INFORMATION HANDOUT

For Contract No. 11-299204
At 11-SD-94, 805-Var

Identified by
Project ID 1100000422

11-299204
11-SD-94, 805-Var
Project ID 1100000422

MATERIALS INFORMATION

Foundation report for Sweetwater Springs Blvd OC, dated April 18, 2014

Foundation report for Murray Ridge Rd OC, dated April 18, 2014

Foundation report for Prospect Ave, dated April 18, 2014

Foundation report for Telegraph Canyon Rd Off-Ramp UC, dated April 18, 2014

Water Availability Letter from The City of San Diego, dated January 29, 2015

State of California **Business, Transportation and Housing Agency**

M e m o r a n d u m

Flex your power!
Be energy efficient!

To: MATT HOLM, CHIEF
Design Branch 12
Office of Structure Design

Attn: Jinrong Wang

Date: April 18, 2014

File: 11-SD-94 PM R 12.73
EA 11-299201, Proj# 1100000422
Sweetwater Springs Blvd OC (Seismic Retrofit)
Br.# 57-0574

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design South 2

Subject: Foundation Report (FR)

This FR is prepared in response to a request by the Office of Structure Design (OSD), proposing to seismically retrofit the Sweetwater Springs Blvd Overcrossing (OC) on Route 94 in San Diego County.

All elevations referenced in this report are based on the NGVD29 vertical datum. According to OSD, elevations at this site can be converted from NGVD29 to the current NAVD88 vertical datum by adding 2.2 feet.

Project Description/History

According to OSD's draft General Plan (attached - with a print date of 3/11/14), the proposed seismic retrofit involves steel encasement of bent columns.

Based on the 2013 Bridge Inspection Report (BIR) and the 1970 as-built plans, this existing bridge (built in 1970) is a continuous two span structure with open end diaphragm abutments, and a 3 column bent; all supported on spread footings.

Site Geology and Subsurface Conditions

According to a 1970 dated as-built Log of Test Boring (LOTB), one rotary and seven penetration borings were performed to obtain subsurface information in December of 1963. The rotary boring (about ten feet deep) describes the first five feet as clayey and silty top soil mixed with small decayed igneous rock fragments, underlain by "very dense granitic bedrock." For further soil and rock information, please refer to the as-built LOTB.

Additionally a field report dated 7/20/70 indicates that at the bent 2 location "Excavation

was carried out to a depth of approximately (8) feet. The first (3) feet consisted of red and brown clayey and silty soil not unlike material noted in "Log of Test Boring" sheet. A layer of dense light grey clayey silt and decomposed sandy granite with fairly large granitic boulders, followed to the bottom of the footing."

According to the Preliminary Geologic Map of California, Department of Conservation, Sate of California 2007, the project site is mainly underlain by Meta-Sedimentary rocks inter-layered and mixed with Meta-Volcanic rocks composed of siltstone, sandstone , and conglomerate.

Ground-Water

A Foundation Report dated 2/24/1964, indicates that no groundwater was observed during the December 1963 field investigations at this site.

Scour Potential

Scouring is not expected as this structure does not span a watercourse.

Corrosion

No corrosion information is available from the 1963 field investigations.

Seismic Recommendations

Ground motion recommendations are based on the Caltrans 2009 Seismic Design Procedure (SDP) as described in the Seismic Design Criteria Version 1.7 (SDC) Appendix B, the Acceleration Response Spectrum (ARS) Online Tool v2.2.06, USGS 2008 Interactive Deaggregations (Beta), and 1970 Log of Test Boring (LOTB) for geotechnical subsurface investigations.

Based on the 2012 Caltrans faults database and Caltrans ARS Online (v2.2.06) Tool, the site is located about 10.6 miles (17.04 km) from the Rose Canyon fault zone (Silver Strand section-Downtown Graben fault). This fault (Fault ID 410, MMax = 6.8, strike-slip, dip = 90 degrees, vertical, Bottom and Top of Rupture Plane approximately 5.0 and 0 miles, respectively) is the controlling fault for the deterministic seismic design procedure. A map showing the location of the bridge and the nearby faults is attached in Figure 1.

According to the 1970 dated as-built LOTBs and general geology at this site, the average shear wave velocity for the upper 100 feet of subsurface materials is estimated as V_{S30} = 500 m/s, using the correlation of Shear wave velocity with standard penetration test resistance and vertical effective stress by Brandenberg, S.J., Bellana, N. and Shantz, T., 2010 UCLA.

Design Response Spectrum

Based on the 2009 SDP, the design response spectrum is the upper envelope of the deterministic and probabilistic response, but is not less than a minimum deterministic response spectrum resulting from a Mmax = 6.5 earthquake on a vertical strike-slip fault at a distance of 7.5 miles (12 km).

Based on the 2009 SDP, the design response spectrum is the upper envelope of the deterministic and probabilistic response, but is not less than a minimum deterministic response spectrum resulting from a Mmax = 6.5 earthquake on a vertical strike-slip fault at a distance of 7.5 miles (12 km).

For this site, the design response spectrum is controlled by Probabilistic response spectrum. The corresponding peak horizontal ground acceleration (PGA) at proposed site is 0.27g. The recommended acceleration response spectrum (adjusted for near field effects) is attached in Figure 2.

Liquefaction

Based on available subsurface information and absence of groundwater (according to the 1970 dated as-built LOTBs), liquefaction potential appears low for this site.

Fault Rupture

The proposed site is not within an Alquist-Priolo Earthquake Fault Zone or an unzoned faults (Holocene or younger in age). The site is more than 10.6 miles from the nearest Caltrans-active fault (Rose Canyon fault zone, Silver Strand section-Downtown Graben fault), which extends to the ground surface. Potential for surface rupture is low, and no further work or design for surface rupture is required.

As-Built Foundations

The Foundation data shown in Table-1 are based on the 1970 dated as-built General Plan, except for the estimated design loads that are suggested by a foundation review dated 7/9/68:

Table-1: As-Built Data for existing OC (57-0574)

Location	Foundation Type	Allowable Bearing Capacity (tsf)	Bottom of the Footing Elevation (ft)
Abutment 1	Spread Footing	2.0	512.0 – 515.5 *
Bent 2	Spread Footing	4.0	498.0
Abutment 3	Spread Footing	2.0	519.0

Note: As-Built elevations refer to NGVD29 datum.

* - Bottom of the footing elevation varies from 512.0 at the east end to 515.5 feet at the west end of Abutment 1.

Estimated Capacity of Existing Foundation

At the request of OBSD, the following information is provided in this report. The ultimate soil bearing capacities shown below are estimated using As-Built plans and LOTBs:

Table-2
Estimated Ultimate Soil Bearing Capacities For The Existing OC (57-0754)

Location	Foundation Type	Estimated Ultimate Soil Bearing Capacities
Abutment 1	Spread Footing	6 tsf
Bent 2	Spread Footing	12 tsf
Abutment 5	Spread Footing	6 tsf

Foundation Recommendations

The following recommendations are for the proposed seismic retrofit of Sweetwater Springs Blvd OC (Br#57-0574) as shown on the attached draft General Plan provided by OSD, print dated March 11, 2014. The plan proposes steel encasement of bent columns. The estimated capacities provided in Table 2 (above) are still considered applicable to the proposed foundation modification.

If any changes are made to the proposed retrofit, our office should be notified and modification of our recommendations may be necessary.

The recommendations contained in this report are based on specific project information provided by OSD. If any conceptual changes are made during final project design, the Office of Geotechnical Design South-2, should review those changes to determine if the foundation recommendations provided in this report are still applicable. Any questions regarding the above recommendations should be directed to attention of Farzad Qmehr (916) 227-4519 or Angel Perez-Cobo (916) 227-7167, Office of Geotechnical Design South-2.

Prepared by: Date: 4-18-14

_____

Farzad Qmehr
Transportation Engineer
Geotechnical Design-South 2
Design Branch A

Attachments: Site Map, ARS Curve, Draft General Plan (dated 3/11/14)

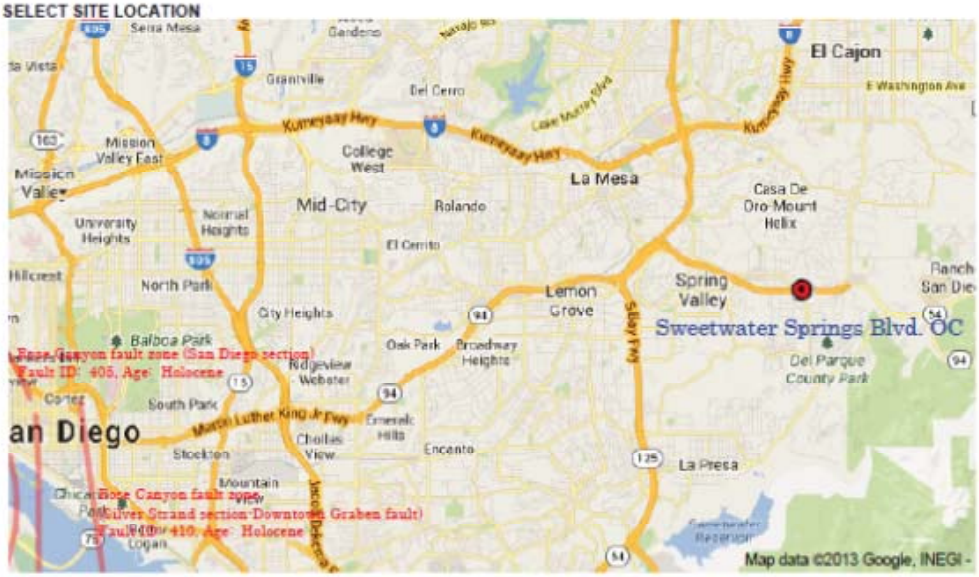
cc: Geotechnical Archive
Bruce Lambert- District Project Manager
Art Padilla - District Materials Engineer
HQ Geotechnical Design South-2 – Abbas Abghari
HQ Geotechnical Design South-2 – Angel Perez-Cobo
R.E. Pending File
Lauren Kemp - District Env. Planning
Angela Ezekiel - Project Coordination. Engr
Specs & Estimates - Ofelia P. Alcantara

