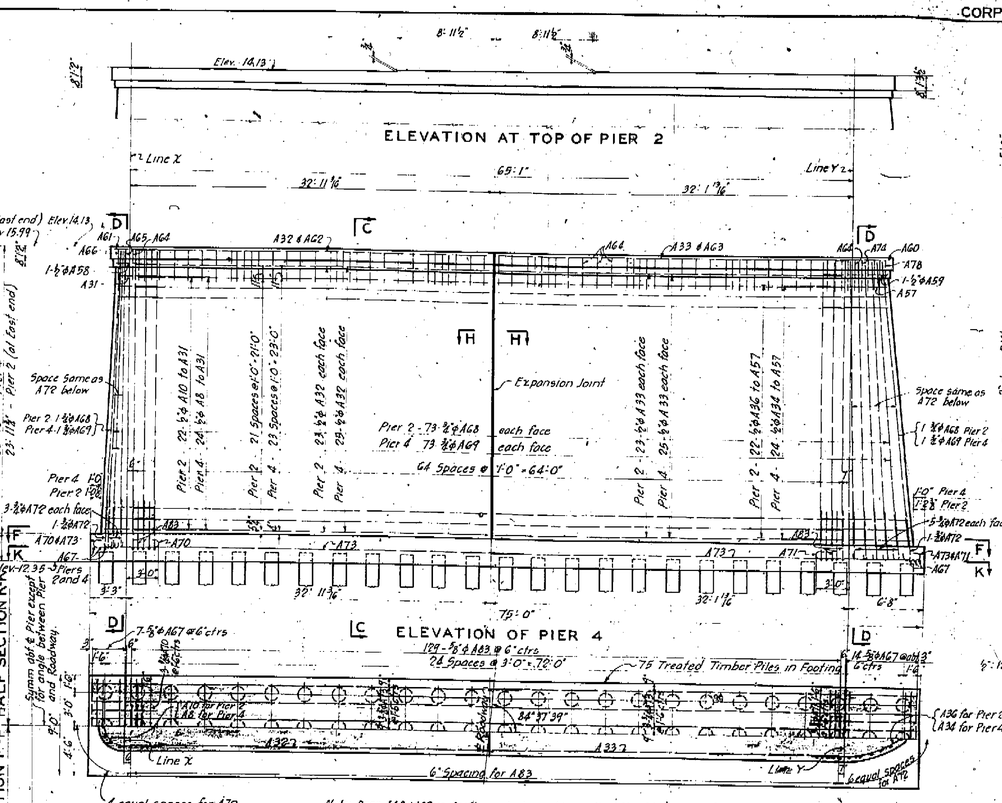
CORPS OF ENGINEERS, U. S. ARMY



PLAN OF CAP FOR PIERS 2, 3 AND 4

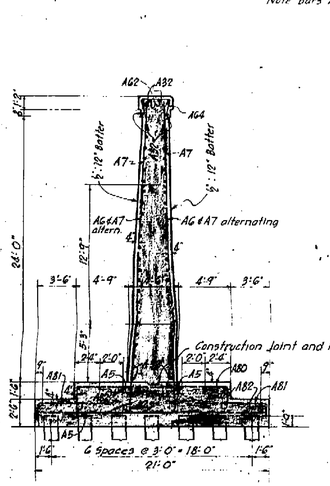


ELEVATION OF PIER 3

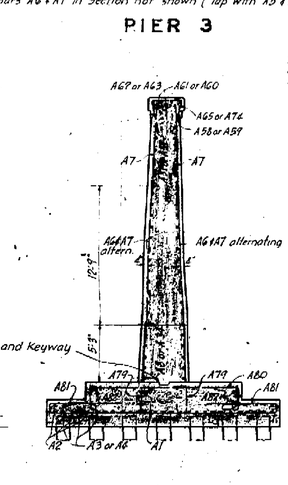


ELEVATION AT TOP OF PIER 2

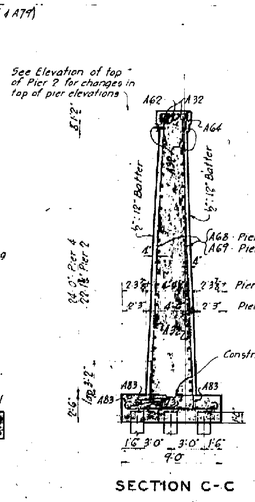
ELEVATION OF PIER 4



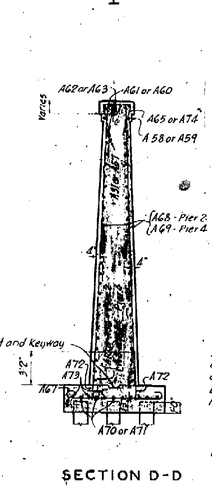
SECTION A-A



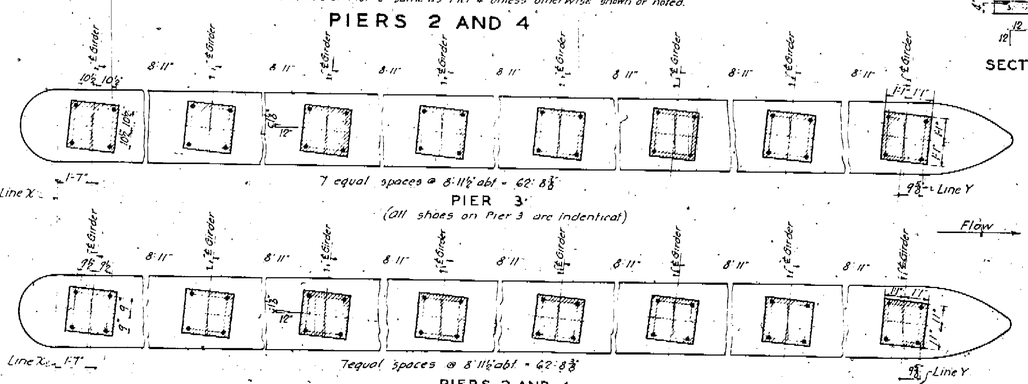
SECTION B-B



SECTION C-C



SECTION D-D

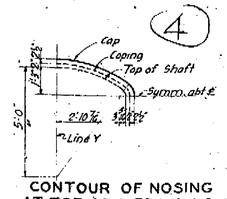


PIERS 2 AND 4

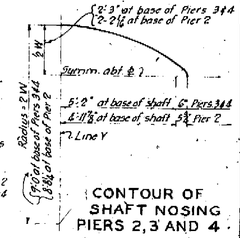
PIER 3

PIERS 2 AND 4

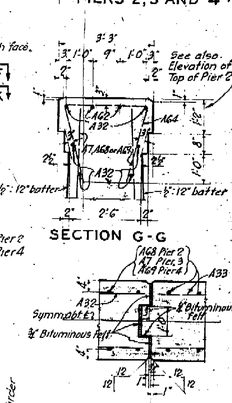
SHOE SETTING AND ANCHOR BOLT PLAN



CONTOUR OF NOSING AT TOP OF PIERS 2, 3 & 4



CONTOUR OF SHAFT NOSING PIERS 2, 3 AND 4



SECTION G-G

SECTION H-H

HALF SECTION E-E, HALF SECTION J-J

HALF SECTION F-F, HALF SECTION K-K

NOTES

The area under, and for a distance of 3" around all shoes, shall be constructed to an elevation 0.04' above the elevation shown on details for top of pier. These areas shall be ground down to a finished elevation 0.02' above the detailed elevation of top of pier. The raised areas shall be dressed to a uniform level bearing with a carborundum brick or power grindar after concrete has set sufficiently to fix the larger particles of sand.

See Sheet No.1 for General Notes

See Sheet No.3 for detail of Anchor Bolt Wells.

All reinforcing bars at splices shall be lapped a minimum of 30 diameters unless otherwise shown.

NOTE: ALL DIMENSIONS FOR REINFORCING STEEL ARE GIVEN TO ℄ OF BAR.

Note: This drawing is not to scale. Follow dimensions.

DATE	REVISION	REV.	CHK	APP

DESIGNED BY SVERDRUP AND PARCEL CONSULTING ENGINEERS ST. LOUIS, MO. LOS ANGELES, CALIF.

DRAWN F.W.K. | TRACED F.W.K. | CHECKED J.A.J.

FEDERAL PROJ. NO. 13-130 (L.A.C.F.C.D. NO. 1)

LOS ANGELES COUNTY FLOOD CONTROL

53-118 BALLONA CREEK

ROOSEVELT HIGHWAY BRIDGE

DETAILS OF PIERS 2, 3 AND 4

SHEET NO. 4 OF 13 SHEETS — SCALE AS SHOWN

DATUM IS MEAN SEA LEVEL

U.S. ENGINEER OFFICE LOS ANGELES, CALIF. JAN. 9 1937

SUBMITTED BY: CAPTAIN, CORPS OF ENGINEERS, U.S.ARMY, CHIEF ENGINEERING DIVISION

APPROVED BY: MAJOR, CORPS OF ENGINEERS, U.S.ARMY, DISTRICT ENGINEER

TO ACCOMPANY SPECIFICATIONS DATED

SERIAL NO. 2680 V-947 FILE NO. 5/55 53-118

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATED ... SIGNATURE ... TITLE ...

CONTRACT PLANS

A559

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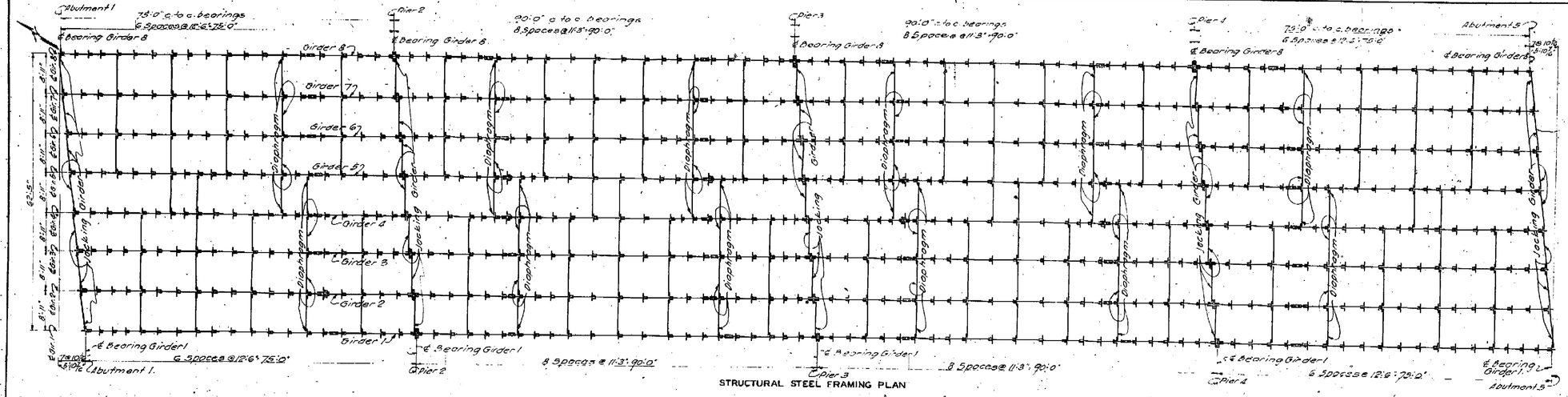
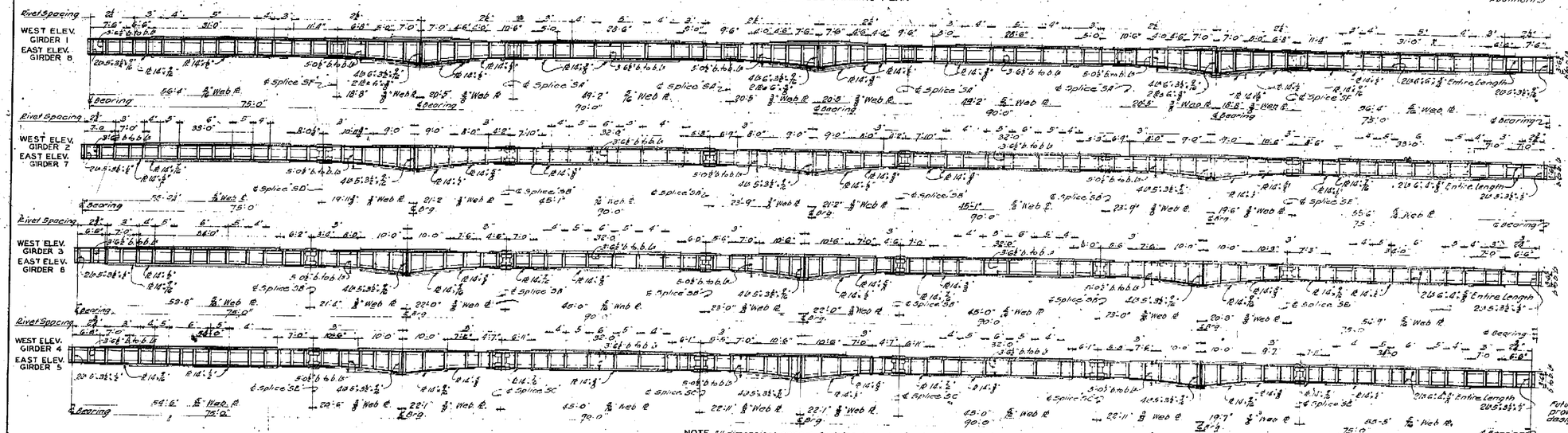
WAR DEPARTMENT

CORPS OF ENGINEERS, U. S. ARMY

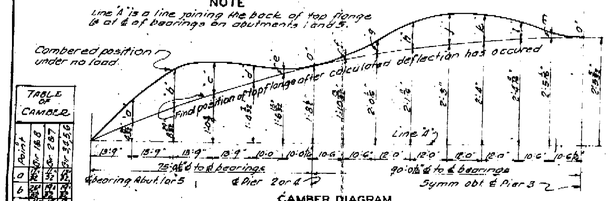
(5)



STRUCTURAL STEEL FRAMING PLAN



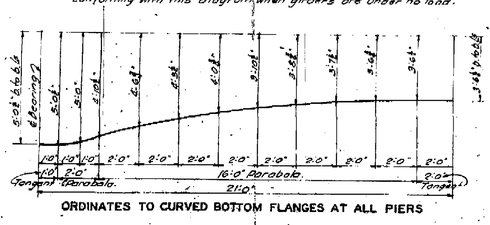
NOTE



CAMBER DIAGRAM

Back of top flange angles for all girders to be constructed in conformity with this diagram when girders are under no load.

Table of Camber	Point	Dim.
	a	0
	b	2 3/16
	c	4 3/16
	d	5 5/16
	e	5 15/16
	f	6 3/16
	g	6 1/16
	h	5 11/16
	i	4 15/16
	k	3 11/16
	l	2 3/16
	m	0



ORDINATES TO CURVED BOTTOM FLANGES AT ALL PIERS

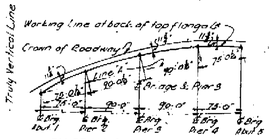


DIAGRAM OF WORKING LINE

NOTES

For details of girders see Sheet #7

Top and bottom cover plates are the same, material one points of cut-off are the same.

Stiffeners at intermediate cross panels are 3½" x ⅜" with fills. Other intermediate stiffeners are 3½" x ⅜" crimped. In lieu of crimping the fabricator may provide fills of his own design.

For details of cross bracing, diaphragms and jacking girders see Sheet #8.

Position of splices shall be substantially as shown but may be shifted slightly in either direction, if desired by the fabricator.

CONTRACT PLANS
Contract No. ———
Document No. 70001934

TABLE OF MAXIMUM MOMENTS AND SHEARS

A 18'-0" D 57'-0" B 67'-6" E 90'-0" C 45'-0" E 90'-0" B 67'-6" D 57'-0" A 18'-0"
75'-0" 90'-0" 90'-0" 90'-0" 75'-0"

Moments in ft. lbs. Shears in kips	ITEM	A Shear	D Moment	D Moment	B Shear	B Shear at C	E Moment	E Moment	C Shear CB
GIRDERS 1 & 8	D.L. (includes curb, rail & fence)	65.6	+ 898.7	- 1805.2	113.7	108.8	+ 668.7	- 1695.4	106.3
	L.L. fence walk	14.2	+# 236.1	- 471.5	20.4	21.5	+ 234.1	- 385.1	21.2
	ULL Roadway	12.9	+ 215.4	- 339.0	18.6	19.6	+ 213.6	- 351.4	19.3
	C.L.L. Roadway	15.25	+ 160.8	- 94.6	19.25	19.25	+ 154.0	- 90.0	18.25
	I.	4.85	+ 64.9	- 54.4	4.65	4.75	+ 63.5	- 72.3	5.45
	Total	112.8	+ 1575.9	- 2664.7	172.6	169.9	+ 1335.4	- 2594.2	167.7
GIRDERS 2 & 7	D.L.	39.5	+ 541.8	- 1088.6	68.5	65.6	+ 403.8	- 1022.2	64.1
	U.L.L.	21.9	+ 364.7	- 574.0	31.5	33.3	+ 361.7	- 595.0	32.7
	C.L.L.	25.8	+ 271.6	- 159.8	25.8	25.8	+ 261.0	- 152.0	25.8
	I.	8.3	+ 109.7	- 100.8	7.9	8.1	+ 107.4	- 122.4	9.6
	Total	95.5	+ 1287.8	- 1922.7	133.7	132.8	+ 1133.9	- 1891.6	132.2
GIRDERS 3,4,5 & 6	D.L.	44.5	+ 609.5	- 1224.6	77.1	73.8	+ 454.2	- 1149.9	72.1
	U.L.L.	21.9	+ 364.7	- 574.0	31.5	33.3	+ 361.7	- 595.0	32.7
	C.L.L.	25.8	+ 271.6	- 159.8	25.8	25.8	+ 261.0	- 152.0	25.8
	I.	8.3	+ 109.7	- 100.8	7.9	8.1	+ 107.4	- 122.4	9.6
	Total	100.5	+ 1355.5	- 2058.7	122.3	121.0	+ 1182.3	- 2019.3	120.2

NOTE This drawing is not to scale. Follow dimensions.