CALIFORNIA DEPARTMENT OF
TRANSPORTATION

Caltrans ARS Online (v2.2.06)

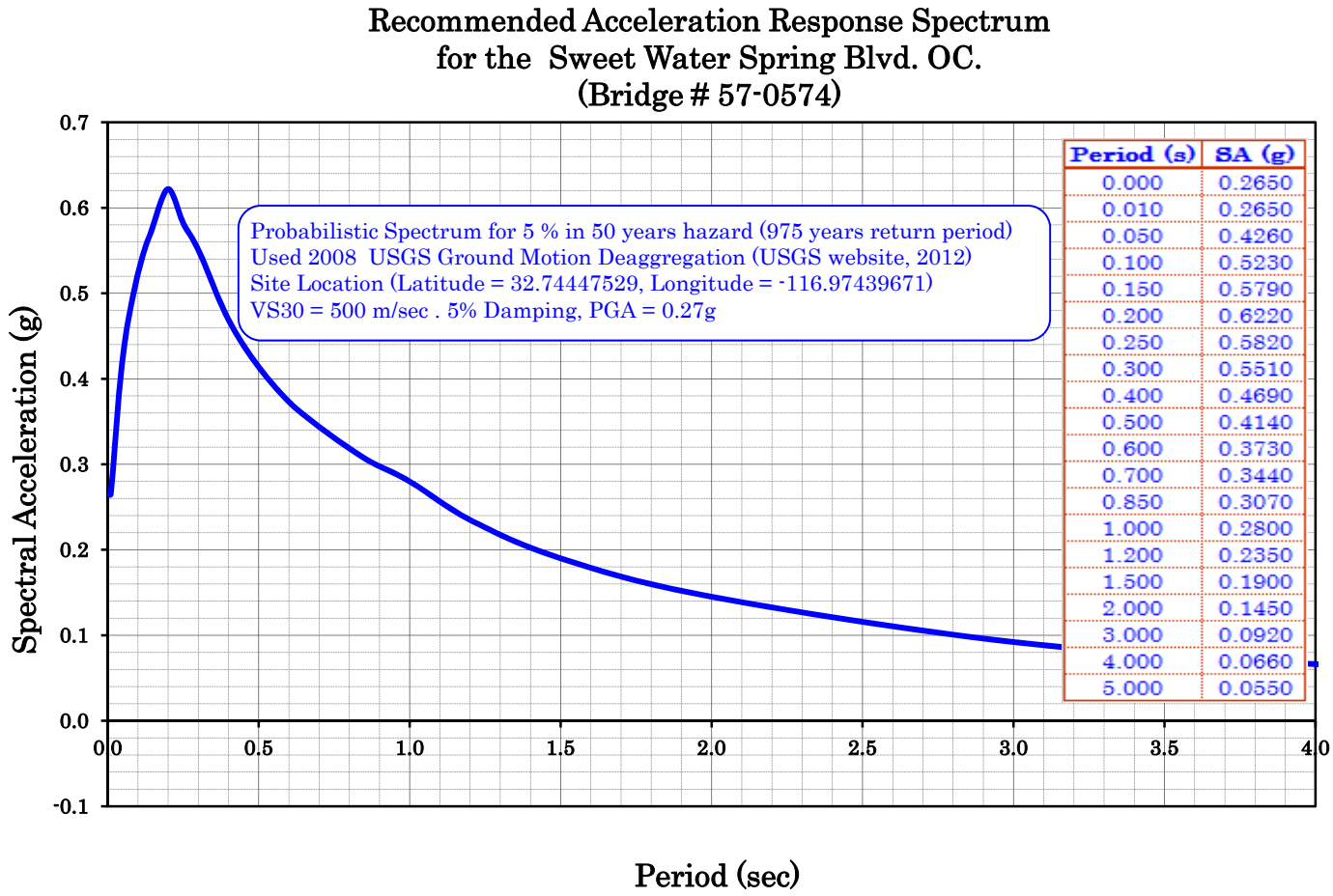
This web-based tool calculates both deterministic and probabilistic acceleration response spectra for any location in California based on criteria provided in *Appendix B of Caltrans Seismic Design Criteria*. More...

SELECT SITE LOCATION



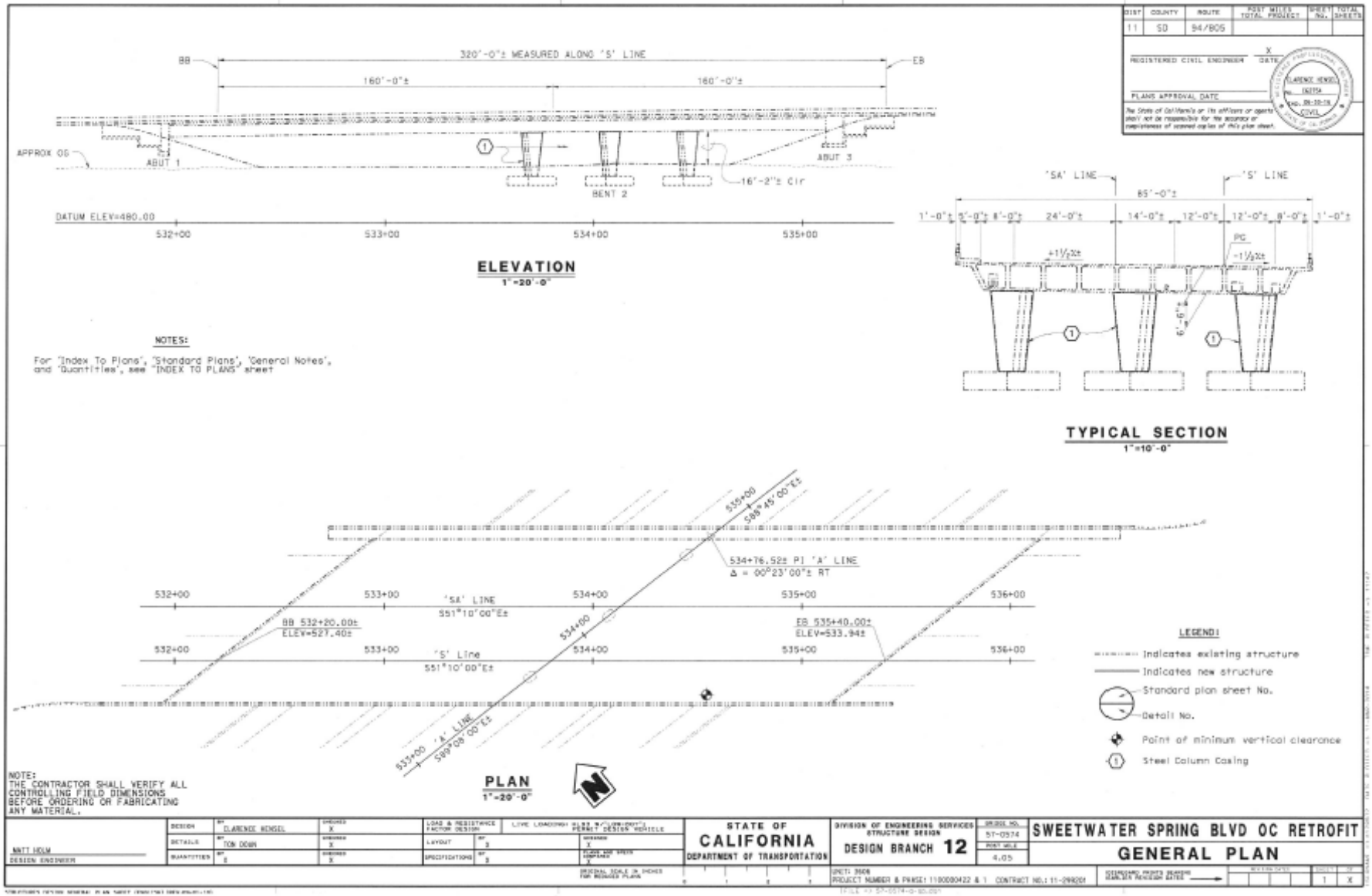
Latitude: 32.74447529 **Longitude:** -116.97439671 **V_{S30}:** 500 m/s Calculate

Figure 1. Project site and the nearby faults



Period (s)	SA (g)
0.000	0.2650
0.010	0.2650
0.050	0.4260
0.100	0.5230
0.150	0.5790
0.200	0.6220
0.250	0.5820
0.300	0.5510
0.400	0.4690
0.500	0.4140
0.600	0.3730
0.700	0.3440
0.850	0.3070
1.000	0.2800
1.200	0.2350
1.500	0.1900
2.000	0.1450
3.000	0.0920
4.000	0.0660
5.000	0.0550

Figure 2. Recommended Acceleration Response Spectrum (ARS) Curve


320'-0"± MEASURED ALONG 'S' LINE
BB
EB
160'-0"±
160'-0"±
APPROX GS
ABUT 1
BENT 2
ABUT 3
16'-2"± Clr
DATUM ELEV=480.00
532+00
533+00
534+00
535+00
ELEVATION
1"=20'-0"
'SA' LINE
'S' LINE
85'-0"±
1'-0"± 2'-0"± 8'-0"± 24'-0"± 14'-0"± 12'-0"± 12'-0"± 8'-0"± 1'-0"±
PC
+1½%±
-1½%±
6'-0"±
TYPICAL SECTION
1"=10'-0"
NOTES:
For 'Index To Plans', 'Standard Plans', 'General Notes', and 'Quantities', see 'INDEX TO PLANS' sheet
535+00
S88°45'00"E±
534+76.52± PI 'A' LINE
Δ = 00°23'00"± RT
532+00
533+00
'SA' LINE
S51°10'00"E±
534+00
535+00
536+00
BB 532+20.00±
ELEV=527.40±
EB 535+40.00±
ELEV=533.94±
'S' Line
S51°10'00"E±
534+00
533+00 'A' LINE
S89°08'00"E±
PLAN
1"=20'-0"
LEGEND
Indicates existing structure
Indicates new structure
Standard plan sheet No.
Detail No.
Point of minimum vertical clearance
Steel Column Casing
NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.
DIST 11 | COUNTY SD | ROUTE 94/805
REGISTERED CIVIL ENGINEER
PLANS APPROVAL DATE
CLARENCE HENSEL
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
DESIGN BRANCH 12
SWEETWATER SPRING BLVD OC RETROFIT
GENERAL PLAN
MATT HOLM
DESIGN ENGINEER

M e m o r a n d u m

Flex your power!
Be energy efficient!

To: MATT HOLM, CHIEF
Design Branch 12
Office of Structure Design

Attn: Jinrong Wang

Date: April 18, 2014

File: 11-SD-805 PM 18.89
EA 11-299201, Proj# 1100000422
Murray Ridge Rd OC (Seismic Retrofit)
Br.# 57-0676

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design South 2

Subject: Foundation Report (FR)

This FR is prepared in response to a request by the Office of Structure Design (OSD), proposing to seismically retrofit the Murray Ridge Road Overcrossing (OC) on Route 805 in San Diego County.

All elevations referenced in this report are based on the NGVD29 vertical datum. According to OSD, elevations at this site can be converted from NGVD29 to the current NAVD88 vertical datum by adding 2.2 feet.

Project Description/History

Based on the 2012 Bridge Inspection Report and the 1973 as-built plans, this existing bridge (built in 1972) is a continuous four span structure with open end diaphragm abutments; all supported on spread footings.

According to OSD's draft General Plan (attached - with a print date of 3/11/14), the proposed seismic retrofit includes encasing of columns, and retrofit of the spread footings at the bents.

Site Geology and Subsurface Conditions

According to a Foundation Report dated 10/7/1966: "The site is underlain by 1 to 3 feet of residual soil (silty sand). This material is underlain by very dense, consolidated sandstone and conglomerate sandstone". The 10/7/66 report also states that "Visual inspection of the site and nearby outcrops provided the basis for the foundation recommendations. No log of test borings will be made."

Based on the reviewed regional geologic map (Kennedy, 1975), the site is underlain by marine sedimentary deposits of the Mission Valley (Tmv) and Stadium Conglomerate (Tst) formations. Generally, the Mission Valley is a soft and friable, light gray colored,

fine to medium grained sandstone. The Stadium Conglomerate is a massive, poorly graded, sand matrix supported cobble conglomerate with dispersed sandstones lenses.

The city of San Diego location of the bridge site is situated in the seismically active southern California area. Locally, the predominate faults for ground rupture and seismogenic sources are splays of the Rose Canyon Fault.

Ground-Water

A Foundation Report dated 10/7/1966, indicates that no groundwater was observed, however it appears to be solely based on visual inspection of the site and nearby outcrops.

Scour Potential

Scour potential is not anticipated as this structure does not span a watercourse.

Corrosion

No corrosion information is available from the previous (1966) field investigations. However, the site may be considered potentially corrosive due to the marine sedimentary bedrock units underlying the site.

Seismic Recommendations

Ground motion recommendations are based on the Caltrans 2009 Seismic Design Procedure (SDP) as described in the Seismic Design Criteria Version 1.7 (SDC) Appendix B, the Acceleration Response Spectrum (ARS) Online Tool v2.2.06, USGS 2008 Interactive Deaggregations (Beta), and 1981 Log of Test Boring (LOTB) of nearby bridge "Mission Center Road Undercrossing (Bridge No. 57-0677 R/L). The Murray Ridge Road OC (57-0676) does not have any as-built LOTBs, and the mentioned (Mission Center Road UC) bridge is located about 0.3 miles northwest of the proposed bridge site.

Based on the 2012 Caltrans faults database and Caltrans ARS Online (v2.2.06) Tool, the site is located about 3.5 miles (5.6 km) from the Rose Canyon fault zone (San Diego section). This fault (Fault ID 405, MMax = 6.8, strike-slip, dip = 90 degrees, vertical, Bottom and Top of Rupture Plane approximately 5.0 and 0 miles, respectively) is the controlling fault for the deterministic seismic design procedure. A map showing the location of the bridge and the nearby faults is attached in Figure 1.

Based on nearby bridge "Mission Center Road Undercrossing (Bridge No. 57-0677 R/L) LOTBs and general geology at this site, the average shear wave velocity for the upper 100 feet of subsurface materials is estimated as V_{S30} = 400 m/s.

Design Response Spectrum

Based on the 2009 SDP, the design response spectrum is the upper envelope of the deterministic and probabilistic response, but is not less than a minimum deterministic response spectrum resulting from a Mmax = 6.5 earthquake on a vertical strike-slip fault at a distance of miles (12 km).

The deterministic response spectrum is obtained by taking the arithmetic average of the median response spectrum calculated using the 2008 Campbell-Bozorgnia and 2008 Chiou-Youngs ground motion prediction equations. The probabilistic response spectrum is obtained for 5 percent probability of exceedance in 50 years (corresponding to 975 year return period).

For this site, the design response spectrum is controlled by deterministic response spectrum for periods below 1.7-second, and probabilistic response spectrum controlls beyond the period of 1.7-second. The corresponding peak horizontal ground acceleration (PGA) at proposed site is 0.38g. The recommended acceleration response spectrum (adjusted for near field effects) is attached in Figure 2.

Liquefaction

Based on the dense nature of soils and sandstone, and observation of no groundwater (according to a foundation report dated 10/7/66), liquefaction potential appears low for this site.

Fault Rupture

The bridge is located 3.74 miles from the splay fault within the Earthquake Fault Zone (AP zone) for the Rose Canyon Fault (CGS/DMG, 1991). No faults active within the last 15,000 years have been mapped within 1000 feet of the project site. Additionally, there are no other closer known faults capable of surface rupture that project towards or trend through the bridge site. Therefore, in accordance with Caltrans MTD 20-10, the potential surface fault rupture is not considered a hazard to the site and further fault rupture hazard analyses are not necessary at this time.

As-Built Foundations

The Foundation data shown in Table-1 are based on the 1969 dated, As-Built General Plan:

Table-1: As-Built Data for Br# 57-0676

Location	Foundation Type	Allowable Bearing Capacity (tsf)	Bottom of the Footing Elevation (ft)
Abutment 1	Spread Footing	2.0	*
Bent 2	Spread Footing	4.0	292.0
Bent 3	Spread Footing	4.0	285.0
Bent 4	Spread Footing	4.0	298.0
Abutment 5	Spread Footing	2.0	*

Note: As-Built elevations refer to NGVD29 datum.
* - The bottom of the footing elevations for the abutments do not appear to be marked on the as-built foundation plan.

Estimated Capacity of Existing Foundation

At the request of OBSD, the following information is provided in this report. The ultimate soil bearing capacities shown below are estimated using as-built plans and LOTBs:

Table-2
Estimated Ultimate Soil Bearing Capacities for Br# 57-0676

Location	Foundation Type	Estimated Ultimate Soil Bearing Capacities
Abutment 1	Spread Footing	6 tsf
Bent 2	Spread Footing	12 tsf
Bent 3	Spread Footing	12 tsf
Bent 4	Spread Footing	12 tsf
Abutment 5	Spread Footing	6 tsf

Foundation Recommendations

The following recommendations are for the proposed seismic retrofit of Murray Ridge Rd OC (Br. #57-0676) as shown on the attached draft General Plan provided by OSD, print dated March 11, 2014. The plan proposes to marginally increase the width and thickness of the existing spread footings. The estimated capacities provided in Table 2 (above) are still considered applicable to the proposed foundation modification.