DESIGN DATA

DESIGN
In accordance with the A.A.S.H.O. Standard Specifications for Highway Bridges for 1935, modified as indicated on this sheet.

LIVE LOAD
Highway H20-44-S16.0 and future sidewalk.

SEISMIC FORCE
In addition to the horizontal forces specified in the A.A.S.H.O. specifications the structure is designed to withstand a horizontal force "S" in any direction equal to 8% of the vertical load. This force is applied in combination with dead load plus ½ live load.

UNIT STRESSES
In accordance with A.A.S.H.O. 1935 specifications except as noted for the following combinations of longing:
Roadway Slab:-
D.L.+L.L.+I. Concrete 900 #/in²
Reinforcing Steel 18,000 #/in²
Remainder of Superstructure.
D.L.+L.L.+I. 25% Normal Unit Stress.
D.L.+L.L.+I+30 Wind 125% Normal Unit Stress.
D.L.+30# Wind. 125% Normal Unit Stress.
D.L.+½(L.L.+I)+S 125% Normal Unit Stress.
Dry or above Temperature 133⅓% Nor. Unit Stress.

MATERIALS
All structural steel shall be carbon steel as specified in the Standard Specifications of the American Society for Testing Materials, having the serial designation A7-34.

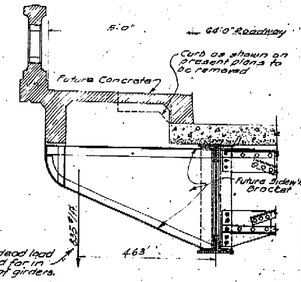
RIVETS
Rivets shall be ⅞" ø except where otherwise noted.

FIELD CONNECTIONS
Riveted except as noted on details.

FABRICATION
In accordance with A.S.L.I.D. 1933 Specifications for punched work, except that holes for girder splices shall be subpunched ¾" and reamed to ⅞" in the shop after girder has been assembled and adjusted to the proper camber position. See accompanying specifications.

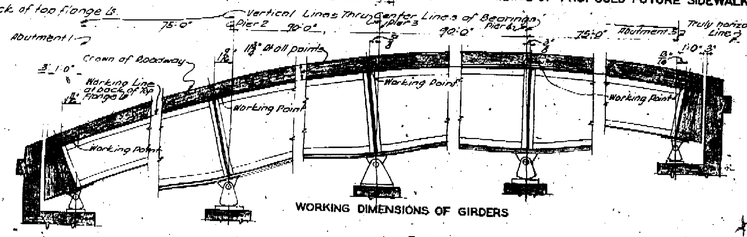
SHOP DRAWINGS
Shop drawings for all structural steel and castings shall be submitted to the Contracting Officer and shall be approved before steel is fabricated.

PAINT
See Sheet #1 for notes.



DETAIL OF PROPOSED FUTURE SIDEWALK

Future dead load provided for in design of girders.



WORKING DIMENSIONS OF GIRDERS

DATE	REVISION	REV.	CHK.	APP.
2-5-37	Note on Girder Web Splice Removed	W.L.W	L.F.	B.B.S.

FEDERAL PROJ. NO. 13-130 (L.A.C.F.C.D. NO. 1)

LOS ANGELES COUNTY FLOOD CONTROL

53-118 BALLONA CREEK

ROOSEVELT HIGHWAY BRIDGE

STRESS SHEET-SUPERSTRUCTURE

SHEET NO. 5 OF 13 SHEETS — SCALE AS SHOWN

DATUM IS MEAN SEA LEVEL

U.S. ENGINEER OFFICE LOS ANGELES, CALIF. JAN. 9, 1937.

SUBMITTED BY: R. E. Cruse, CAPTAIN, CORPS OF ENGINEERS, U.S. ARMY, CHIEF ENGINEERING DIVISION

APPROVED BY: Wm. M. Hoyt, MAJOR, CORPS OF ENGINEERS, U.S. ARMY, DISTRICT ENGINEER

TO ACCOMPANY SPECIFICATIONS DATED

DESIGNED BY: SVERDRUP AND PARCEL, CONSULTING ENGINEERS, ST. LOUIS, MO. LOS ANGELES, CALIF.

DRAWN A.J.S. | TRACED A.J.S. | CHECKED L.F.

SERIAL NO. 2681 V-9-77 FILE NO. 5/56 53-118

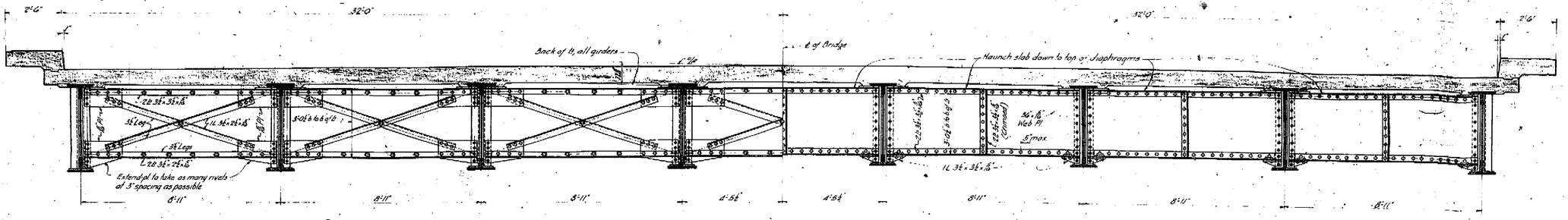
I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE _____ SIGNATURE _____ TITLE _____

WAR DEPARTMENT

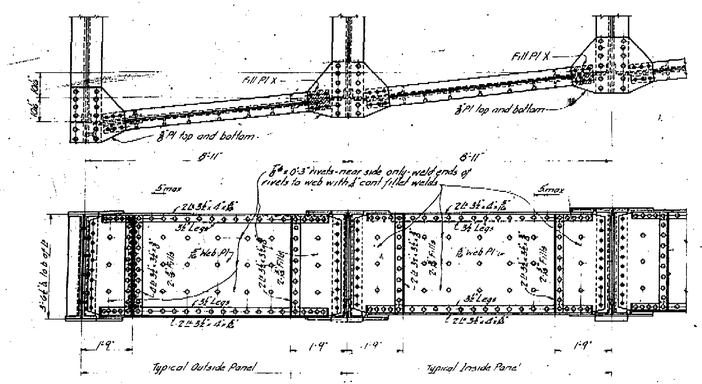
CORPS OF ENGINEERS, U. S. ARMY

(6)

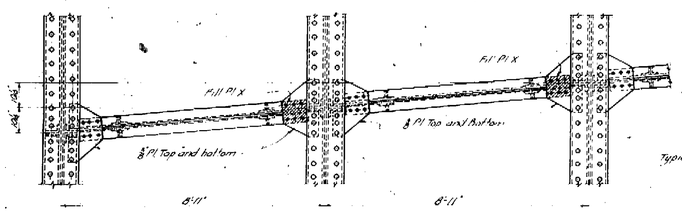


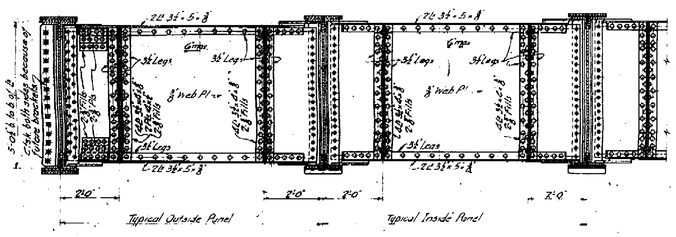
HALF CROSS SECTION SHOWING CROSS FRAMES

(All cross frames are the same except as shown and except at pipe support)



JACKING GIRDERS OVER ABUTMENTS 1 AND 5





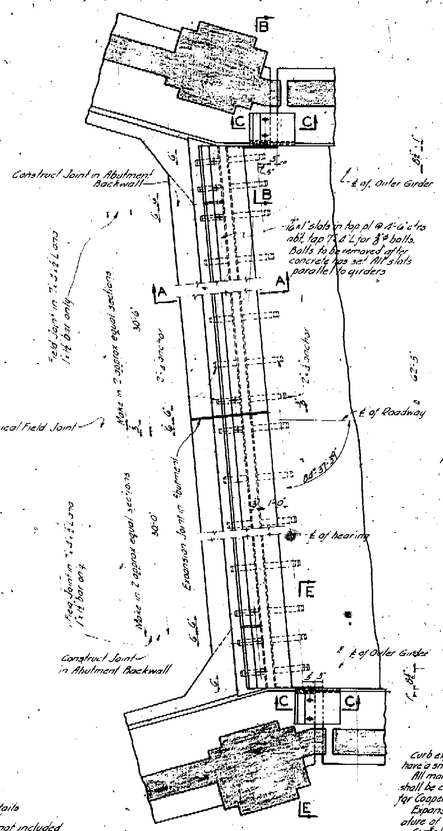
JACKING GIRDERS OVER PIERS 2, 3 AND 4

Fills shown are minimum fills required to keep flanges of jacking girders horizontal, if desirable for duplication, fabricator may increase thickness of fills.

THICKNESS OF FILLS X ON JACKING GIRDERS

Location		ABUT 1 East End	ABUT 1 West End	PIER 2 East End	PIER 2 West End	PIER 3 East End	PIER 3 West End	PIER 4 East End	PIER 4 West End	ABUT 5 East End	ABUT 5 West End
N Panel 1-2	Top	0	⅜"	0	⅛"	0	0	1/16"	0	⅛"	0
	Bottom	⅜"	0	⅜"	0	⅛"	0	0	0	0	1/16"
N Panel 1-B	Top	0	⅛"	0	⅜"	0	⅛"	0	0	1/16"	0
	Bottom	⅜"	0	⅛"	0	0	0	0	1/16"	0	1/16"
All Fill Filler Panels	Top	0	⅜"	0	⅛"	0	⅛"	0	0	⅛"	0
	Bottom	⅜"	0	⅛"	0	⅛"	0	0	0	0	1/16"

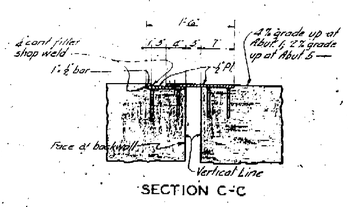
Shop weld fill plates X to gussets with cont. fillet weld



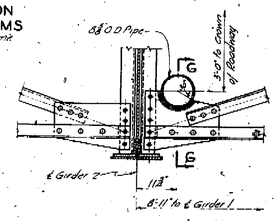
DETAILS OF EXPANSION DEVICES AT ABUTMENTS 1 AND 5

HALF CROSS SECTION SHOWING DIAPHRAGMS

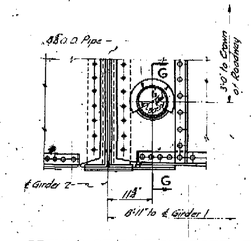
(All diaphragms are the same except at pipe support)



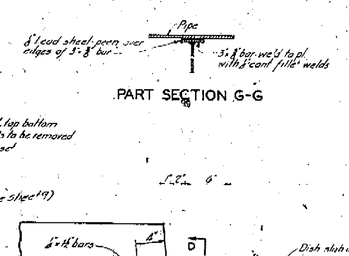
SECTION C-C



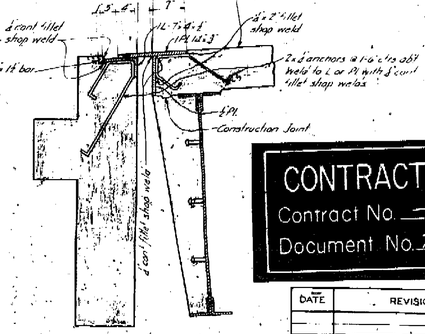
DETAILS OF PIPE SUPPORT AT CROSS FRAMES



DETAILS OF PIPE SUPPORT AT DIAPHRAGMS & JACKING GIRDERS

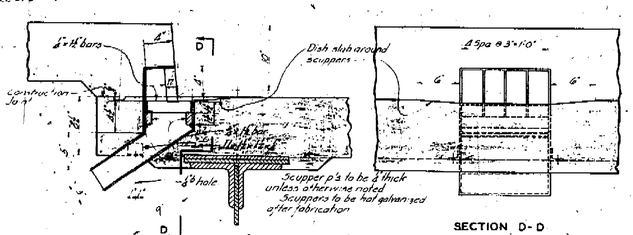


PART SECTION B-B
SECTION E-E OPP. HAND



SECTION A-A

Curb expansion device to be so fabricated that the two ⅜" plates will have a snug fit and slide freely one over the other.
All material in expansion devices (except anchors and ⅞" bolts) shall be copper bearing steel and shall conform to A.S.T.M. specifications for Copper Steel, Serial Designation A-7-34.
Expansion devices are shown in normal position at a temperature of 70° Fahrenheit.
Complete expansion devices, including copper steel, shall be paid for at the contract unit price for "Fabricated Structural Steel."
Roadway expansion devices shall be shaped to conform accurately to surface of roadway.
The bearing surfaces shall have a snug fit and slide freely.



SECTION D-D

DETAIL OF SCUPPERS

(32 Required)

See sheet #1 for location of scuppers.
All material in scuppers to be wrought iron.
Scuppers to be shop welded throughout with continuous welds.
Longitudinal curb reinforcing to be bent around scuppers where necessary. Vertical curb bars to be re-spaced about scuppers using the same number of bars as indicated on concrete details.
Wrought iron plates shall conform to A.S.T.M. specifications, Serial Designation A-42-35T.
Wrought iron bars and angles shall conform to A.S.T.M. specifications, Serial Designation A-81-38.
Hot galvanizing shall conform to A.S.T.M. specifications, Serial Designation A-123-38.

PART SECTION G-G

NOTES

See sheet #1 for General Notes
See sheet #3 for additional steel details
All rivets ⅞" unless otherwise noted
Legal sheets for pipe supports are not included in "Fabricated Structural Steel" but shall be furnished in connection with the placing of pipes.

All stiffeners on jacking girders shall be milled to bear top and bottom Fills under these stiffeners shall be shop welded to web with ⅜"x⅜" fillet welds at 6" c's, each edge of fill.

Note-This drawing is not to scale. Follow dimensions.

CONTRACT PLANS
Contract No.
Document No. 70001934

DATE	REVISION	REV.	CHK.	APP.

DESIGNED BY SVERDRUP AND PARCEL CONSULTING ENGINEERS ST. LOUIS, MO. LOS ANGELES, CALIF.

DRAWN A.E.F. TRACED H.A.T. CHECKED L.F.

FEDERAL PROJ. NO. 13-130 (L.A.C.F.C.D. NO. 1.)

LOS ANGELES COUNTY FLOOD CONTROL.

BALLONA CREEK

53-118

ROOSEVELT HIGHWAY BRIDGE

TYPICAL CROSS SECTION & MISC. DETAILS

SHEET NO. 6 OF 13 SHEETS. SCALE AS SHOWN

DATUM IS MEAN SEA LEVEL

U.S. ENGINEER OFFICE LOS ANGELES, CALIF. JAN. 9, 1937

SUBMITTED BY: CAPTAIN, CORPS OF ENGINEERS, U.S. ARMY CHIEF ENGINEERING DIVISION

APPROVED BY: MAJOR, CORPS OF ENGINEERS, U.S. ARMY DISTRICT ENGINEER

TO ACCOMPANY SPECIFICATIONS DATED

SERIAL NO. 2662 V-997 FILE NO. 5/57

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND DRAWING ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE SIGNATURE TITLE

WAR DEPARTMENT

CORPS OF ENGINEERS, U.S. ARMY

7

TOP FLANGE

DETAIL AT ENDS OF GIRDER

INTERMEDIATE STIFFENERS

STIFFENERS AT CROSS FRAMES

DETAIL OVER PIERS 2, 3, AND 4

DETAIL OF SPLICE "SA"
DETAIL OF SPLICE "SF"

BOTTOM FLANGE

DETAILS OF GIRDERS 1 AND 8

DETAIL OF SPLICE "SB"
DETAIL OF SPLICE "SE"

DETAIL OF SPLICE "SC"
DETAIL OF SPLICE "SD"

DETAILS OF GIRDERS 2, 3, 4, 5, 6 AND 7

LINK BAR (Rolled Steel)

LINK BLOCK

TOP LINK BOLT

DETAIL OF CAP & END OF PIN FOR ROCKER SHOES FOR ABUTS. 1 & 5

SECTION A-A

ROCKER SHOES FOR ABUTMENTS 1 AND 5
(1 is Required)

Note: Provide not less than 2" movement from normal in either direction. Position of rockers shown is normal position at 70° F.

DETAIL OF ANCHOR BOLTS

At Abutments 1 & 5	1-6½"	6 Required
At Pier 3	1-4½"	8 Required
At Piers 2 & 4	1-6½"	6 Required

CONTRACT PLANS
Contract No. _____
Document No. 7000 1934

DETAIL OF PINTLES FOR ALL ROCKER SHOES

ROCKER SHOES FOR PIERS 2 AND 4
(16 - Required)

FIXED SHOES FOR PIER 3
(8 - Required)

NOTE FOR ALL PIER SHOES

Provide small wooden shims to equalize and maintain side clearances between upper and lower portions of shoe at pins until superstructure is in final position and anchor bolts grouted.

BEVELS "X" FOR ALL GIRDERS

Abutment 1	6"
Pier 2	4"
Pier 3	0"
Pier 4	4"
Abutment 5	6"

Bevels given are with the horizontal.

SHOE SETTING DIAGRAM

TABLE OF DIMENSIONS "Y"

Girder	Over Pier or Abutment 1	2	3	4	5
1	7/16	5/16	11/16	0"	0"
2	0"	1/16	5/16	1/16	1/16
3	3/8"	1/8"	1/16	3/16	1/16
4	0"	3/16	1/16	1/8"	3/8"
5	3/8"	3/8"	1/16	3/16	0"
6	0"	3/8"	1/8"	3/8"	1/4"
7	1/16	3/8"	3/8"	3/8"	1/16
8	0"	0"	0"	1/16	3/8"

NOTES

All shoes shall be cast steel, annealed, unless noted. Material shall conform to Federal specifications 90-S-681. The grade shall be two (2) medium.

All fillets ½" unless noted.

Payment for items classified as 'Fabricated Structural Steel' and for all castings, will be based upon Division 3, Section 10, of the A.R.S.M.A. Standard Specifications for 1935. Estimated quantities as given on sheet 1 have been computed on this basis. See accompanying specifications.

Cover plates shall have a rivet spacing of 3" for at least 1'-6" from end of plate, gradually increasing to a maximum spacing of 6". Each cover plate shall have enough rivets to develop its full strength before the end of the next outside cover plate is reached.

See Sheet No. 5 for location of splices.

Lead plates under shoes shall be paid for at the contract unit price for "Fabricated Structural Steel."

Anchor bolts, rolled steel slabs, link bolts, pins, phosphor bronze washers, link blocks and link bars to be paid for at the contract unit price for "Fabricated Structural Steel."

Assemble top and bottom shoe castings, and pins in shop and ship assembled.

Shoes shall be painted same as structural steel (See sheet No. 1).

All fills under stiffeners at shoes shall be shop welded to girder webs with 5/16" fillet welds @ 6" ctrs, each edge of fill.

All stiffeners other than at bearing points shall be cut ½" short and welded to 0.S leg at top and bottom flanges with 6" cont. fillet welds on both sides at stiffeners.

Fills shall be used under 14"x⅞" girder splice plates where necessary. Weld fills to splice plates with cont. fillet welds.

All loose fills shall be shop welded to other material.

DATE	REVISION	REV.	CHK	APP
2-5-37	Top Shoe Castings	A.E.F.	L.F.	B.R.S.
9-5-37	Diagonal Web Splice Removed	M.L.W.	L.F.	B.R.S.

FEDERAL PROJ. NO. 13-130 (L.A.C.F.C.D. NO. 1)

LOS ANGELES COUNTY FLOOD CONTROL

53-118

BALLONA CREEK

ROOSEVELT HIGHWAY BRIDGE

DETAILS OF GIRDERS & SHOES

SHEET NO. 7 OF 13 SHEETS — SCALE AS SHOWN

DATUM IS MEAN SEA LEVEL

U.S. ENGINEER OFFICE LOS ANGELES, CALIF. JAN. 9, 1937

SUBMITTED BY: P. C. Collar, CAPTAIN, CORPS OF ENGINEERS, U.S. ARMY, CHIEF ENGINEERING DIVISION

APPROVED BY: [signature], MAJOR, CORPS OF ENGINEERS, U.S. ARMY, DISTRICT ENGINEER

DESIGNED BY SVERDRUP AND PARCEL, CONSULTING ENGINEERS, ST. LOUIS, MO. LOS ANGELES, CALIF.

DRAWN	TRACED	CHECKED
A.E.F.	A.E.F.	L.F.

TO ACCOMPANY SPECIFICATIONS DATED _____

SERIAL NO. 2683 V-9-17 FILE NO. 5/58 53-118

Note: This drawing is not to scale. Follow dimensions.

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE INSTRUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE _____ SIGNATURE _____ TITLE _____

APPENDIX B:

CALIFORNIA DEPARTMENT OF TRANSPORTATION BRIDGE INSPECTION REPORT

California Department of Transportation
Division of Maintenance

Structure Maintenance and Investigations

BRIDGE

INSPECTION

RECORDS

INFORMATION

SYSTEM

The requested documents have been generated by BIRIS.

Records for “Confidential” bridges may only be released outside the Department of Transportation upon execution of a confidentiality agreement.

DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 53 0118
Facility Carried: STATE ROUTE 1
Location : 07-LA-001-30.36-LA
City : LOS ANGELES
Inspection Date : 11/09/2011

Bridge Inspection Report

Inspection Type

Routine	FC	Underwater	Special	Other
X				

STRUCTURE NAME: BALLONA CREEK

CONSTRUCTION INFORMATION

Year Built : 1937
Year Widened: N/A
Length (m) : 102.1
Skew (degrees): 10
No. of Joints : 2
No. of Hinges : 0

Structure Description: Continuous four span riveted steel plate girder (8) with RC open end seated abutments and piers, all supported on treated timber piles.

Span Configuration : (N) 22.9 m,(2) 27.4 m, 22.9 m (S) c/c

LOAD CAPACITY AND RATINGS

Design Live Load: MS-13.5 OR HS-15
Inventory Rating: 37.6 metric tonnes Calculation Method: LOAD FACTOR
Operating Rating: 61.9 metric tonnes Calculation Method: LOAD FACTOR
Permit Rating : PPPPP
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 0.5 m br, 0.3 m cu, 14.5 m, 0.3 m cu, 0.5 m br (E)
Total Width: 21.0 m Net Width: 19.5 m No. of Lanes: 4
Rail Description: Concrete baluster Rail Code : 0000
Min. Vertical Clearance: Unimpaired

DESCRIPTION UNDER STRUCTURE

Channel Description: Trapezoidal, concrete lined, mud at bottom

INSPECTION COMMENTARY

CONDITION OF STRUCTURE

The channel is full of water at time of this inspection.

The southbound G-11 sign is intact but there is graffiti on the face.

The northbound G-11 sign is missing.

The deck has map/pattern up to 0.04 inches wide spaced 1 to 3 feet on center.

The southerly abutment slope protection his minor shrinkage cracking.

The rocker bearings have debris and surface rust.

The northbound approach slab has minor cracking.

The girders have rust along 90 percent of the bottom flange.

UNDERWATER INVESTIGATION

Water level has never been low enough to facilitate wading. Scour evaluation should be done by divers.

INSPECTION COMMENTARY

PAINT CONDITION
The following items were noted in previous reports:

a. There is rust scattered along the edge of the bottom flange of the girders.

b. Approximate 2m2 of paint on the bottom flange of northeastern exterior girder above the bike way is scratched. Bare metal is exposed along the eastern side of the bottom flange.(minor)

c. Corrosion is visible on various parts of the bearing assemblies with minor rusts on surface of pins and there is some corrosion on edge of the masonry plate of rocker bearings.

The above work items have been programmed into EA 4Y1501 for remediations.

ELEMENT INSPECTION RATINGS

Elem No.	Element Description	Env	Total Qty	Units	Qty in each Condition State St. 1	St. 2	St. 3	St. 4	St. 5
38	Concrete Slab - Bare	2	2150	sq.m.	2150	0	0	0	0
107	Painted Steel Open Girder/Beam	2	817	m.	0	817	0	0	0
210	Reinforced Conc Pier Wall	2	63	m.	63	0	0	0	0
215	Reinforced Conc Abutment	2	42	m.	42	0	0	0	0
311	Moveable Bearing (roller, sliding, etc.)	2	32	ea.	15	16	1		
313	Fixed Bearing	2	8	ea.	0	8	0	0	0
339	Concrete Railing (aesthetic/masonry)	2	230	m.	228	2	0	0	0
349	Sliding Steel Plates	2	43	m.	43	0	0	0	0
358	Deck Cracking	2	1	ea.	0	1	0	0	0

WORK RECOMMENDATIONS

RecDate: 11/09/2011
Action : Bridge-Install Sign
Work By: BRIDGE CREW
Status : PROPOSED
EstCost: $500
StrTarget: 1 YEAR
DistTarget:
EA:
Install a G-11 sign for the northbound direction. Clean the graffiti off the G-11 sign in the southbound direction.

RecDate: 11/09/2011
Action : Bearings-Clean
Work By: BRIDGE CREW
Status : PROPOSED
EstCost: $2,800
StrTarget: 1 YEAR
DistTarget:
EA:
Clean the debris from the rocker bearings at the abutments.

RecDate: 11/18/2009
Action : Paint-Spot Prep/Full
Work By: MAINT. CONTRACT
Status : PROGRAMMED
EstCost: $450,000
StrTarget: 2 YEARS
DistTarget:
EA: 4Y1501
Spot blast or power tool clean to remove rust on girder lower flange edges and around lower flange rivets.
Spot blast to remove graffiti patches on the end diaphragm and girder webs near abutment 1.
Overcoat paint all steel elements using Caltrans PWB waterborne paints.
(paint work recommendation entered by John C. Rogers)

WORK RECOMMENDATIONS

RecDate: 08/03/2000	EstCost:		There are longitudinal and transverse cracks in the southbound AC departure. There are potholes 75mm deep in the paving notch and there is cavity under the departure. Seal with asphaltic material crack seal at paving notch, and level AC
Action : Appr. Slab-Repair	StrTarget:	2 YEARS	
Work By: DISTRICT	DistTarget:		
Status : PROGRAMMED	EA:	4Y1501	
RecDate: 08/03/2000	EstCost:	$56,096	There are cavities under the Approach and Departure AC of the bridge as noted by the encroachment permit contractor. Provide new PCC approach and departure slabs in a future contract.
Action : Appr. Slab-Replace	StrTarget:	2 YEARS	
Work By: DISTRICT	DistTarget:		
Status : PROGRAMMED	EA:	4Y1501	
RecDate: 08/22/1997	EstCost:	$5,000	Corrosion is visible on various parts of the bearing assemblies with minor rusts on surface of pins and there is some corrosion on edge of the masonry plate of rocker bearings. Remove the rust by abrasive blast cleaning. Prime and repaint metal surfaces as required. Note: there is lead in the existing paint. Include this work in the contract 07-166004
Action : Bearings-Rehab	StrTarget:	2 YEARS	
Work By: MAINT. CONTRACT	DistTarget:		
Status : PROGRAMMED	EA:	4Y1501	
RecDate: 02/10/1984	EstCost:	$373,920	F1-03 / F2-0 / F3-5 / Rail Type-C.WIN Rail upgrade (Approx 683 LF)
Action : Railing-Upgrade	StrTarget:	2 YEARS	
Work By: STRAIN	DistTarget:		
Status : TEN YEAR PLAN	EA:	D112D	

Inspected By : D.Muwanes/NN.Vo

David Muwanes (Registered Civil Engineer)

STRUCTURE INVENTORY AND APPRAISAL REPORT

********** IDENTIFICATION **********

(1)	STATE NAME- CALIFORNIA	069
(8)	STRUCTURE NUMBER	**53 0118**
(5)	INVENTORY ROUTE(ON/UNDER)- ON	131000010
(2)	HIGHWAY AGENCY DISTRICT	07
(3)	COUNTY CODE 037 (4) PLACE CODE	44000
(6)	FEATURE INTERSECTED-	BALLONA CREEK
(7)	FACILITY CARRIED-	STATE ROUTE 1
(9)	LOCATION-	07-LA-001-30.36-LA
(11)	MILEPOINT/KILOMETERPOINT	30.36
(12)	BASE HIGHWAY NETWORK- PART OF NET	1
(13)	LRS INVENTORY ROUTE & SUBROUTE	000000000101
(16)	LATITUDE	33 DEG 58 MIN 30 SEC
(17)	LONGITUDE	118 DEG 25 MIN 56 SEC
(98)	BORDER BRIDGE STATE CODE % SHARE	%
(99)	BORDER BRIDGE STRUCTURE NUMBER	

******** STRUCTURE TYPE AND MATERIAL *********

(43)	STRUCTURE TYPE MAIN:MATERIAL- TYPE- SLAB	STEEL CONT CODE 401
(44)	STRUCTURE TYPE APPR:MATERIAL- TYPE- SLAB	OTHER/NA CODE 001
(45)	NUMBER OF SPANS IN MAIN UNIT	4
(46)	NUMBER OF APPROACH SPANS	0
(107)	DECK STRUCTURE TYPE- CIP CONCRETE	CODE 1
(108)	WEARING SURFACE / PROTECTIVE SYSTEM:	
A)	TYPE OF WEARING SURFACE- NONE	CODE 0
B)	TYPE OF MEMBRANE- NONE	CODE 0
C)	TYPE OF DECK PROTECTION- NONE	CODE 0

********** AGE AND SERVICE **********

(27)	YEAR BUILT	1937
(106)	YEAR RECONSTRUCTED	0000
(42)	TYPE OF SERVICE: ON- HIGHWAY	1
	UNDER- WATERWAY	5
(28)	LANES:ON STRUCTURE 04 UNDER STRUCTURE	00
(29)	AVERAGE DAILY TRAFFIC	50000
(30)	YEAR OF ADT 2006 (109) TRUCK ADT	2 %
(19)	BYPASS, DETOUR LENGTH	2 KM

********** GEOMETRIC DATA **********

(48)	LENGTH OF MAXIMUM SPAN	27.4 M
(49)	STRUCTURE LENGTH	102.1 M
(50)	CURB OR SIDEWALK: LEFT 0.3 M	RIGHT 0.3 M
(51)	BRIDGE ROADWAY WIDTH CURB TO CURB	19.5 M
(52)	DECK WIDTH OUT TO OUT	21.0 M
(32)	APPROACH ROADWAY WIDTH (W/SHOULDERS)	19.5 M
(33)	BRIDGE MEDIAN- NO MEDIAN	0
(34)	SKEW 10 DEG (35) STRUCTURE FLARED	NO
(10)	INVENTORY ROUTE MIN VERT CLEAR	99.99 M
(47)	INVENTORY ROUTE TOTAL HORIZ CLEAR	19.5 M
(53)	MIN VERT CLEAR OVER BRIDGE RDWY	99.99 M
(54)	MIN VERT UNDERCLEAR REF- NOT H/RR	0.00 M
(55)	MIN LAT UNDERCLEAR RT REF- NOT H/RR	0.0 M
(56)	MIN LAT UNDERCLEAR LT	0.0 M

********** NAVIGATION DATA **********

(38)	NAVIGATION CONTROL- NO CONTROL	CODE 0
(111)	PIER PROTECTION-	CODE
(39)	NAVIGATION VERTICAL CLEARANCE	0.0 M
(116)	VERT-LIFT BRIDGE NAV MIN VERT CLEAR	M
(40)	NAVIGATION HORIZONTAL CLEARANCE	0.0 M