Also the following table (Table-3) presents the stiffness coefficients at the bent locations:

Table-3
Estimated Stiffness Coefficients at Bent Locations for Br# 57-0676

	Units	**Spring Values**
Horizontal Translation (x)	Kips/ft	91,000
Horizontal Translation (y)	Kips/ft	85,000
Vertical Translation	Kips/ft	92,000
X-Rocking	Kips-ft/rad	162,679,000
Y-Rocking	Kips-ft//rad	54,704,000
Z-Axis Rotation	Kips-ft/rad	183,919,000

If any changes are made to the proposed retrofit, our office should be notified and modification of our recommendations may be necessary.

Construction Considerations

- Concrete for the structure support footing shall be placed neat against the undisturbed material at the bottom of the footing excavation. Should the bottom of the footing excavation be disturbed, then the disturbed soils shall be re-compacted to 95% relative compaction prior to placement of concrete for the structure support footing.

- Unsuitable material (as defined in Section 19-1 of the Standard Specifications) below the bottom of the spread footing shall be removed and replaced by sub-excavating and replaced with engineered fill compacted to 95% relative compaction. The limits of the sub-excavation and replacement shall conform to the limits defined for relative compaction under footings—as defined in Section 19-5.03 of the Standard Specifications.

The recommendations contained in this report are based on specific project information provided by OSD. If any conceptual changes are made during final project design, the Office of Geotechnical Design South-2, should review those changes to determine if the foundation recommendations provided in this report are still applicable. Any questions regarding the above recommendations should be directed to attention of Farzad Qmehr (916) 227-4519 or Angel Perez-Cobo (916) 227-7167, Office of Geotechnical Design South-2.

Prepared by: Date: 4-18-14

_____

Farzad Qmehr
Transportation Engineer
Geotechnical Design-South 2-A

Attachments: Site Map, ARS Curve, Draft General Plan (dated 3/11/14)

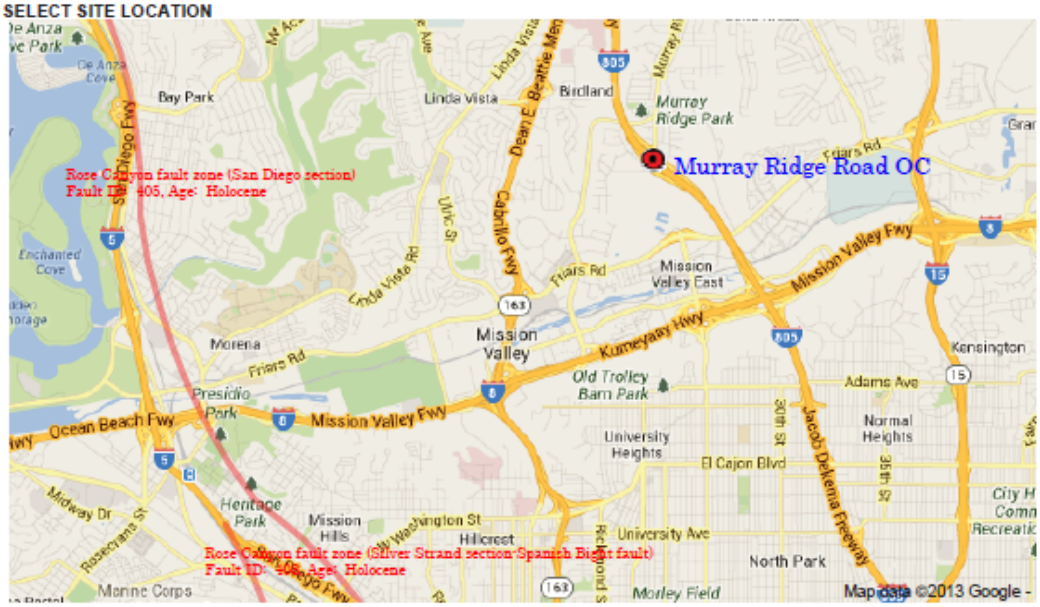
cc: Geotechnical Archive
Bruce Lambert- District Project Manager
Art Padilla - District Materials Engineer
HQ Geotechnical Design South-2 – Abbas Abghari
HQ Geotechnical Design South-2 – Angel Perez-Cobo
R.E. Pending File
Lauren Kemp - District Env. Planning
Angela Ezekiel - Project Coordination. Engr
Specs & Estimates - Ofelia P. Alcantara

CALIFORNIA DEPARTMENT OF
TRANSPORTATION

Caltrans ARS Online (v2.2.06)

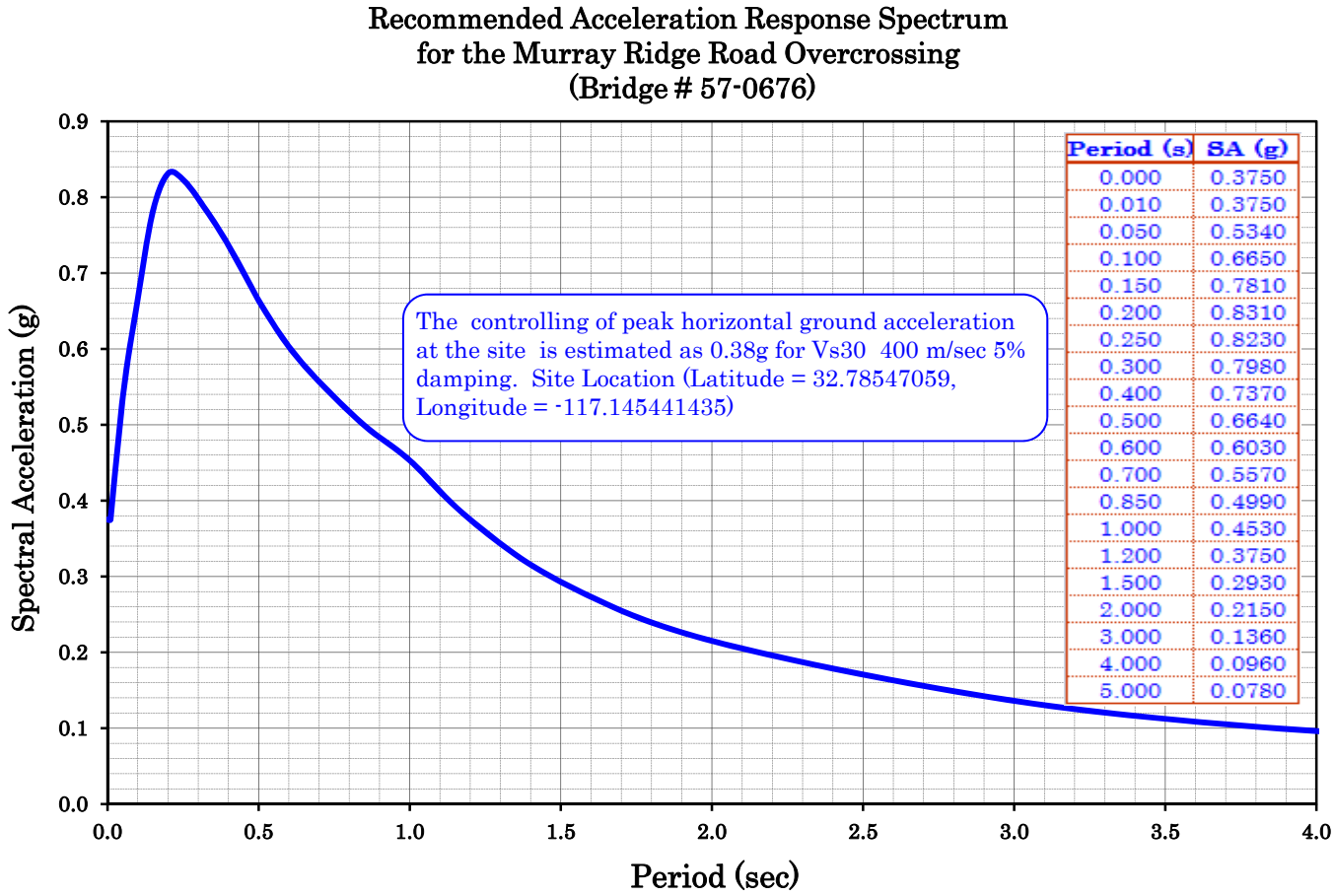
This web-based tool calculates both deterministic and probabilistic acceleration response spectra for any location in California based on criteria provided in *Appendix B of Caltrans Seismic Design Criteria*. More...