****

	SUFFICIENCY RATING =	92.3
	STATUS	
	HEALTH INDEX	88.4
	PAINT CONDITION INDEX =	75.0

********** CLASSIFICATION ********** CODE

(112)	NBIS BRIDGE LENGTH- YES	Y
(104)	HIGHWAY SYSTEM- NOT ON NHS	0
(26)	FUNCTIONAL CLASS- OTHER PRIN ART URBAN	14
(100)	DEFENSE HIGHWAY- NOT STRAHNET	0
(101)	PARALLEL STRUCTURE- NONE EXISTS	N
(102)	DIRECTION OF TRAFFIC- 2 WAY	2
(103)	TEMPORARY STRUCTURE-	
(105)	FED.LANDS HWY- NOT APPLICABLE	0
(110)	DESIGNATED NATIONAL NETWORK - NOT ON NET	0
(20)	TOLL- ON FREE ROAD	3
(21)	MAINTAIN- STATE HIGHWAY AGENCY	01
(22)	OWNER- STATE HIGHWAY AGENCY	01
(37)	HISTORICAL SIGNIFICANCE- NOT ELIGIBLE	5

********** CONDITION ********** CODE

(58)	DECK	6
(59)	SUPERSTRUCTURE	7
(60)	SUBSTRUCTURE	7
(61)	CHANNEL & CHANNEL PROTECTION	8
(62)	CULVERTS	N

********* LOAD RATING AND POSTING ********* CODE

(31)	DESIGN LOAD- MS-13.5 OR HS-15	3
(63)	OPERATING RATING METHOD- LOAD FACTOR	1
(64)	OPERATING RATING-	61.9
(65)	INVENTORY RATING METHOD- LOAD FACTOR	1
(66)	INVENTORY RATING-	37.6
(70)	BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS	5
(41)	STRUCTURE OPEN, POSTED OR CLOSED-	A
	DESCRIPTION- OPEN, NO RESTRICTION	

********** APPRAISAL ********** CODE

(67)	STRUCTURAL EVALUATION	7
(68)	DECK GEOMETRY	7
(69)	UNDERCLEARANCES, VERTICAL & HORIZONTAL	N
(71)	WATER ADEQUACY	8
(72)	APPROACH ROADWAY ALIGNMENT	8
(36)	TRAFFIC SAFETY FEATURES	0000
(113)	SCOUR CRITICAL BRIDGES	8

********** PROPOSED IMPROVEMENTS **********

(75)	TYPE OF WORK-	CODE
(76)	LENGTH OF STRUCTURE IMPROVEMENT	M
(94)	BRIDGE IMPROVEMENT COST	
(95)	ROADWAY IMPROVEMENT COST	
(96)	TOTAL PROJECT COST	
(97)	YEAR OF IMPROVEMENT COST ESTIMATE	
(114)	FUTURE ADT	89227
(115)	YEAR OF FUTURE ADT	2029

********** INSPECTIONS **********

(90)	INSPECTION DATE 11/11	(91) FREQUENCY	24	MO
(92)	CRITICAL FEATURE INSPECTION:		(93) CFI DATE	
A)	FRACTURE CRIT DETAIL- NO	MO	A)	
B)	UNDERWATER INSP- NO	MO	B)	08/97
C)	OTHER SPECIAL INSP- NO	MO	C)	

Structure Maintenance & Investigations

Structure Rating Summary Sheet

Bridge Number: 53 0118
Facility Carried: STATE ROUTE 1
Location: 07-LA-001-30.36-LA
City: LOS ANGELES

Bridge Name: BALLONA CREEK

Structural Element Rated: Continuous four span riveted steel plate girder (8) with RC open end seated abutments and piers, all supported on treated timber piles.

Rating Summary

	Rating Factor	Metric Tonnes	Critical Location: Structure	Control Element	Load Action	Location
DESIGN LOADING						
Inventory:	1.16	37.6	span 1	Superstructure	Ultimate Moment	Span 1 10th Point 0
Operating:	1.91	61.9	span 1	Superstructure	Ultimate Moment	Span 1 10th Point 0
LEGAL RATING		Posting U.S. Tons				
Type 3 (25T):	1.00	Legal	span 1	Superstructure	Ultimate Moment	Span 1 10th Point 0
Type 3S2 (36T):	1.00	Legal	span 1	Superstructure	Ultimate Moment	Span 1 10th Point 0
Type 3-3 (40T):	1.00	Legal	span 1	Superstructure	Ultimate Moment	Span 1 10th Point 0
PERMIT RATING		Permit Rating				
5 Axle Truck :	1.13	P	span 1	Superstructure	Ultimate Moment	Span 1 10th Point 0
7 Axle Truck :	1.13	P	span 1	Superstructure	Ultimate Moment	Span 1 10th Point 0
9 Axle Truck :	1.13	P	span 1	Superstructure	Ultimate Moment	Span 1 10th Point 0
11 Axle Truck:	1.13	P	span 1	Superstructure	Ultimate Moment	Span 1 10th Point 0
13 Axle Truck.	1.13	P	span 1	Superstructure	Ultimate Moment	Span 1 10th Point 0

RELEVANT LOAD RATING INFORMATION

NOTES:

Overlay Used In Rating:

Rating Method: Load Factor (LF) Inventory (65) — Load Factor (LF) Operating (63)

Analysis Tool Used: BDS Frame Rate

Rating/File Location: Bridge Book

Control Rating By: SM&I — Rating Date: 02/11/1977

Rating Checked By: SM&I

Rating Type: Calculated

Summary Prepared By: Edwin Mah — Summary Date: 05/24/2010

REGISTERED PROFESSIONAL ENGINEER
Edwin Mah
No. 27141
03/31/2011
CIVIL
STATE OF CALIFORNIA

Edwin Mah - Registered Engineer

DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 53 0118
Facility Carried: STATE ROUTE 1
Location : 07-LA-001-30.36-LA
City : LOS ANGELES
Inspection Date : 11/18/2009

Bridge Inspection Report

Inspection Type

Routine	FC	Underwater	Special	Other
X				

STRUCTURE NAME: BALLONA CREEK

CONSTRUCTION INFORMATION

Year Built : 1937
Year Widened: N/A
Length (m) : 102.1
Skew (degrees): 10
No. of Joints : 2
No. of Hinges : 0

Structure Description: Continuous four span riveted steel plate girder (8) with RC open end seated abutments and piers, all supported on treated timber piles.

Span Configuration : (N) 22.9 m, 27.4 m, 22.9 m (S) c/c

LOAD CAPACITY AND RATINGS

Design Live Load: MS-13.5 OR HS-15
Inventory Rating: 37.2 metric tonnes Calculation Method: LOAD FACTOR
Operating Rating: 61.6 metric tonnes Calculation Method: LOAD FACTOR
Permit Rating : PPPPP
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 0.5 m br, 0.3 m cu, 14.5 m, 0.3 m cu, 0.5 m br (E)
Total Width: 21.0 m Net Width: 19.5 m No. of Lanes: 4
Rail Description: Concrete baluster Rail Code : 0000
Min. Vertical Clearance: Unimpaired

DESCRIPTION UNDER STRUCTURE

Channel Description: Trapezoidal, concrete lined, mud at bottom

CONDITION TEXT

CONDITION OF STRUCTURE

1. The creek channel is full of water at time of this inspection.

2. There are map pattern cracks (0.2 to 0.3 mm) throughout the entire deck spaced at 150 mm to 200 mm.

3. several concrete spalls with exposed rebars on the interior side of the concrete baluster rail. (o)

4. There are cracks and potholes in both south and north bounds departure slabs.

5. Otherwise, the structure appeared to be in good condition.

UNDERWATER INVESTIGATION

Water level has never been low enough to facilitate wading. Scour evaluation should be done by divers.

PAINT CONDITION
The following items were noted in previous reports with almost the same condition:

CONDITION TEXT

a. There are some rusts on the edge of the bottom flanges of girders.(scattered and minor)
b. Approximate 2m2 of paint on the bottom flange of northeastern exterior girder above the bike way is scratched. Bare metal is exposed along the eastern side of the bottom flange.(minor)
c. Corrosion is visible on various parts of the bearing assemblies with minor rusts on surface of pins and there is some corrosion on edge of the masonry plate of rocker bearings.

The above work items have been programmed into EA 4Y1501 for remediations.

This inspection consisted of Nelson Vo and Edwin Mah.

ELEMENT INSPECTION RATINGS

F#	Elem	Element Description	Env	Total Qty	Units	Qty in each Condition State St. 1	St. 2	St. 3	St. 4	St. 5
101	38	Concrete Slab - Bare	2	2150	sq.m.	2150	0	0	0	0
101	107	Painted Steel Open Girder/Beam	2	817	m.	0	817	0	0	0
101	210	Reinforced Conc Pier Wall	2	63	m.	63	0	0	0	0
101	215	Reinforced Conc Abutment	2	42	m.	42	0	0	0	0
101	311	Moveable Bearing (roller, sliding, etc.)	2	32	ea.	15	16	1		
101	313	Fixed Bearing	2	8	ea.	0	8	0	0	0
101	339	Concrete Railing (aesthetic/masonry)	2	230	m.	228	2	0	0	0
101	349	Sliding Steel Plates	2	43	m.	43	0	0	0	0
101	358	Deck Cracking	2	1	ea.	0	1	0	0	0

WORK RECOMMENDATIONS

RecDate: 11/18/2009
Action : Paint-Spot Prep/Full
Work By: MAINT. CONTRACT
Status : INITIATED
EstCost: $500,000
StrTarget: 2 YEARS
DistTarget:
EA: 4Y1501

Spot blast or power tool clean to remove rust on girder lower flange edges and around lower flange rivets.
Spot blast to remove graffiti patches on the end diaphragm and girder webs near abutment 1.
Overcoat paint all steel elements using Caltrans PWB waterborne paints.
(paint work recommendation entered by John C. Rogers)

RecDate: 09/26/2003
Action : Bearings-Reset
Work By: MAINT. CONTRACT
Status : INITIATED
EstCost: $4,000
StrTarget: 2 YEARS
DistTarget:
EA: 4Y1501

Provide the top rod (or pin) in the link bar that are missing at both sides of the second Rocker Bearing (from west) and at east side of third Rocker Bearing at Abutment 1.

RecDate: 08/03/2000
Action : Appr. Slab-Repair
Work By: DISTRICT
Status : INITIATED
EstCost:
StrTarget: 2 YEARS
DistTarget:
EA: 4Y1501

There are longitudinal and transverse cracks in the southbound AC departure. There are potholes 75mm deep in the paving notch and there is cavity under the departure.
Seal with asphaltic material crack seal at paving notch, and level AC

WORK RECOMMENDATIONS

RecDate: 08/03/2000	EstCost:	$68,000	There are cavities under the Approach and
Action : Appr. Slab-Replace	StrTarget:	2 YEARS	Departure AC of the bridge as noted by
Work By: DISTRICT	DistTarget:		the encroachment permit contractor.
Status : INITIATED	EA:	4Y1501	Provide new PCC approach and departure slabs in a future contract.

RecDate: 08/22/1997	EstCost:	$5,000	Corrosion is visible on various parts of
Action : Bearings-Rehab	StrTarget:	2 YEARS	the bearing assemblies with minor rusts
Work By: MAINT. CONTRACT	DistTarget:		on surface of pins and there is some
Status : INITIATED	EA:	4Y1501	corrosion on edge of the masonry plate of rocker bearings.
			Remove the rust by abrasive blast cleaning. Prime and repaint metal surfaces as required. Note: there is lead in the existing paint.
			Include this work in the contract 07-166004

RecDate: 02/10/1984	EstCost:	$373,920	F1-03 / F2-0 / F3-5 / Rail Type-C.WIN
Action : Railing-Upgrade	StrTarget:	2 YEARS	Rail upgrade
Work By: STRAIN	DistTarget:		
Status : PROPOSED	EA:		

Inspected By : Nelson V. Vo

Registered Civil Engineer

STRUCTURE INVENTORY AND APPRAISAL REPORT

********** IDENTIFICATION **********

(1) STATE NAME- CALIFORNIA 069
(8) STRUCTURE NUMBER **53 0118**
(5) INVENTORY ROUTE(ON/UNDER)- ON 131000010
(2) HIGHWAY AGENCY DISTRICT 07
(3) COUNTY CODE 037 (4) PLACE CODE 44000
(6) FEATURE INTERSECTED- BALLONA CREEK
(7) FACILITY CARRIED- STATE ROUTE 1
(9) LOCATION- 07-LA-001-30.36-LA
(11) MILEPOINT/KILOMETERPOINT 30.36
(12) BASE HIGHWAY NETWORK- PART OF NET 1
(13) LRS INVENTORY ROUTE & SUBROUTE 000000000101
(16) LATITUDE 33 DEG 58 MIN 30 SEC
(17) LONGITUDE 118 DEG 25 MIN 56 SEC
(98) BORDER BRIDGE STATE CODE % SHARE %
(99) BORDER BRIDGE STRUCTURE NUMBER

******** STRUCTURE TYPE AND MATERIAL *********

(43) STRUCTURE TYPE MAIN:MATERIAL- STEEL CONT
TYPE- SLAB CODE 401
(44) STRUCTURE TYPE APPR:MATERIAL- OTHER/NA
TYPE- SLAB CODE 001
(45) NUMBER OF SPANS IN MAIN UNIT 4
(46) NUMBER OF APPROACH SPANS 0
(107) DECK STRUCTURE TYPE- CIP CONCRETE CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE- NONE CODE 0
B) TYPE OF MEMBRANE- NONE CODE 0
C) TYPE OF DECK PROTECTION- NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1937
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON- HIGHWAY 1
UNDER- WATERWAY 5
(28) LANES.ON STRUCTURE 04 UNDER STRUCTURE 00
(29) AVERAGE DAILY TRAFFIC 50000
(30) YEAR OF ADT 2000 (109) TRUCK ADT 2 %
(19) BYPASS, DETOUR LENGTH 2 KM

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 27.4 M
(49) STRUCTURE LENGTH 102.1 M
(50) CURB OR SIDEWALK: LEFT 0.3 M RIGHT 0.3 M
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 19.5 M
(52) DECK WIDTH OUT TO OUT 21.0 M
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 19.5 M
(33) BRIDGE MEDIAN- NO MEDIAN 0
(34) SKEW 10 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 19.5 M
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M
(54) MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M
(55) MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M
(56) MIN LAT UNDERCLEAR LT 0.0 M

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL- NO CONTROL CODE 0
(111) PIER PROTECTION- CODE
(39) NAVIGATION VERTICAL CLEARANCE 0.0 M
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR M
(40) NAVIGATION HORIZONTAL CLEARANCE 0.0 M

****

SUFFICIENCY RATING = 92.3
STATUS
HEALTH INDEX 88.4
PAINT CONDITION INDEX = 75.0

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH- YES Y
(104) HIGHWAY SYSTEM- NOT ON NHS 0
(26) FUNCTIONAL CLASS- OTHER PRIN ART URBAN 14
(100) DEFENSE HIGHWAY- NOT STRAHNET 0
(101) PARALLEL STRUCTURE- NONE EXISTS N
(102) DIRECTION OF TRAFFIC- 2 WAY 2
(103) TEMPORARY STRUCTURE-
(105) FED.LANDS HWY- NOT APPLICABLE 0
(110) DESIGNATED NATIONAL NETWORK - NOT ON NET 0
(20) TOLL- ON FREE ROAD 3
(21) MAINTAIN- STATE HIGHWAY AGENCY 01
(22) OWNER- STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE- NOT ELIGIBLE 5

********** CONDITION ********** CODE

(58) DECK 6
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 7
(61) CHANNEL & CHANNEL PROTECTION 8
(62) CULVERTS N

********* LOAD RATING AND POSTING ********* CODE

(31) DESIGN LOAD- MS-13.5 OR HS-15 3
(63) OPERATING RATING METHOD- LOAD FACTOR 1
(64) OPERATING RATING- 61.6
(65) INVENTORY RATING METHOD- LOAD FACTOR 1
(66) INVENTORY RATING- 37.2
(70) BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5
(41) STRUCTURE OPEN, POSTED OR CLOSED- A
DESCRIPTION- OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 7
(68) DECK GEOMETRY 7
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATER ADEQUACY 8
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 0000
(113) SCOUR CRITICAL BRIDGES 8