SELECT SITE LOCATION



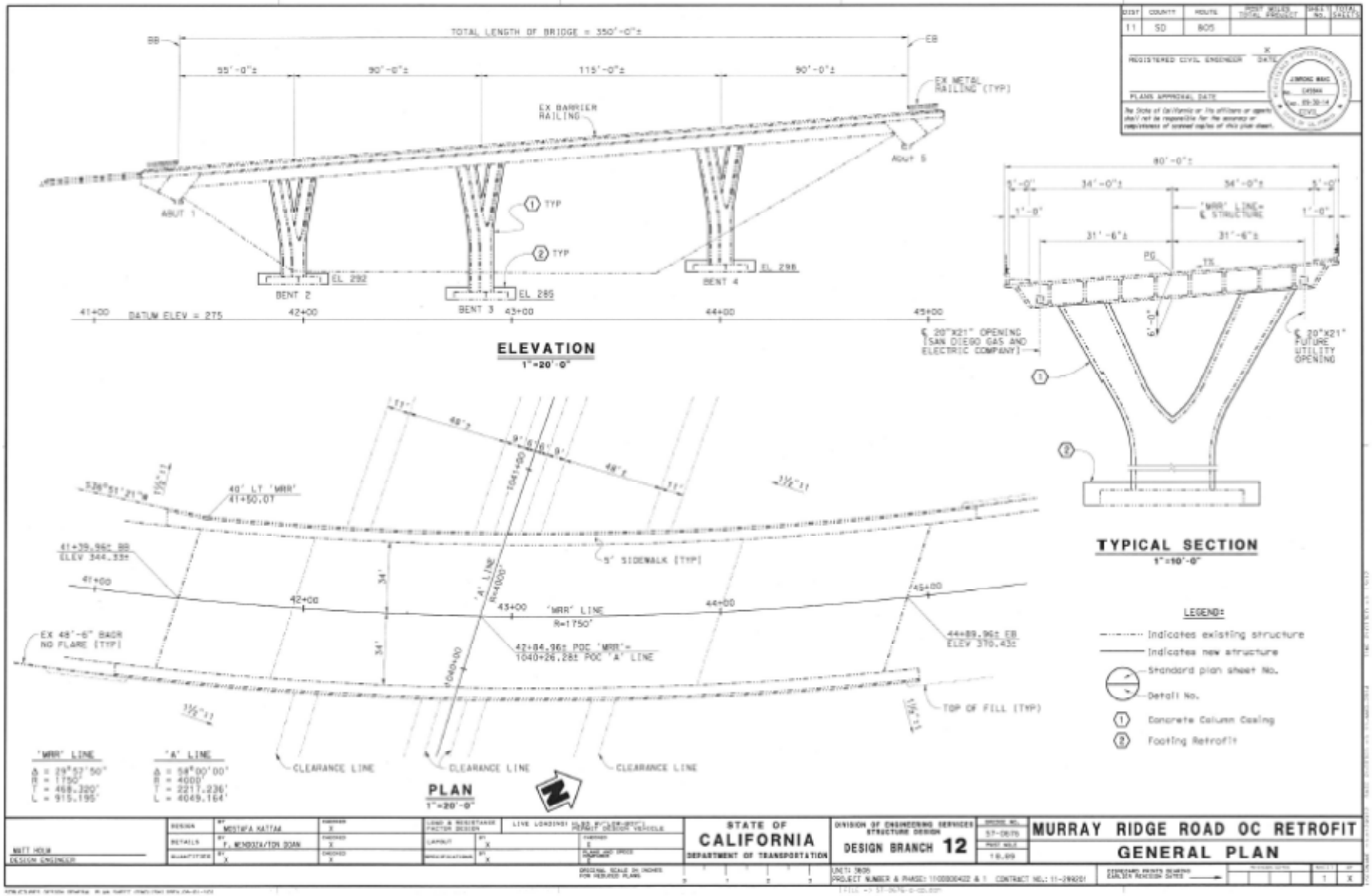
Latitude: 32.78547059 **Longitude:** -117.14544143 **Vs30:** 400 m/s Calculate

Figure 1. Project site and the nearby faults



Period (s)	SA (g)
0.000	0.3750
0.010	0.3750
0.050	0.5340
0.100	0.6650
0.150	0.7810
0.200	0.8310
0.250	0.8230
0.300	0.7980
0.400	0.7370
0.500	0.6640
0.600	0.6030
0.700	0.5570
0.850	0.4990
1.000	0.4530
1.200	0.3750
1.500	0.2930
2.000	0.2150
3.000	0.1360
4.000	0.0960
5.000	0.0780

Figure 2. Recommended Acceleration Response Spectrum (ARS) Curve


TOTAL LENGTH OF BRIDGE = 350'-0"±
EB
55'-0"±
90'-0"±
115'-0"±
90'-0"±
EX METAL RAILING (TYP)
EX BARRIER RAILING
ABUT 1
ABUT 5
TYP
TYP
EL 292
EL 286
EL 298
BENT 2
BENT 3
BENT 4
41+00
DATUM ELEV = 275
42+00
43+00
44+00
45+00
ELEVATION
1"=20'-0"
80'-0"±
5'-0"
34'-0"±
34'-0"±
5'-0"
1'-0"
'MRR' LINE & STRUCTURE
1'-0"
31'-6"±
31'-6"±
PG
TS
2'-0"
℄ 20"X21" OPENING (SAN DIEGO GAS AND ELECTRIC COMPANY)
℄ 20"X21" FUTURE UTILITY OPENING
TYPICAL SECTION
1"=10'-0"
40' LT 'MRR' 41+50.07
41+39.96± BB ELEV 344.55±
5' SIDEWALK (TYP)
'A' LINE R=4000'
'MRR' LINE R=1750'
42+84.96± POC 'MRR'= 1040+26.28± POC 'A' LINE
44+89.96± EB ELEV 370.43±
EX 48'-6" BACK NO FLARE (TYP)
TOP OF FILL (TYP)
CLEARANCE LINE
CLEARANCE LINE
CLEARANCE LINE
'MRR' LINE
Δ = 29°52'50"
R = 1750'
T = 468.320'
L = 915.195'
'A' LINE
Δ = 58°00'00"
R = 4000'
T = 2211.236'
L = 4049.164'
PLAN
1"=20'-0"
LEGEND:
Indicates existing structure
Indicates new structure
Standard plan sheet No.
Detail No.
Concrete Column Casing
Footing Retrofit
DIST 11
COUNTY SD
ROUTE 805
REGISTERED CIVIL ENGINEER
PLANS APPROVAL DATE
MUSTAFA HATTAM
F. MONDIYA/TIN DOAN
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN
DESIGN BRANCH 12
57-0676
MURRAY RIDGE ROAD OC RETROFIT
GENERAL PLAN

State of California **Business, Transportation and Housing Agency**

M e m o r a n d u m

Flex your power!
Be energy efficient!

To: MATT HOLM, CHIEF
Design Branch 12
Office of Structure Design

Attn: Jinrong Wang

Date: April 18, 2014

File: 11-SD-805 PM 9.48
EA 11-299201, Proj# 1100000422
Prospect Ave OC (Seismic Retrofit)
Br.# 57-0751

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design South 2

Subject: Foundation Report (FR)

This FR is prepared in response to a request by the Office of Structure Design (OSD), proposing to seismically retrofit Prospect Avenue Overcrossing (OC) - Br# 57-00751 - in San Diego County.

All elevations referenced in this report are based on the NGVD29 vertical datum. According to OSD, elevations at this site can be converted from NGVD29 to the current NAVD88 vertical datum by adding 2.2 feet.

Project Description/History

Based on the 2012 Bridge Inspection Report (BIR), Prospect Ave OC (Br# 57-00751) was built in 1974 and consists of a two span structure with open end diaphragm abutments and a single column bent, all supported on spread footings.

According to OSD's draft General Plan (attached - with a print date of 3/11/14), the existing abutments will be seismically retrofit by addition of concrete bolsters.

Site Geology and Subsurface Conditions

According to the 1974 As-Built Log of Test Boring (LOTB), one rotary and two cone penetration tests were performed to obtain subsurface information during October of 1968. The rotary boring extended to a maximum depth of about 70 feet below grade (approximate elevation of 58 ft).

A Foundation Report dated 12/31/1968 describes the subsurface as: "Dense to very dense interbeded sand and sandy gravel is overlain by 40 to 45 feet of sand containing some gravel. Except for the 5 to 10 feet of dense to very dense sand and gravel encountered at about

elevation 114, the consistency of this overlying material varies from loose to compact." For further soil and rock information, please refer to the As-Built LOTB.

The bridge site is located in the Peninsular Ranges geomorphic province, in an area of ancient sedimentary marine terraces cut by creeks, which generally flow east to west. The "Geologic Map of the San Diego 30'x60' Quadrangle, California (2008, Kennedy and Tan)" indicates that the site is located on the contact between material described as Quaternary Old Paralic deposits and Quaternary Young Alluvial Flood-Plain deposits.

Ground-Water

A Foundation Report dated 12/31/1968 states that: "Groundwater was not encountered during the field study in October 1968."

Scour Potential

Scouring is not expected as this structure does not span a watercourse.

Corrosion

No corrosion information is available from the 1967 field investigations.

Seismic Recommendations

Ground motion recommendations are based on the Caltrans 2009 Seismic Design Procedure (SDP) as described in the Seismic Design Criteria Version 1.7 (SDC) Appendix B, the Acceleration Response Spectrum (ARS) Online Tool v2.2.06, USGS 2008 Interactive Deaggregations (Beta), and 1974 Log of Test Boring (LOTB) for geotechnical subsurface investigations.

Based on the 2012 Caltrans faults database and Caltrans ARS Online (v2.2.06) Tool, the site is located about 3.8 miles (6.1 km) from the Rose Canyon fault zone (Silver Strand section-Downtown Graben fault). This fault (Fault ID 410, MMax = 6.8, strike-slip, dip = 90 degrees, vertical, Bottom and Top of Rupture Plane approximately 5.0 and 0 miles, respectively) is the controlling fault for the deterministic seismic design procedure. A map showing the location of the bridge and the nearby faults is attached in Figure 1.

According to the 1974 dated as-built LOTBs for this site, the average shear wave velocity for the upper 100 feet of subsurface materials is estimated as V_{S30} = 270 m/s, using the correlation of Shear wave velocity with standard penetration test resistance and vertical effective stress by Brandenberg, S.J., Bellana, N. and Shantz, T., 2010 UCLA.

Design Response Spectrum

Based on the 2009 SDP, the design response spectrum is the upper envelope of the deterministic and probabilistic response, but is not less than a minimum deterministic response spectrum resulting from a Mmax = 6.5 earthquake on a vertical strike-slip fault at a distance of 7.5 miles (12 km).

The deterministic response spectrum is obtained by taking the arithmetic average of the median response spectrum calculated using the 2008 Campbell-Bozorgnia and 2008 Chiou-Youngs ground motion prediction equations. The probabilistic response spectrum is obtained for 5 percent probability of exceedance in 50 years (corresponding to 975 year return period).

For this site, the design response spectrum is controlled by deterministic response spectrum for periods below 2.0-second, and probabilistic response spectrum controls beyond the period of 2.0-second. The corresponding peak horizontal ground acceleration (PGA) at proposed site is 0.35g. The recommended acceleration response spectrum (adjusted for near field effects) is attached in Figure 2.

Liquefaction

Based on available subsurface information and absence of groundwater (according to the 1974 dated as-built LOTBs), liquefaction potential appears low for this site.

Fault Rupture

The proposed site is not within an Alquist-Priolo Earthquake Fault Zone or an unzoned faults (Holocene or younger in age). The site is more than 3.8 miles from the nearest Caltrans-active fault (Rose Canyon fault zone, Silver Strand section-Downtown Graben fault), which extends to the ground surface. Potential for surface rupture is low, and no further work or design for surface rupture is required.

As-Built Foundations

The Foundation data shown in Table-1 are based on the 1974 dated, As-Built General Plan:

Table-1: As-Built Data for existing Br#57-0751

Location	Foundation Type	Bottom of the Footing Elevation (ft)
Abutment 1	Spread Footing	91.5
Bent 2	Spread Footing	76.5
Abutment 3	Spread Footing	101.0

Note: As-Built elevations refer to NGVD29 datum.

Estimated Capacity of Existing Foundation

At the request of OBSD, the following information is provided in this report. The ultimate soil bearing capacities shown below are estimated using As-Built plans and LOTBs:

Table-2: Estimated Ultimate Soil Bearing Capacities for existing Br#57-751

Location	Foundation Type	Estimated Ultimate Soil Bearing Capacities
Abutment 1	Spread Footing	12 tsf
Bent 2	Spread Footing	18 tsf
Abutment 5	Spread Footing	12 tsf

Foundation Recommendations

The following recommendations are for the proposed seismic retrofit of Prospect Ave OC (Br#57-0751) as shown on the attached draft General Plan provided by OSD, print dated March 11, 2014. The plan proposes to retrofit the existing abutments by addition of concrete bolsters. The estimated capacities provided in Table 2 (above) are still considered applicable to the proposed foundation modification.

If any changes are made to the proposed retrofit, our office should be notified and modification of our recommendations may be necessary.

The recommendations contained in this report are based on specific project information provided by OSD. If any conceptual changes are made during final project design, the Office of Geotechnical Design South-2, should review those changes to determine if the foundation recommendations provided in this report are still applicable. Any questions regarding the above recommendations should be directed to attention of Farzad Qmehr (916) 227-4519 or Angel Perez-Cobo (916) 227-7167, Office of Geotechnical Design South-2.

Prepared by: Date: 4-18-14

_____

Farzad Qmehr
Transportation Engineer
Geotechnical Design-South 2, Branch A

Attachments: Site Map, ARS Curve, Draft General Plan (dated 3/11/14)

cc: Geotechnical Archive
Bruce Lambert- District Project Manager
Art Padilla - District Materials Engineer
HQ Geotec.l Design S2 – Abbas Abghari
HQ Geotech. Design S2 – Angel Perez-Cobo
R.E. Pending File
Lauren Kemp - District Env. Planning
Angela Ezekiel - Project Coordination. Engr
Specs & Estimates - Ofelia P. Alcantara

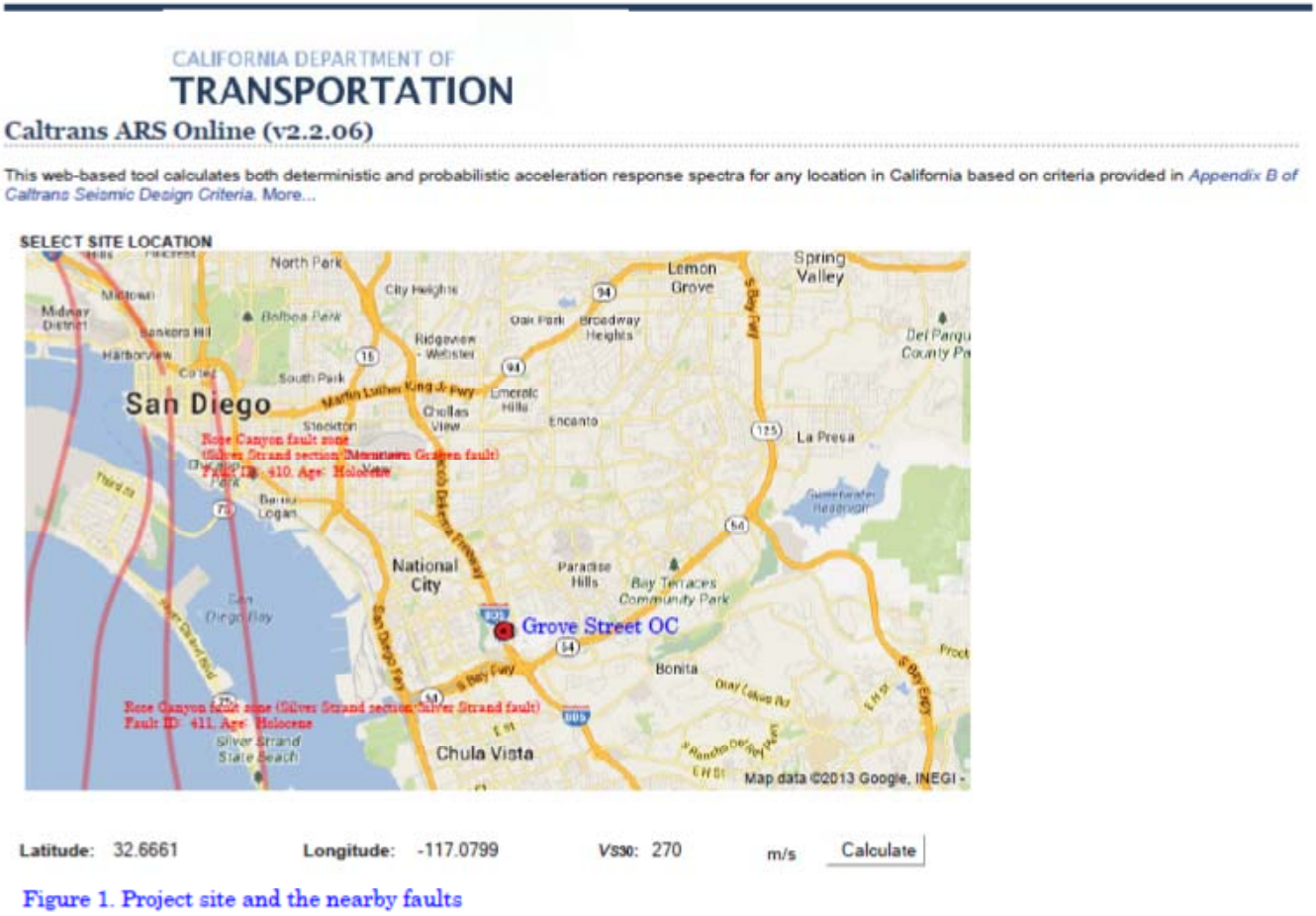
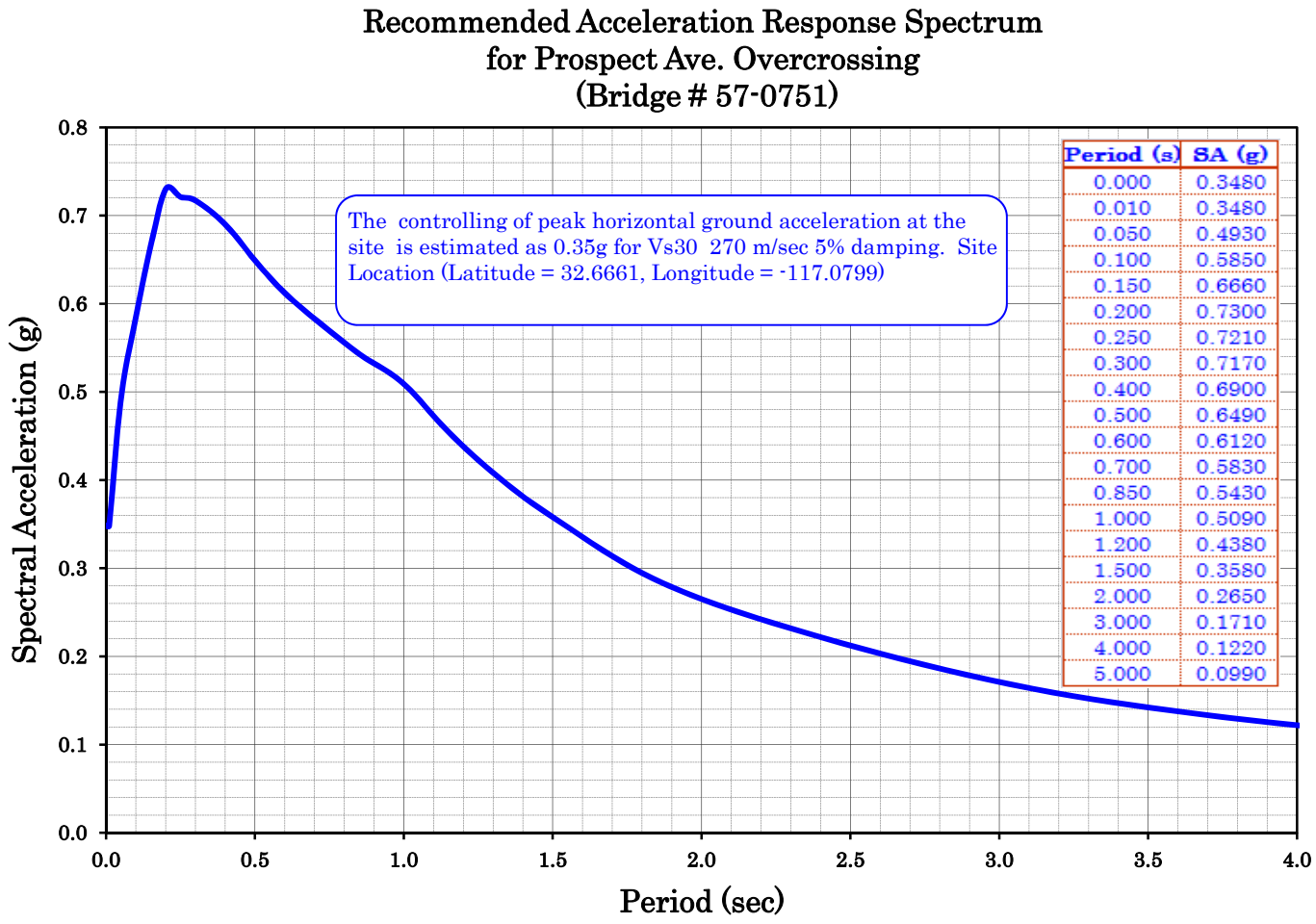