********** PROPOSED IMPROVEMENTS **********

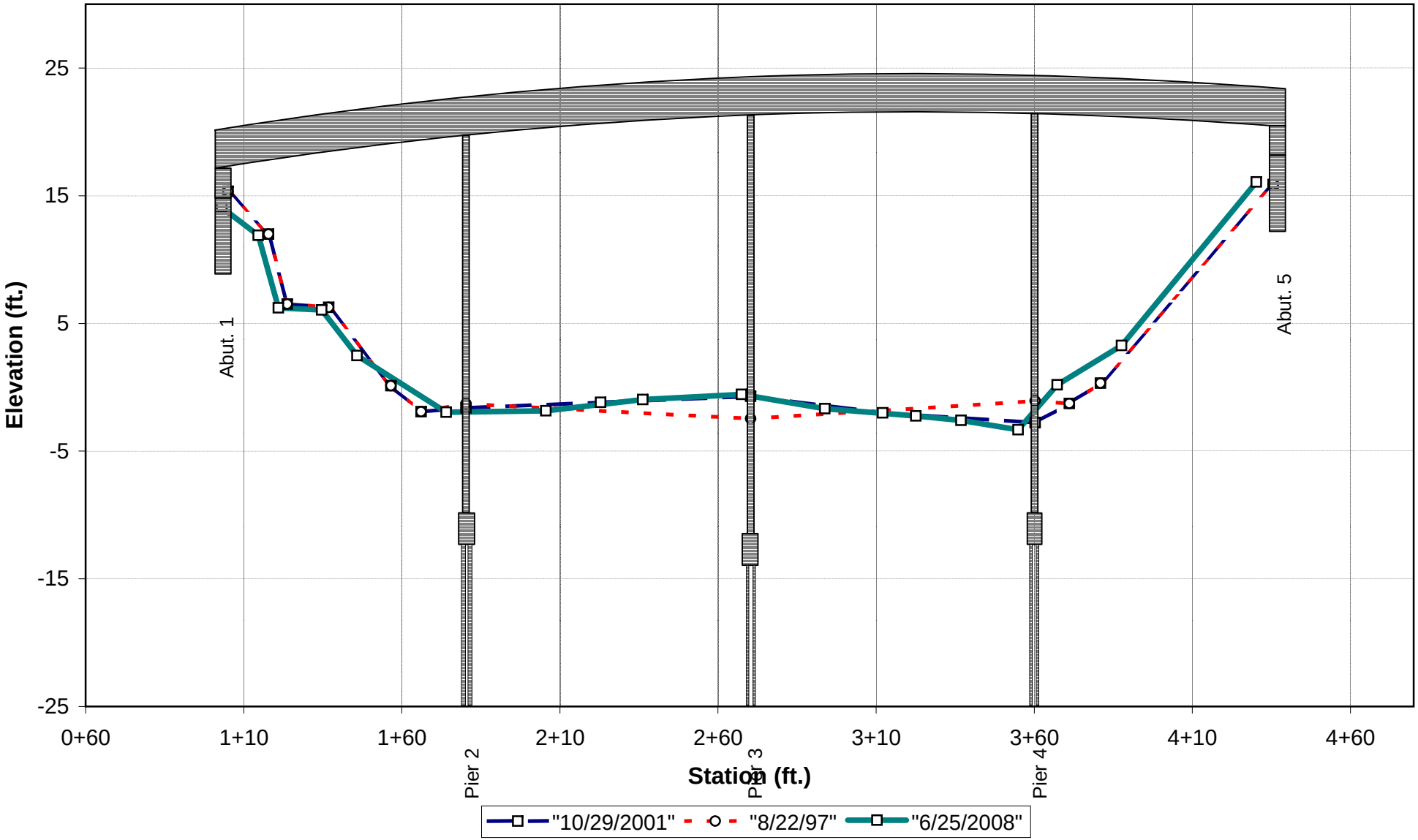
(75) TYPE OF WORK- CODE
(76) LENGTH OF STRUCTURE IMPROVEMENT M
(94) BRIDGE IMPROVEMENT COST
(95) ROADWAY IMPROVEMENT COST
(96) TOTAL PROJECT COST
(97) YEAR OF IMPROVEMENT COST ESTIMATE
(114) FUTURE ADT 89227
(115) YEAR OF FUTURE ADT 2029

********** INSPECTIONS **********

(90) INSPECTION DATE 11/09 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL- NO MO A)
B) UNDERWATER INSP- NO MO B)
C) OTHER SPECIAL INSP- NO MO C)

Bridge ID: 53 0118 **7-LA-1-30.36**

Ballona Creek - Upstream



53-0118.xlu

Printed by MM on 3/24/2009

DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 53 0118
Facility Carried: STATE ROUTE 1
Location : 07-LA-001-30.36-LA
City : LOS ANGELES
Inspection Date : 06/25/2008

Bridge Inspection Report

Inspection Type

Routine	FC	Underwater	Special	Other
☐	☐	☐	☐	☒

STRUCTURE NAME: BALLONA CREEK

CONSTRUCTION INFORMATION

Year Built : 1937
Year Widened: N/A
Length (m) : 102.1

Skew (degrees): 10
No. of Joints : 2
No. of Hinges : 0

Structure Description: Continuous four span riveted steel plate girder (8) with RC open end seated abutments and piers, all supported on treated timber piles.

Span Configuration : (N) 22.9 m, 27.4 m, 22.9 m (S) c/c

LOAD CAPACITY AND RATINGS

Design Live Load: MS-13.5 OR HS-15

Inventory Rating: 37.2 metric tons — Calculation Method: LOAD FACTOR
Operating Rating: 61.6 metric tons — Calculation Method: LOAD FACTOR
Permit Rating : PPPPP
Posting Load : Type 3 N/A — Type 3S2 N/A — Type 3-3 N/A

DESCRIPTION ON STRUCTURE

Deck X-Section: (W) 0.5 m br, 0.3 m cu, 14.5 m, 0.3 m cu, 0.5 m br (E)

Total Width: 21.0 m — Net Width: 19.5 m — No. of Lanes: 4
Rail Description: Concrete baluster — Rail Code : 0000
Min. Vertical Clearance: Unimpaired

DESCRIPTION UNDER STRUCTURE

Channel Description: Trapezoidal, concrete lined, mud at bottom

CONDITION TEXT

HISTORY
The bridge was built in 1937 and retrofitted in 1996. The channel is trapezoidal in shape, with concrete lined banks and mud at the bottom. History shows that the water level has been high enough that it was not possible to inspect the foundation. An underwater investigation has never been performed on this structure. No scour issues have been reported since the bridge was built.

REVISION
The Item 113 code for scour vulnerability has been changed from T to 8.

SCOUR
This report summarizes the results of the inspection and scour evaluation performed by the SM&I Hydraulics Office.

This bridge is tidally influenced, however, using engineering judgement, the tidal influence is minimal because adding some flow to the channel would have minimal affect on the scour calculation. In addition, no scour issues have been reported since the bridge was built in 1937; however, the foundation has never been inspected by an underwater inspection team.

An evaluation for scour potential was made using the 2002 Final Hydraulic Report (FHR), bridge inspection reports, as-built plans, channel cross sections and observations obtained during a field visit to the bridge site. There were no scour problems noted

CONDITION TEXT

during this field inspection. The upstream and downstream banks and abutment slopes were concrete lined. Due to the high water levels at the time of the visit, it was not possible to make an adequate assessment of the condition of the substructure. Historical cross-sections show that the channel is stable.
The bridge scour potential from the 2002 FHR was used in this study and was calculated in accordance with FHWA Technical Advisory T5140.23,"Evaluating Scour at Bridges" and was determined to be not scour critical. The Item 113 Code," Vulnerability to Scour", has been changed to 8, "Bridge foundations determined to be stable for assessed or calculated scour condition. Scour is determined to be above top of footing by assessment (i.e., bridge foundations are on rock formations that have been determined to resist scour within the service life of the bridge), by calculations or by installation of properly designed countermeasures".

A channel cross-section was taken on the upstream side of the bridge. A plot of historical cross-sections is attached.

CHANNEL X-SECTION

Side : Upstream X-Section Date: 06/25/2008
Measured From : top of concrete rail

Location	Horiz(m)	Vert(m)	Comments
	0.00	2.90	Face of A1
	3.50	3.70	
	5.46	5.50	Edge of Bike trail
	9.62	5.70	Edge of Bike trail
	13.03	6.90	EOW
	21.63	8.50	Pier 2
	31.23	8.70	
	40.57	8.60	
	50.10	8.60	Pier 3
	58.13	9.00	
	66.13	9.20	
	70.48	9.30	
	76.00	9.50	Pier 4/Thalweg
	79.75	8.40	
	85.95	7.40	EOW/Bottom of concrete bank
	98.95	3.30	Face of A5/Top of concrete bank

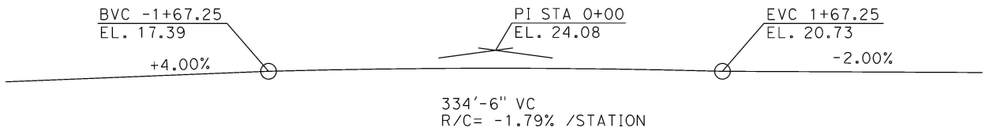
Inspected By : Manah, Mohamad

Registered Civil Engineer

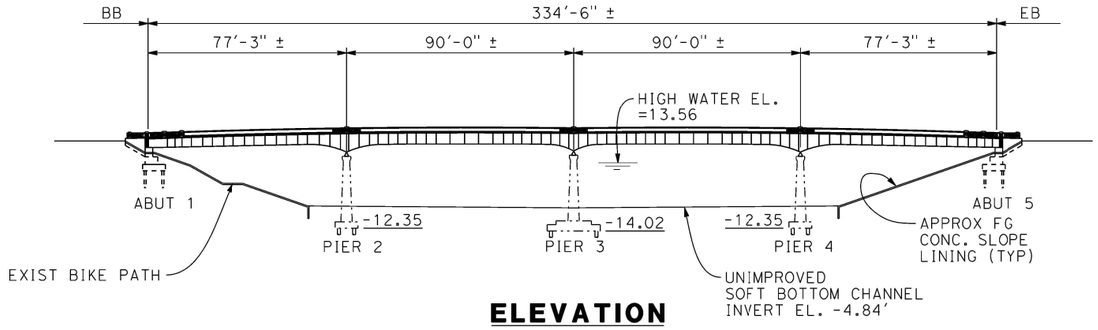
APPENDIX C:

LINCOLN BRIDGE PRELIMINARY DESIGN

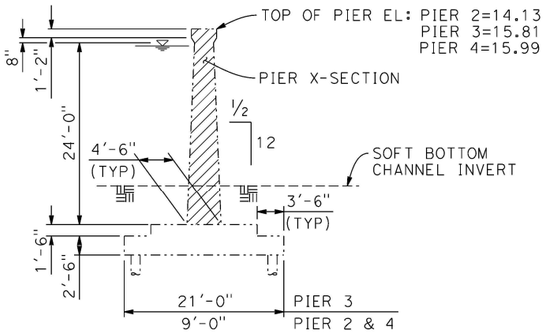
EXISTING BRIDGE



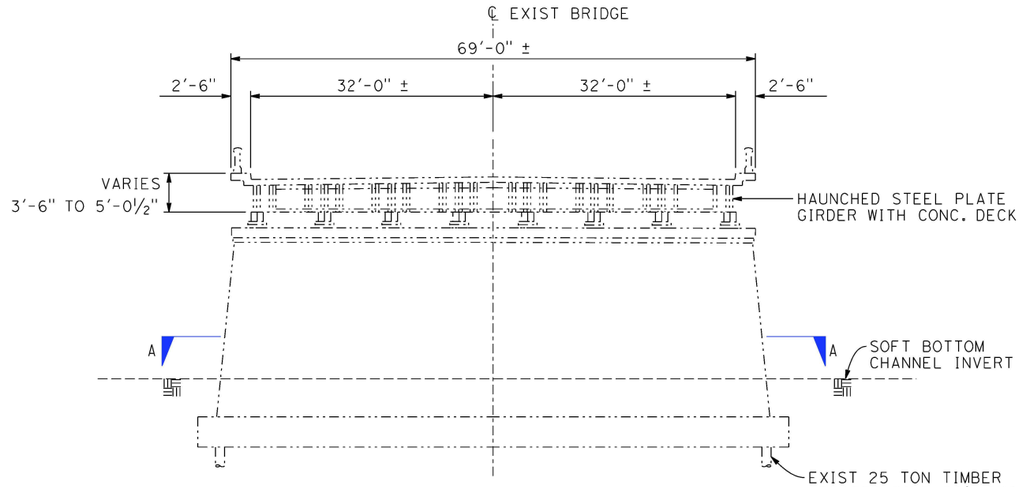
PROFILE GRADE
NTS



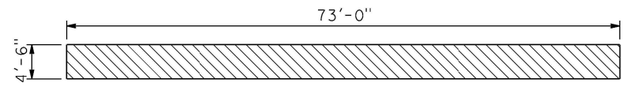
ELEVATION
1"=30'



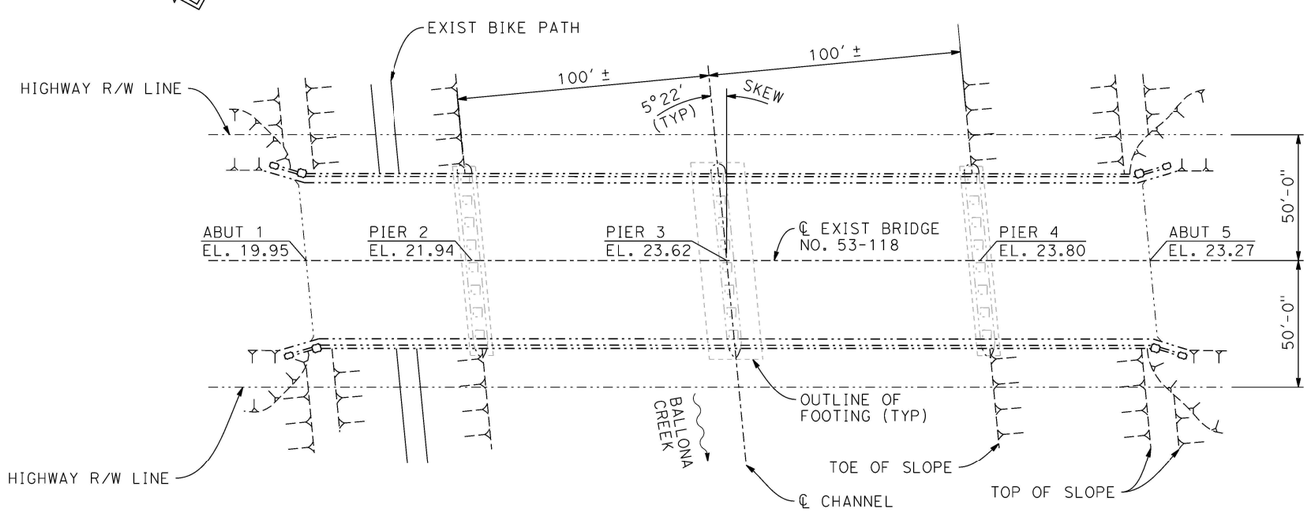
PIER 3 DETAIL
1"=5'
(PIER 2 & 4 SIMILAR)



TYPICAL SECTION @ PIER
1"=10'



SECTION A-A
1"=10'



PLAN
1"=30'

LOCATION	EXISTING FOOT PRINT IN WATER (SQFT)	VOL OF FOOTING (CF/CY)	EXISTING PIER X-SECTION (SQFT)
PIER 2	73' X 4'-6"=329	22.5 SF X 75' = 1688/63	23'-11 3/8" X 3'-7"(AVE)=86
PIER 3	73' X 4'-6"=329	73.5 SF X 78' = 5733/212	25'-10" X 3'-6"(AVE)=91
PIER 4	73' X 4'-6"=329	22.5 SF X 75' = 1688/63	25'-10" X 3'-6"(AVE)=91
TOTAL	987 SF	9110 CF / 338 CY	268 SF

NOT FOR CONSTRUCTION

BASIS OF DRAWING: CORPS OF ENGINEERING, US ARMY 1937 & FIELD VISIT 12/16/12

REV	DATE	BY	SUB	APP	DESCRIPTION
1	20131205	STV			REVISE TO SHOW CHANNEL TYPE
0	20130328	STV			ORIGNAL DRAWING

DESIGNED BY D. SARETSKY
DRAWN BY Z. OHN
CHECKED BY R. CAMPBELL
IN CHARGE T. DUTTA
DATE 20131205

STV 100 Years

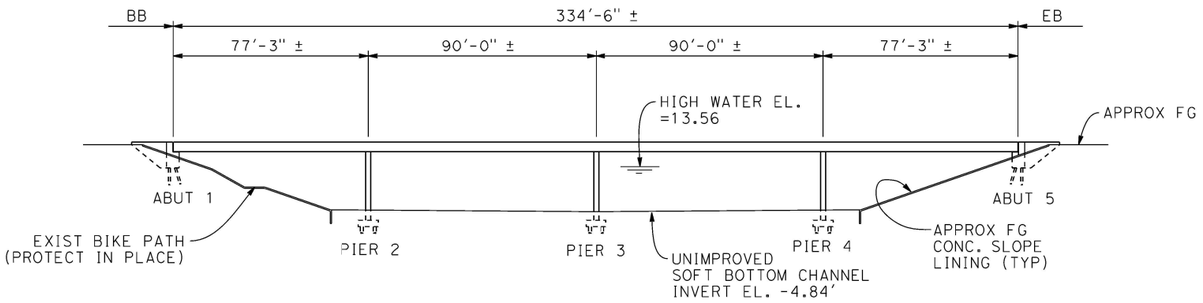
LOS ANGELES DEPARTMENT OF TRANSPORTATION
LINCOLN BLVD (SR-1) BRIDGE
OVER BALLONA CREEK