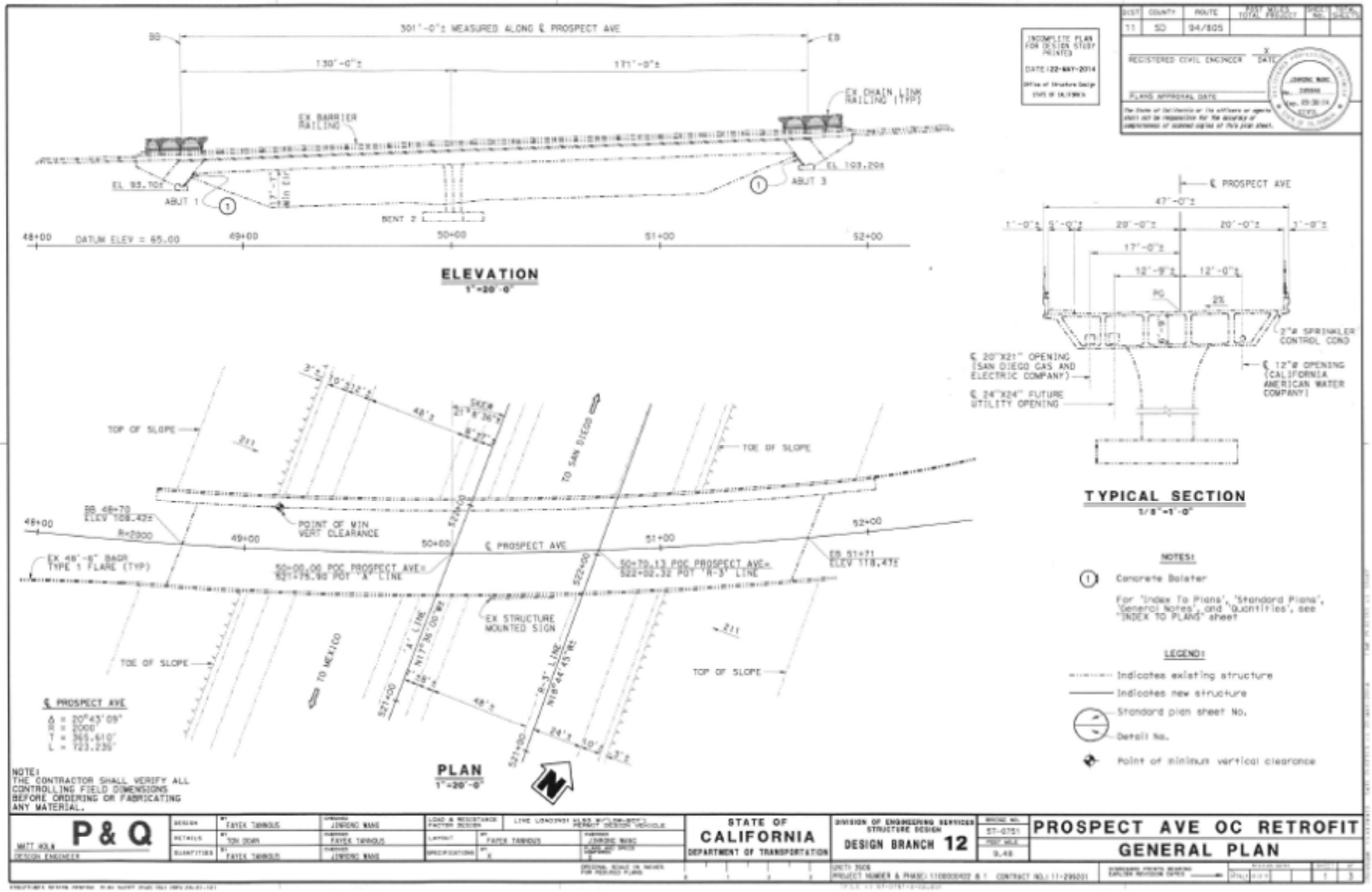
Figure 1. Project site and the nearby faults

Please note that Grove St OC is now referred to as Prospect Ave OC



Period (s)	SA (g)
0.000	0.3480
0.010	0.3480
0.050	0.4930
0.100	0.5850
0.150	0.6660
0.200	0.7300
0.250	0.7210
0.300	0.7170
0.400	0.6900
0.500	0.6490
0.600	0.6120
0.700	0.5830
0.850	0.5430
1.000	0.5090
1.200	0.4380
1.500	0.3580
2.000	0.2650
3.000	0.1710
4.000	0.1220
5.000	0.0990

Figure 2. Recommended Acceleration Response Spectrum (ARS) Curve


301'-0"± MEASURED ALONG ℄ PROSPECT AVE
BD
ED
130'-0"±
171'-0"±
EX CHAIN LINK RAILING (TYP)
EX BARRIER RAILING
EL 93.70±
ABUT 1
BENT 2
EL 103.29±
ABUT 3
48+00
DATUM ELEV = 65.00
49+00
50+00
51+00
52+00
ELEVATION
1"=20'-0"
℄ PROSPECT AVE
47'-0"±
1'-0"±
5'-0"±
20'-0"±
20'-0"±
3'-0"±
17'-0"±
12'-9"±
12'-0"±
2% SPRINKLER CONTROL COND
℄ 20"X21" OPENING (SAN DIEGO GAS AND ELECTRIC COMPANY)
℄ 24"X24" FUTURE UTILITY OPENING
℄ 12"Ø OPENING (CALIFORNIA AMERICAN WATER COMPANY)
TYPICAL SECTION
1/8"=1'-0"
TOP OF SLOPE
TOE OF SLOPE
TO SAN DIEGO
TO MEXICO
BD 48+70
ELEV 108.43±
R=2900
POINT OF MIN VERT CLEARANCE
℄ PROSPECT AVE
50+00.06 POC PROSPECT AVE=
521+76.90 POT 'A' LINE
50+70.13 POC PROSPECT AVE=
522+02.32 POT 'A-3' LINE
ED 51+71
ELEV 118.47±
EX 48'-6" BARR TYPE 1 FLARE (TYP)
EX STRUCTURE MOUNTED SIGN
℄ PROSPECT AVE
Δ = 20°43'09"
R = 2000'
T = 365.610'
L = 723.230'
PLAN
1"=20'-0"
NOTES:
① Concrete Bolster
For 'Index To Plans', 'Standard Plans', 'General Notes', and 'Quantities', see "INDEX TO PLANS" sheet
LEGEND:
Indicates existing structure
Indicates new structure
Standard plan sheet No.
Detail No.
Point of minimum vertical clearance
NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.
INCOMPLETE PLANS FOR DESIGN STUDY PRINTED
DATE: 22-MAY-2014
REGISTERED CIVIL ENGINEER
PLANS APPROVAL DATE
DIST 11 | COUNTY SD | ROUTE 94/805
P&Q
MATT HOLM
DESIGN ENGINEER
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 12
57-0751
9.48
PROSPECT AVE OC RETROFIT
GENERAL PLAN

State of California **Business, Transportation and Housing Agency**

M e m o r a n d u m

Flex your power!
Be energy efficient!