EXISTING - GENERAL PLAN & ELEVATION

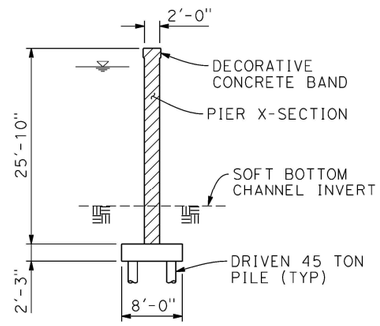
CONTRACT NO.
DRAWING NO.
SCALE AS NOTED
SHEET NO. 1 OF 2

saretsde 12/5/2013 12:08:22 PM K:\Vol3\Projects\4014988\4014988_0005\90_CAD Models and Sheets\06_S_Structural\SHEETS\Lincoln-GP-exist.dgn

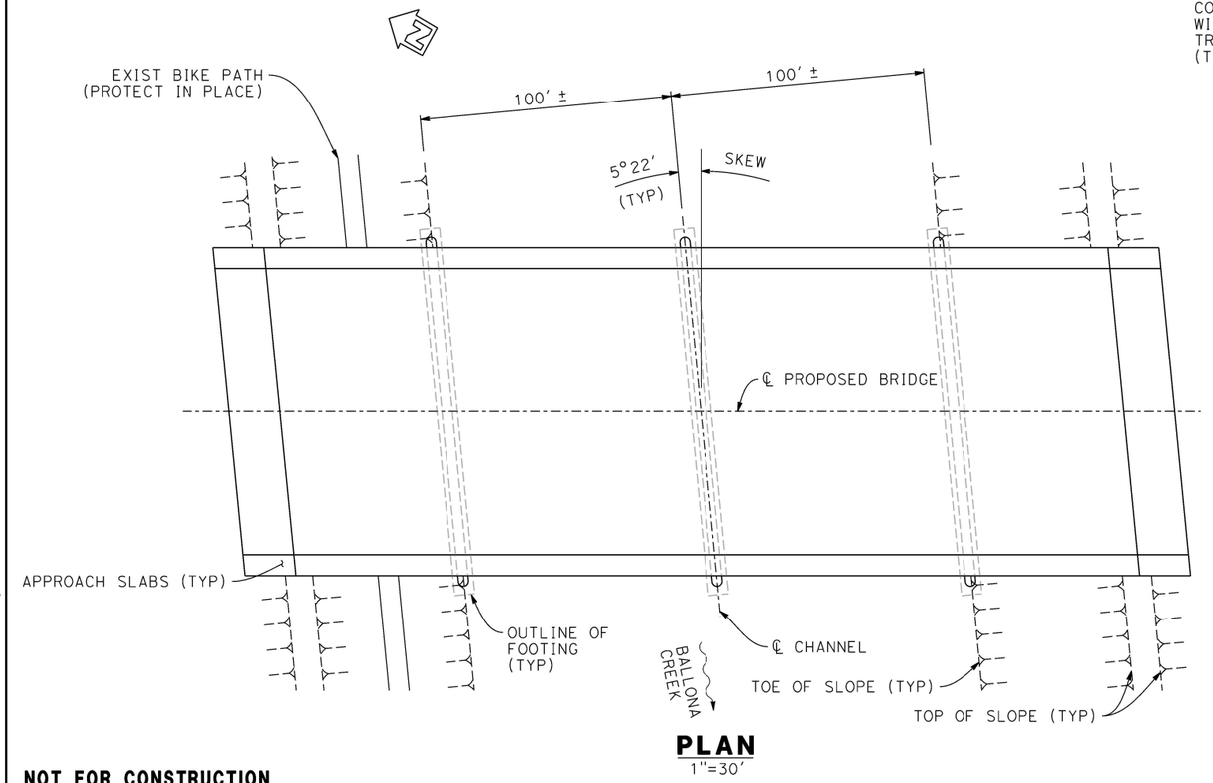
PROPOSED BRIDGE



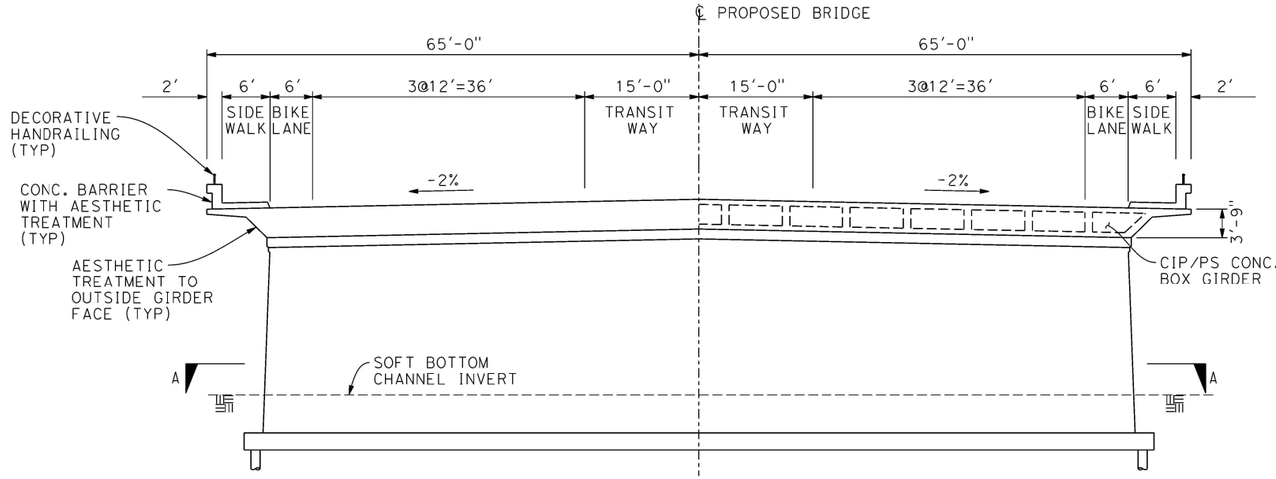
ELEVATION
1"=30'



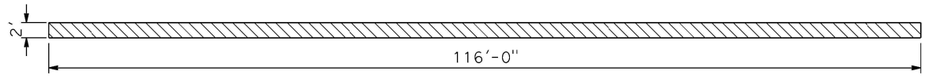
PIER DETAIL
1"=5'



PLAN
1"=30'



TYPICAL SECTION @ PIER
1"=10'



SECTION A-A
1"=10'

LOCATION	PROPOSED FOOT PRINT IN WATER (SQFT) ▨	VOL OF FOOTING (CF/CY)	PROPOSED PIER X-SECTION (SQFT) ▨
PIER 2	116' X 2'-0" = 232	8' X 2'-3" X 121' = 2178/81	23'-11⅜" X 2'-0" = 48
PIER 3	116' X 2'-0" = 232	8' X 2'-3" X 121' = 2178/81	25'-10" X 2'-0" = 52
PIER 4	116' X 2'-0" = 232	8' X 2'-3" X 121' = 2178/81	25'-10" X 2'-0" = 52
TOTAL	696 SF	6534 CF / 243 CY	152 SF
% PROPOSED / EXISTING	696 / 987 = 71%	6534 / 9110 = 72%	152 / 268 = 57%

NOT FOR CONSTRUCTION

REV	DATE	BY	SUB	APP	DESCRIPTION
1	20131210	STV			REVISE TO SHOW CHANNEL TYPE
0	20130328	STV			ORIGNAL DRAWING

DESIGNED BY D. SARETSKY
DRAWN BY Z. OHN
CHECKED BY R. CAMPBELL
IN CHARGE T. DUTTA
DATE 20131210

STV 100 Years

LOS ANGELES DEPARTMENT OF TRANSPORTATION
LINCOLN BLVD (SR-1) BRIDGE
OVER BALLONA CREEK

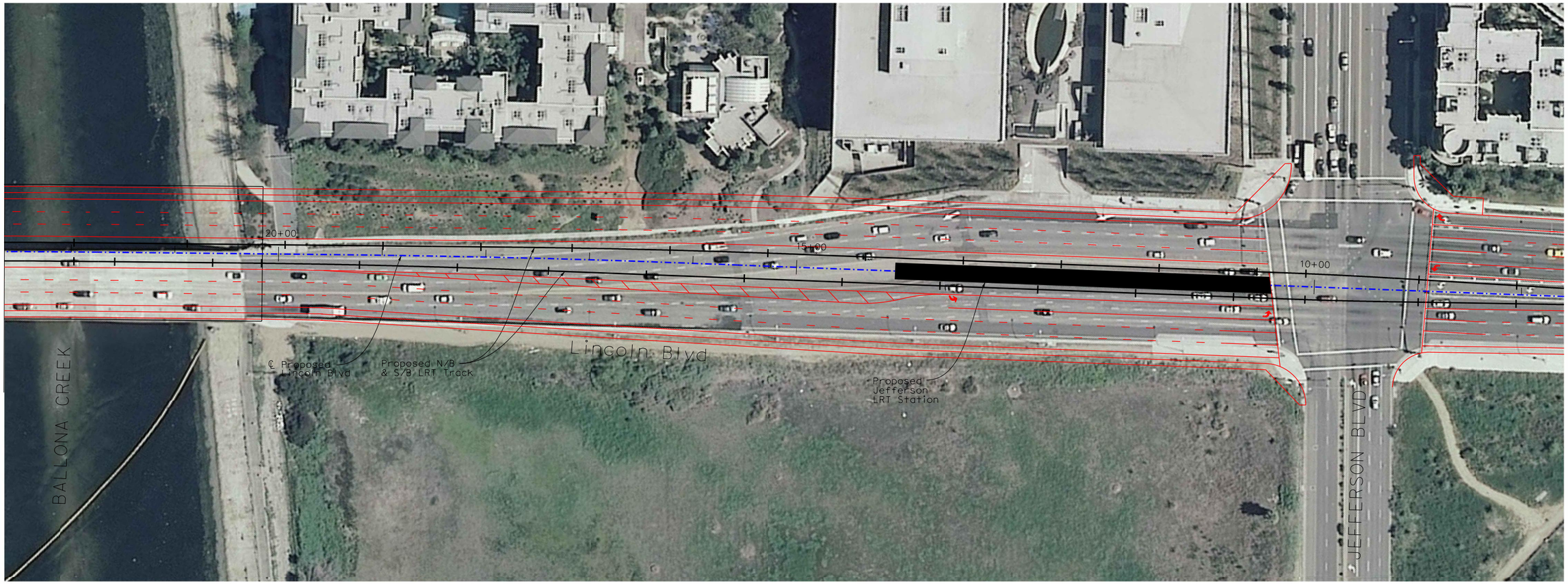
PROPOSED - GENERAL PLAN & ELEVATION

CONTRACT NO.
DRAWING NO.
SCALE AS NOTED
SHEET NO. 2 OF 2

saretsde 12/11/2013 11:20:37 AM I:\Projects\4014988\4014988_0005\90_CAD Models and Sheets\06_S_Structural\Lincoln-GP-proposed.dgn

APPENDIX D:

LINCOLN BOULEVARD ALIGNMENT



50 0 50 100
1"=50'

NOT FOR CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY A. BOSCH
DRAWN BY D. SARETSKY
CHECKED BY T. DUTTA
IN CHARGE T. DUTTA
DATE

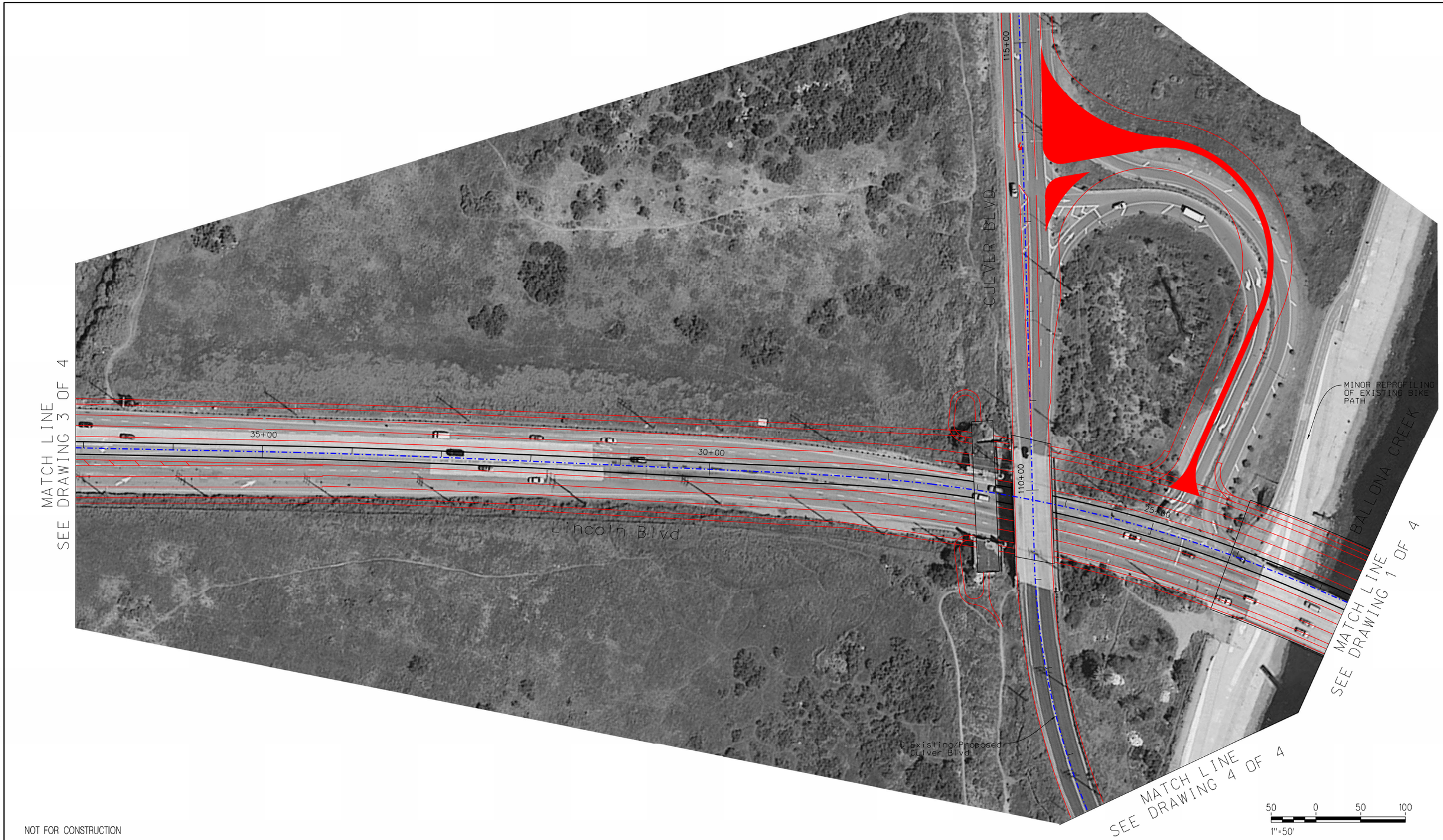
STV 100 Years

LOS ANGELES DEPARTMENT OF TRANSPORTATION

FROM JEFFERSON BLVD TO FIJI WAY
PLAN
SHEET 1 OF 4

CONTRACT NO.
DRAWING NO.
SCALE AS NOTED
SHEET NO. 1 OF 4

partenmf 11/1/2013 4:00:34 PM C:\Users\partenmf\Desktop\Lincoln\Lincoln Exh_Alt3A_Plan_3_of_4.dgn



NOT FOR CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION

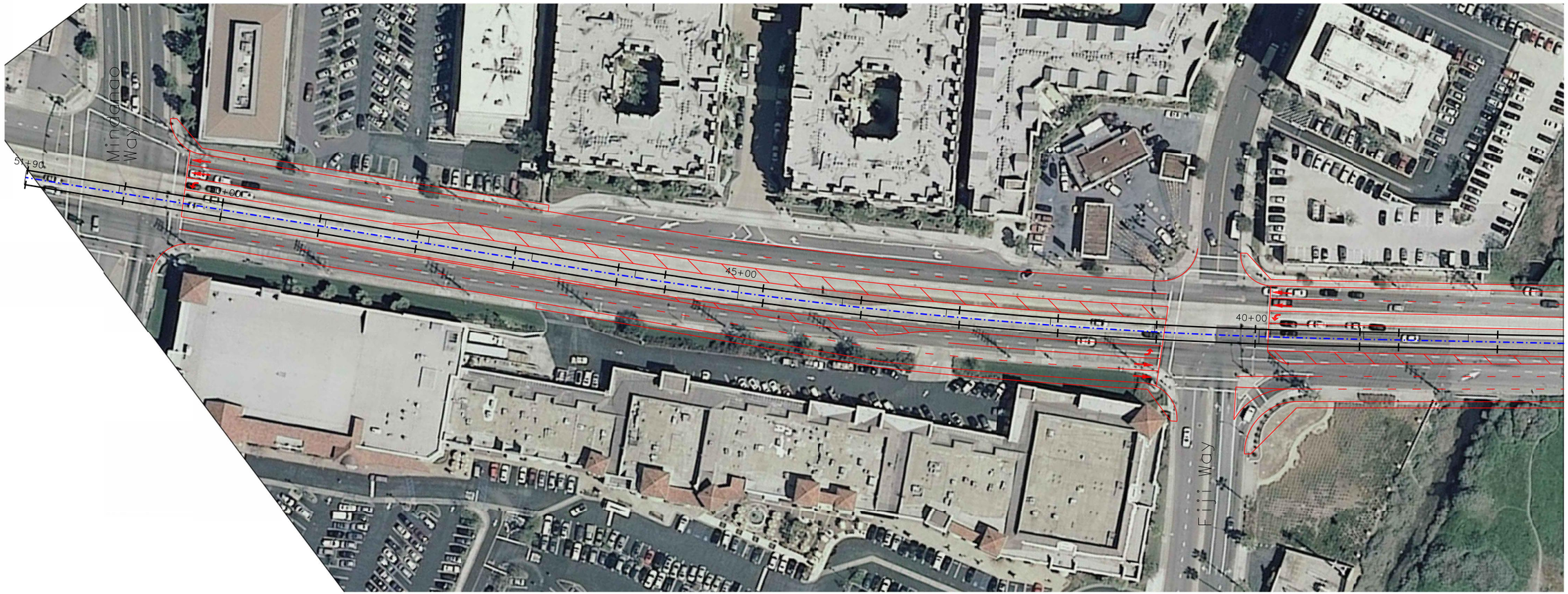
DESIGNED BY A. BOSCH
DRAWN BY D. SARETSKY
CHECKED BY T. DUTTA
IN CHARGE T. DUTTA
DATE

STV 100 Years

LOS ANGELES DEPARTMENT OF TRANSPORTATION

FROM JEFFERSON BLVD TO FIJI WAY
PLAN
SHEET 2 OF 4

CONTRACT NO.
DRAWING NO.
SCALE AS NOTED
SHEET NO. 2 OF 4



MATCH LINE
SEE DRAWING 2 OF 4

50 0 50 100
1"=50'

NOT FOR CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY A. BOSCH
DRAWN BY D. SARETSKY
CHECKED BY T. DUTTA
IN CHARGE T. DUTTA
DATE

STV 100 Years

LOS ANGELES DEPARTMENT OF TRANSPORTATION
LINCOLN BLVD (SR-1)
FROM JEFFERSON BLVD TO FIJI WAY
PLAN
SHEET 3 OF 4

CONTRACT NO.
DRAWING NO.
SCALE AS NOTED
SHEET NO. 3 OF 4

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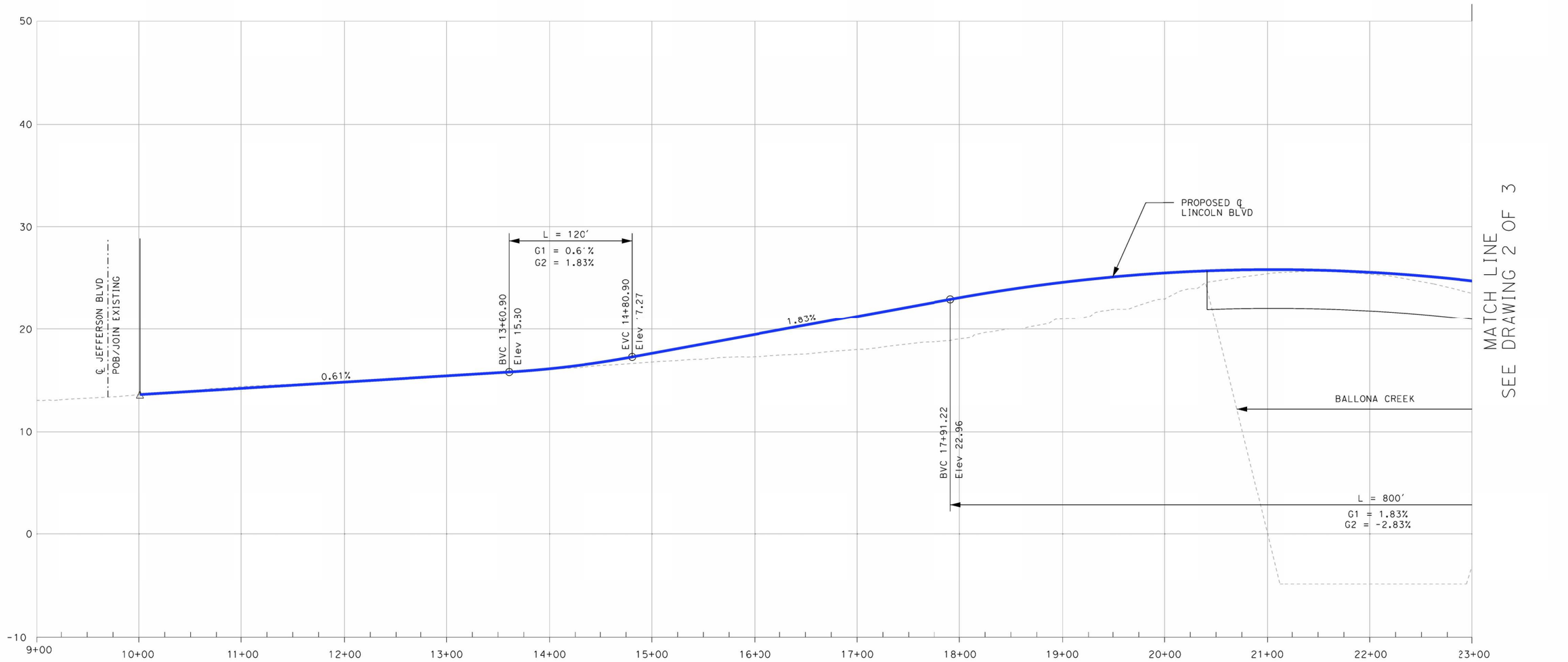


50 0 50 100
1"=50'

NOT FOR CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION

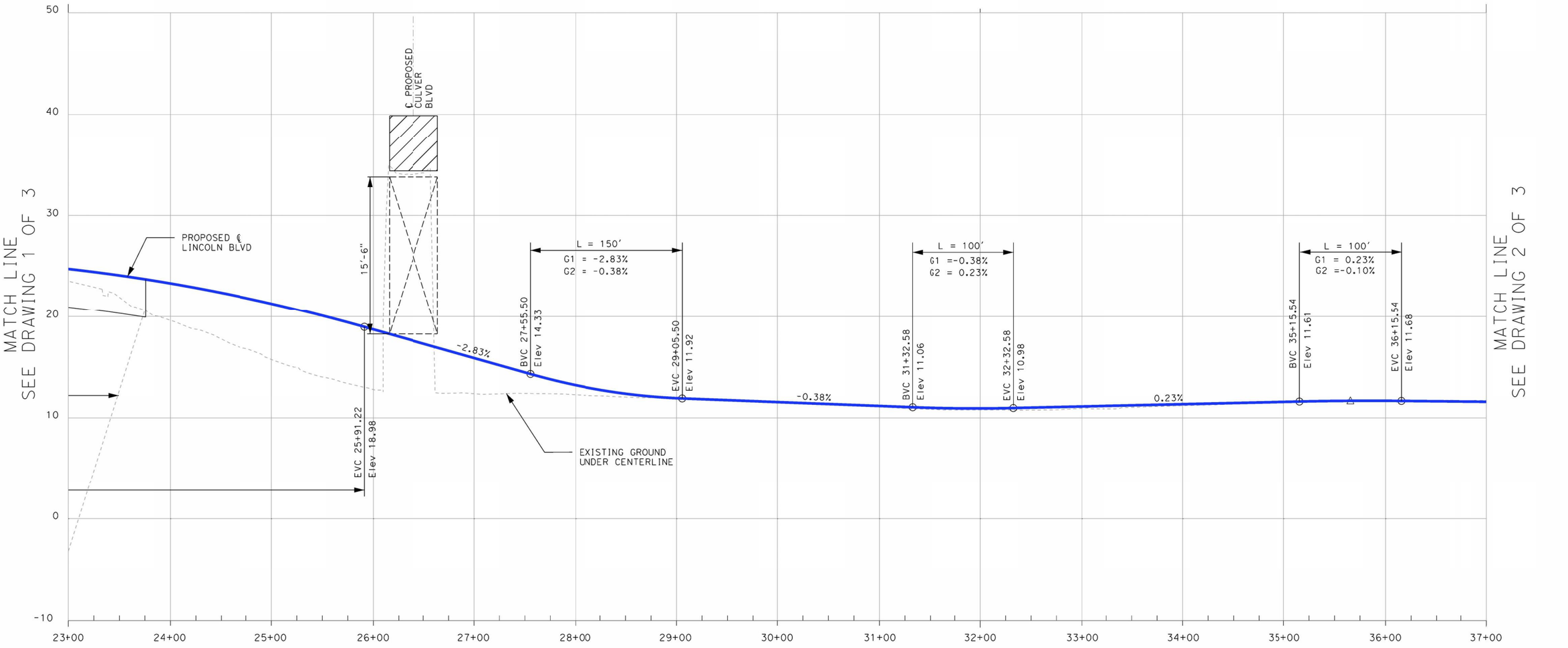
DESIGNED BY: A. BOSCH
DRAWN BY: D. SARETSKY
CHECKED BY: T. DUTTA
IN CHARGE: T. DUTTA
DATE:

STV 100 Years

LOS ANGELES DEPARTMENT OF TRANSPORTATION
LINCOLN BLVD (SR-1)

PROFILE
STA 8+00 TO STA 23+00

CONTRACT NO.
DRAWING NO.
SCALE: AS NOTED
SHEET NO.: 1 OF 3



50 0 50 100
1"=50'

NOT FOR CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION

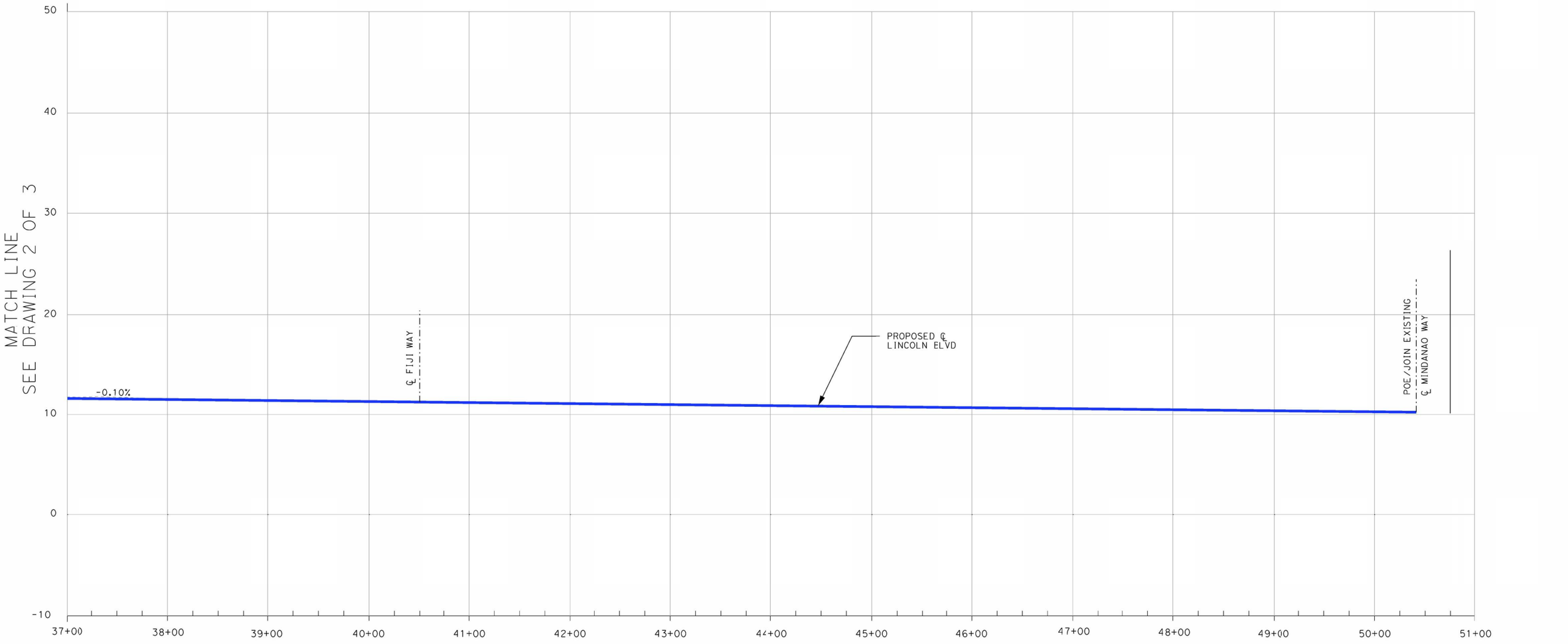
DESIGNED BY A. EOSCH
DRAWN BY D. SARETSKY
CHECKED BY T. CUTTA
IN CHARGE T. CUTTA
DATE

STV 100 Years

LOS ANGELES DEPARTMENT OF TRANSPORTATION
LINCOLN BLVD (SR-1)

PROFILE
STA 23+00 TO STA 37+00

CONTRACT NO.
DRAWING NO.
SCALE AS NOTED
SHEET NO. 2 OF 3



50 0 50 100
1"=50'

NOT FOR CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY A. EOSCH
DRAWN BY D. SARETSKY
CHECKED BY T. DUTTA
IN CHARGE T. DUTTA
DATE

STV 100 Years

LOS ANGELES DEPARTMENT OF TRANSPORTATION
LINCOLN BLVD (SR-1)

PROFILE
STA 37+00 TO STA 51+00

CONTRACT NO.
DRAWING NO.
SCALE AS NOTED
SHEET NO. 3 OF 3

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APPENDIX E:
CULVER BOULEVARD ALIGNMENT

50 0 50 100
1"=50'

NOT FOR CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY A. BOSCH
DRAWN BY D. SARETSKY
CHECKED BY T. DUTTA
IN CHARGE T. DUTTA
DATE

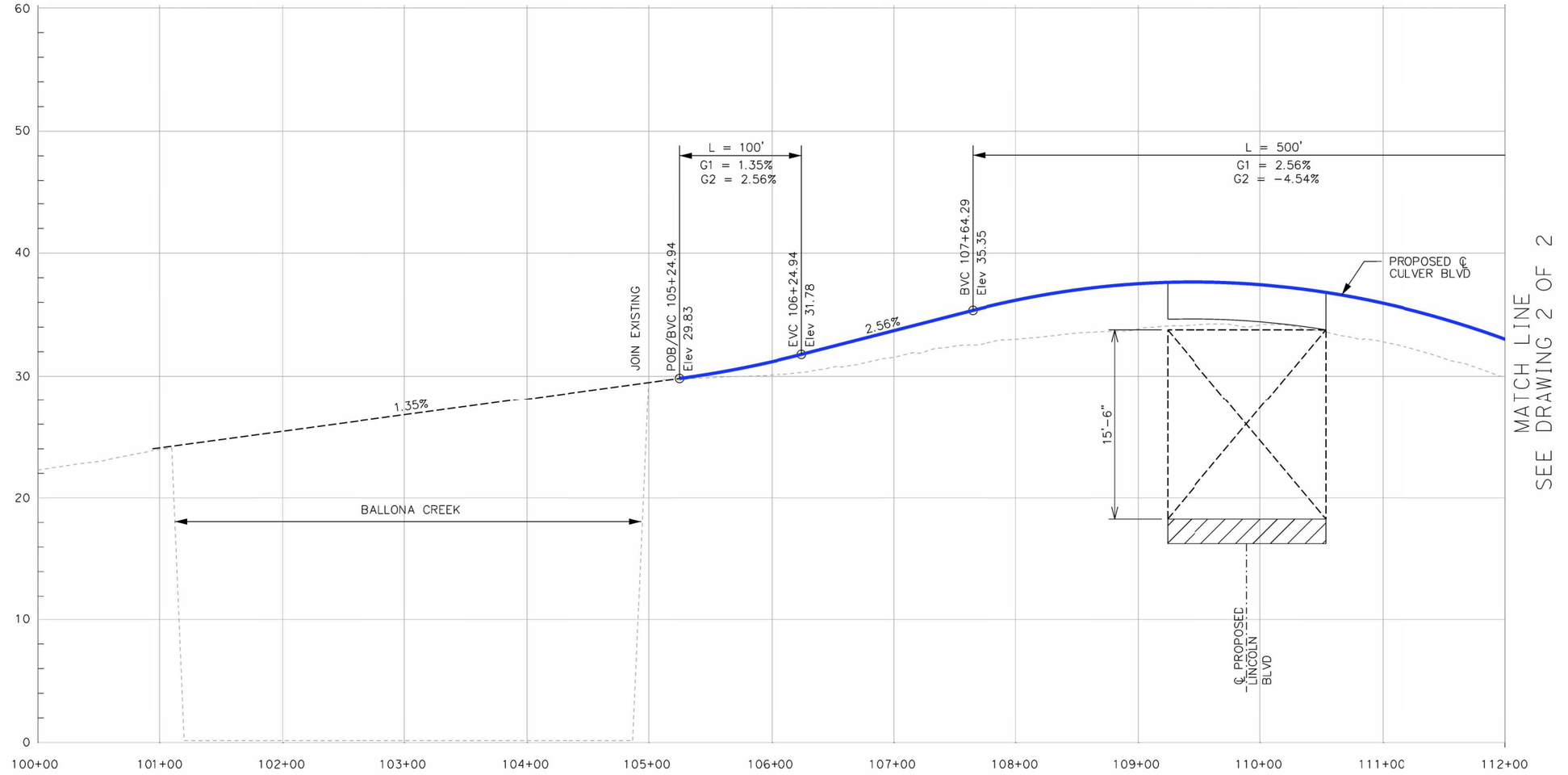
STV 100 Years

LOS ANGELES DEPARTMENT OF TRANSPORTATION
CULVER BLVD

PLAN
SHEET 4 OF 4

CONTRACT NO.
DRAWING NO.
SCALE AS NOTED
SHEET NO. 4 OF 4

partenmf 11/1/2013 4:01:04 PM C:\Users\partenmf\Desktop\Lincoln\Lincoln Exh_Alt3A_Plan_4_of_4.dgn



NOT FOR CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION

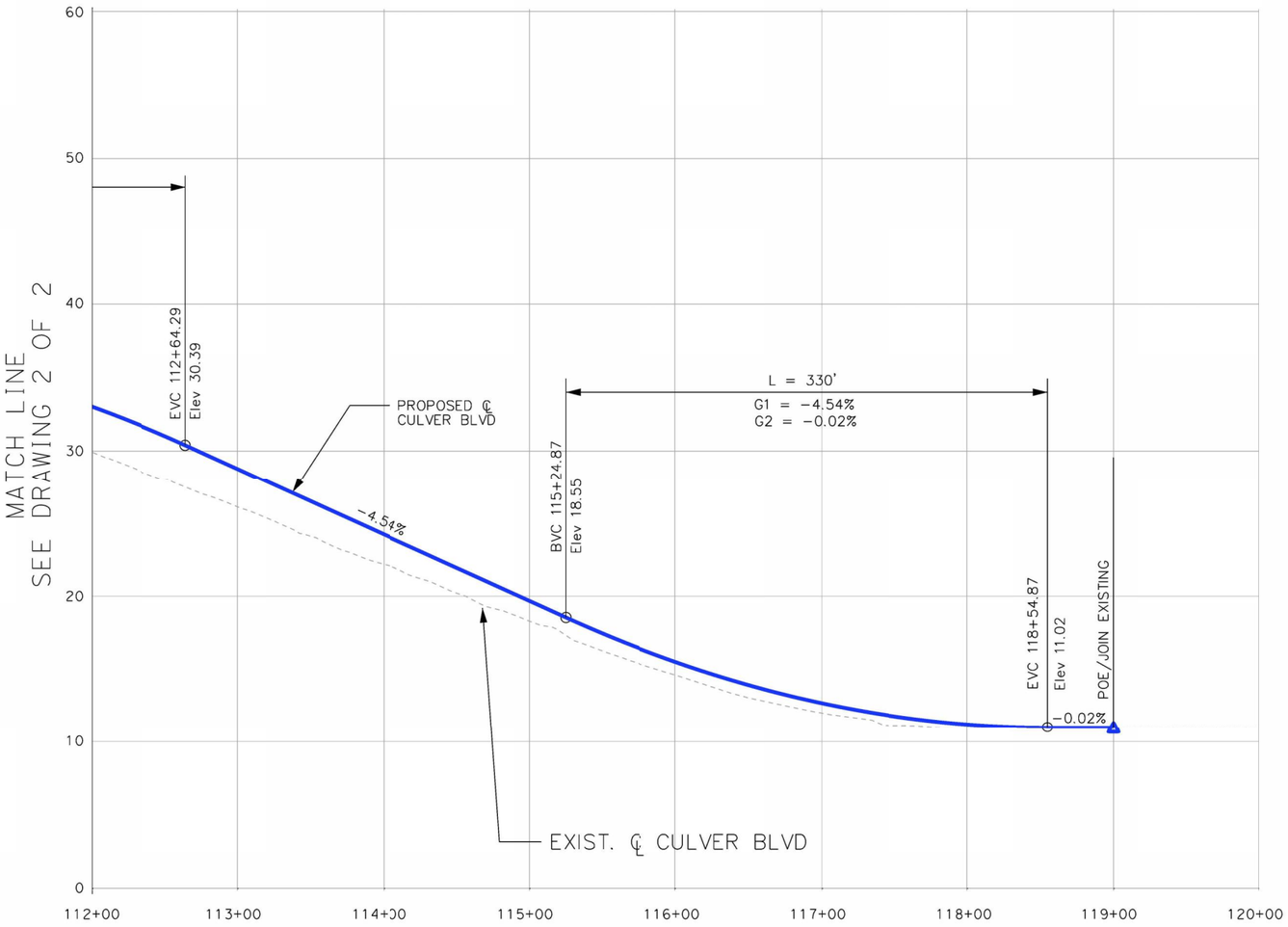
DESIGNED BY: A. EOSCH
DRAWN BY: D. SARETSKY
CHECKED BY: T. DUTTA
IN CHARGE: T. DUTTA
DATE:

STV 100 Years

LOS ANGELES DEPARTMENT OF TRANSPORTATION
CULVER BLVD

PROFILE
STA 100+00 TO STA 112+00

CONTRACT NO.
DRAWING NO.
SCALE: AS NOTED
SHEET NO.: 1 OF 2



50 0 50 100
1"=50'

NOT FOR CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY A. EOSCH
DRAWN BY D. SARETSKY
CHECKED BY T. CUTTA
IN CHARGE T. CUTTA
DATE

STV 100 Years

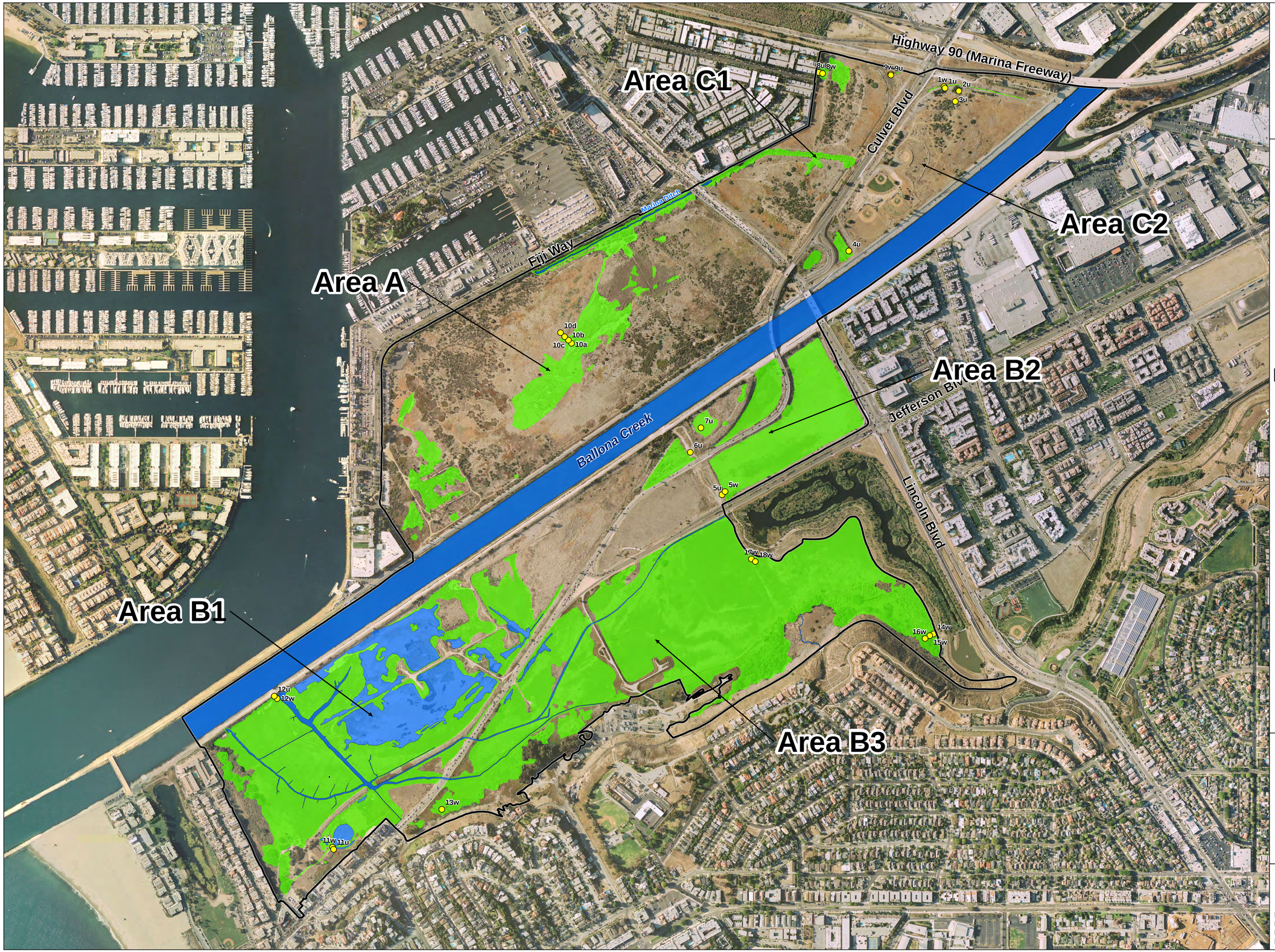
LOS ANGELES DEPARTMENT OF TRANSPORTATION
CULVER BLVD

PROFILE
STA 112+00 TO STA 120+00

CONTRACT NO.
DRAWING NO.
SCALE AS NOTED
SHEET NO. 2 OF 2

saretsde 9/27/2013 8:05:10 AM I:\Projects\4014988\4014988_0005\90_CAD Models and Sheets\04_C_Civil\Exhibits\Culver Profile_2_of_2.dgn

APPENDIX F:
PRELIMINARY DELINEATION OF CALIFORNIA COASTAL COMMISSION JURISDICTIONAL AREAS



wra
ENVIRONMENTAL CONSULTANTS
2169-G East Francisco Blvd.
San Rafael, CA 94901
(415) 454-8868 Phone
(415) 454-0129 Fax

Ballona Creek Wetlands Ecological Reserve

Marina Del Rey, California

Appendix B. Preliminary Delineation of California Coastal Commission Jurisdictional Areas

Legend

- Project Area: (604.9 acres)
- Sample Point
- Potential Non-Wetland Waters: (83.0 acres)
- Potential Wetland: (195.5 acres)
- Upland Area: (326.4 acres)

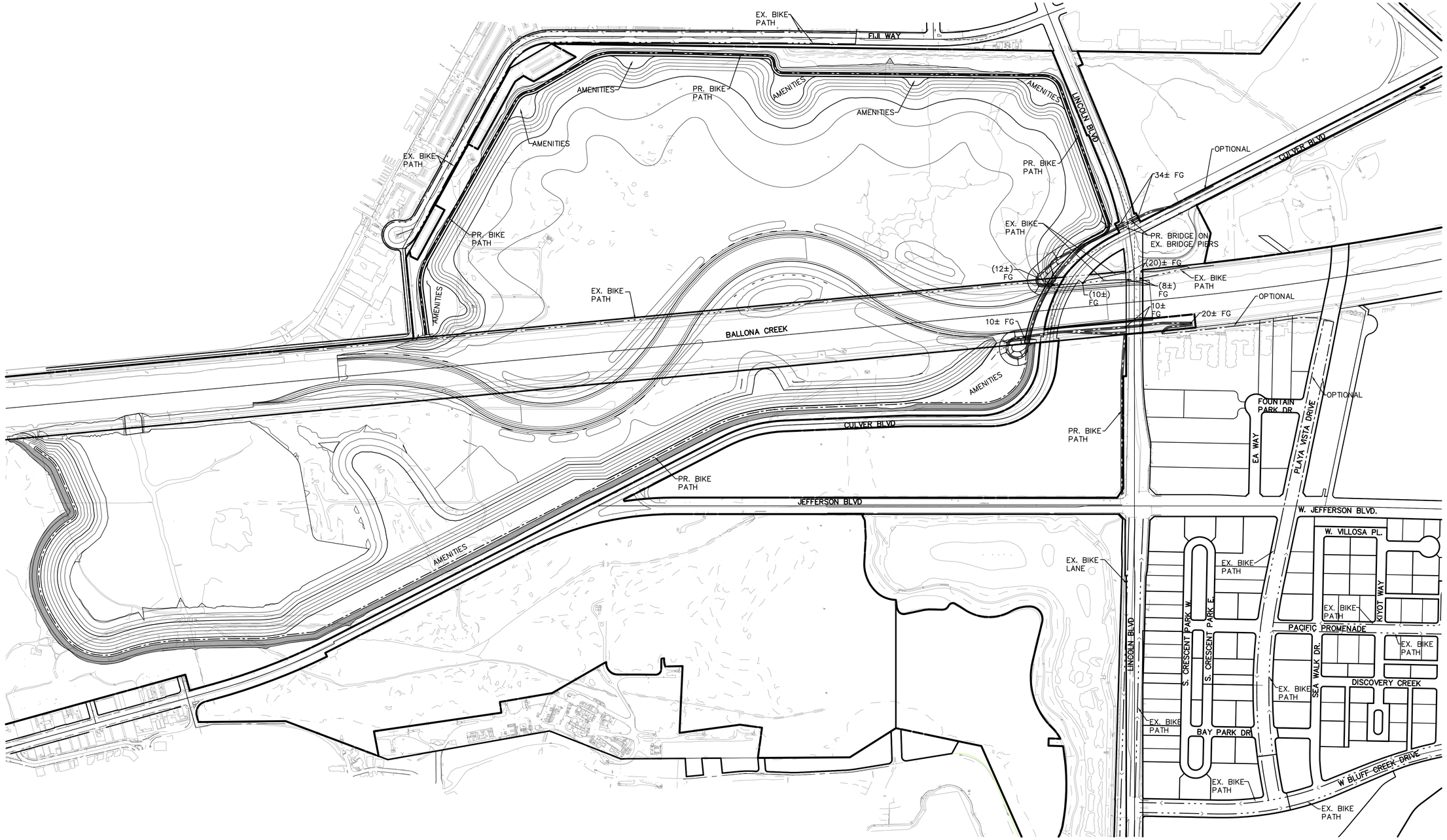
N
W E
S

0 400 800 1,600
Feet
1 inch = 400 feet

Map Date: April 2010
Map By: Sundaran Gillespie
Base Source: County of LA
Filepath: I:\ACAD2000\00016-3\GIS\ArcMap\CCCDelin.mxd

APPENDIX G:

SANTA MONICA BAY RESTORATION COMMISSION STUDY



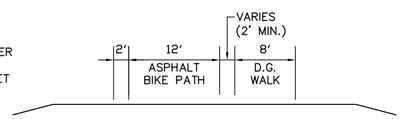
LEGEND

EXISTING BIKE PATH/LANE

PROPOSED BIKE PATH

NOTES:

1. BIKE PATH WIDTH IS 12 FEET MINIMUM (8 FOOT WITH 2 FOOT SHOULDER ON EITHER SIDE)
2. MINIMUM HEIGHT CLEARANCE FOR BIKE PATH UNDER BRIDGE IS 10 FEET



TYPICAL BRIDGE CROSS-SECTION
NTS

300' 150' 0' 300' 600'
GRAPHIC SCALE
Note: For reduced sized prints, original scale is in inches

REVIEWED LAND DEVELOPMENT DIVISION
BY _____
SUBDIVISION PLAN CHECKING SECTION DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER
MICHAEL J. ORDMAN
No. C48944
Exp. 09-30-14
CIVIL
STATE OF CALIFORNIA

PROJECT ENGINEER DATE

T.G.: PAGE

PROPOSED BIKE PATH ALIGNMENTS AND AMENITIES EXHIBIT

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

PLANS PREPARED BY:

PSOMAS

555 South Flower Street, Suite 4300
Los Angeles, CA 90071
(213) 223-1400 (213) 223-1444 fax
www.psomas.com

BALLONA WETLANDS ECOLOGICAL RESERVE

SHEET 1 OF 1