To: MATT HOLM, CHIEF
Design Branch 12
Office of Structure Design

Attn: Jinrong Wang

Date: April 18, 2014

File: 11-SD-805 PM 6.06
EA 11-299201, Proj# 1100000422
Telegraph Canyon Rd Off-Ramp UC (Seismic Retrofit)
Br.# 57-0635K

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design South 2

Subject: Foundation Report (FR)

This FR is prepared in response to a request by the Office of Structure Design (OSD), proposing to seismically retrofit the Telegraph Canyon Road Off-Ramp Undercrossing (UC) - Br. No. 57-0635K - on Route 805 in San Diego County.

Unless noted otherwise, elevations referenced in this report are based on the NGVD 1929 vertical datum. According to OSD, elevations at this site can be converted from NGVD29 to the current NAVD88 vertical datum by the addition of 2.2 feet.

Project Description/History

The Telegraph Canyon Road Off-Ramp UC (Br# 57-0635K) is located about 200 feet west of Telegraph Canyon Road UC (Br# 57-0635R/L) on 1-805 in Chula Vista. Based on the 2012 Bridge Inspection Report (BIR) and as-built plans, Br# 57-0635K (built in 1971) is a continuous two span structure with open end diaphragm abutments supported on spread footings, and a single column bent supported on group of 16" CIDH piles.

According to OSD's draft General Plan (attached - with a print date of 3/11/14), the proposed seismic retrofit includes encasing of columns, and retrofit of the footings at the bent location. In 1997 a seismic retrofit was completed for the adjacent main-line bridges (Br# 57-0635R/L) involving column retrofit at the Bent 2 location and installation of 60" diameter CIDH piles at the abutments.

Site Geology and Subsurface Conditions

The bridge site is located in the Peninsular Ranges geomorphic province, in an area of ancient sedimentary marine terraces cut by creeks, which generally flow east to

west. The geologic map "Geology of National City, Imperial Beach and Otay Mesa Quadrangles, Southern San Diego Metropolitan Area, California (1977, Kennedy and Tan)" indicates that the site is underlain by the Tertiary San Diego Formation (sandstone part), which is described as a poorly indurated, fine to medium grained sandstone with locally cemented zones.

In August of 1966 three rotary borings and six cone penetration tests were performed to obtain subsurface information for the original construction of the Telegraph Canyon main-line and off-ramp UCs (Br# 57-635R/L and Br# 57-635QL, now called Br#57-635K). A Foundation Report (dated 10/7/1966) indicates that the site is underlain by granular material (loose to very dense sand and gravelly sand) to elevation 164 feet (based on NGVD 1929), the maximum boring depth attained.

For further soil and rock information, please refer to the as-built LOTBs.

A subsurface investigation was also completed in March/April 2010 for the adjacent main-line bridges (Br# 57-635R/L) consisting of two rotary and one P/S Log in Borings. The following descriptions are summarized from a Foundation Report (dated 6/29/2011) for that UC (Br# 57-635R/L) as additional potentially useful information:

About 39 to 48 feet of fill material is revealed by the 2010 borings (R-10-002 and R-10-001) near Abutment 1 and 3 locations respectively. Boring R-10-002's fill consists of medium dense silty-sand; underlain by four feet of loose, clayey sand with trace gravels; followed by very soft to soft, sandstone. Boring R-10-001's fill consists of a medium dense to dense silty-sand; underlain by 22 feet of very stiff, lean clay with sand and trace gravels; followed by very soft sandstone.

Ground-Water

No ground water is shown on "as-built" LOTB's from the 1966 subsurface investigation. Also ground water was not encountered during the 2010 investigation for the main-line bridges (Br# 57-635R/L). Ground-water levels are subject to seasonal fluctuations, and may be encountered at different elevations, as a result of conditions at the time of construction.

Scour Potential

The original creek which flowed through Telegraph Canyon has been diverted to a concrete- lined channel and flows through a large concrete culvert beneath the bridge site. Therefore, scour is not an issue at the site.

Corrosion

No corrosion information is available from the 1966 field investigations. However as potentially useful information, the following corrosion test results from the 2010 investigation of nearby main-line bridges (Br# 57-0635R/L) are shown below in Table 1. Based on current Caltrans' standards, that site was considered non-corrosive.

Table 1 – Corrosion Test Summary from the Main-Line Bridges (Br# 57-0635R/L)

Location	pH	Minimum Resistivity (Ohm-Cm)	Sulfate Content (ppm)	Chloride Content (ppm)
Boring R-10-001 (Eiev. 253.9-192.4 ft)	7.48	990	77	260

Note: Caltrans currently defines a corrosive environment as an area where the soil has either a chloride concentration of 500 ppm or greater, a sulfate concentration of 2000 ppm or greater, or has a pH of 5.5 or less. With the exception of MSE walls, soil and water are not tested for chlorides and sulfates if the minimum resistivity is greater than 1,000 ohm-cm.

Seismic Recommendations

Ground motion recommendations are based on the Caltrans 2009 Seismic Design Procedure (SDP) as described in the Seismic Design Criteria Version 1.7 (SDC) Appendix B, the Acceleration Response Spectrum (ARS) Online Tool v2.2.06, USGS 2008 Interactive Deaggregations (Beta), and 2010 Log of Test Boring (LOTB) for geotechnical subsurface investigations.

Based on the 2012 Caltrans faults database and Caltrans ARS Online (v2.2.06) Tool, the site is located about 5.5 miles (8.92 km) from the Rose Canyon fault zone (Silver Strand section-Downtown Graben fault). This fault (Fault ID 410, MMax = 6.8, strike-slip, dip = 90 degrees, vertical, Bottom and Top of Rupture Plane approximately 5.0 and 0 miles, respectively) is the controlling fault for the deterministic seismic design procedure. A map showing the location of the bridge and the nearby faults is attached in Figure 1.

According to the 1966 and 2010 LOTBs the sites average shear wave velocity for the upper 100 feet of subsurface materials is estimated as V_{S30} = 300 m/s., using the correlation of Shear wave velocity with standard penetration test resistance and vertical effective stress by Brandenberg, S.J., Bellana, N. and Shantz, T., 2010 UCLA.

Design Response Spectrum

Based on the 2009 SDP, the design response spectrum is the upper envelope of the deterministic and probabilistic response, but is not less than a minimum deterministic response spectrum resulting from a Mmax = 6.5 earthquake on a vertical strike-slip fault at a distance of 7.5 miles (12 km).

The deterministic response spectrum is obtained by taking the arithmetic average of the median response spectrum calculated using the 2008 Campbell-Bozorgnia and 2008 Chiou-Youngs ground motion prediction equations. The probabilistic response spectrum is obtained for 5 percent probability of exceedance in 50 years (corresponding to 975 year return period).

For this site, the design response spectrum is controlled by Probabilistic response spectrum. The corresponding peak horizontal ground acceleration at proposed site is 0.32g. The recommended acceleration response spectrum (adjusted for near field effects) is attached in Figure 2.

Liquefaction

Based on available subsurface information from 1969 LOTBs; soil liquefaction is not likely due to the absence of a high ground water and the dense nature of the soil.

Fault Rupture

A memorandum, dated January 19, 2010, by the Office of Geotechnical Support, discusses fault rupture hazards for several bridges on the I-805 south corridor. The memorandum states that the La Nacion fault zone is within 200 feet, and must be considered to pass beneath Telegraph Canyon Road UC, without further work being done. The La Nacion fault zone is not considered active by Caltrans' criteria, however other references have suggested some fault traces may have been active more recently, and capable of secondary fault rupture or creep, but not likely primary fault movement. The memorandum concludes that expected displacement, if the fault is active, would be small, and would be approximately 4 inches or less.

As-Built Foundations

The Foundation data shown in Table-2 are based on the 1969 dated, As-Built General Plan:

Table-1: As-Built Data for existing Off-Ramp UC (57-0635K)

Location	Foundation Type	Bottom of the footing or Average Pile-Tip Elevation * (ft)
Abutment 1	Spread Footing	217.0
Bent 2	CIDH Piles	180.0
Abutment 3	Spread Footing	219.0

* Note: As-Built elevations refer to NGVD29 datum.

Estimated Capacity of Existing Foundation

At the request of OBSD, the following information is provided in this report. The ultimate soil bearing capacities shown below are estimated using as-built plans and LOTBs:

Table-2:
Estimated Ultimate Soil Bearing Capacities for the Existing Off-Ramp UC (57-0635K)

Location	Foundation Type	Estimated Ultimate Soil Bearing Capacities
Abutment 1	Spread Footing	9 tsf
Bent 2	16" CIDH Piles	70 Tons (Compression) 50 Tons (Tension)
Abutment 5	Spread Footing	9 tsf

Foundation Recommendations

The following recommendations are for the proposed seismic retrofit of Telegraph Canyon Rd Off-Ramp UC (Br#57-0635K) as shown on the attached draft General Plan provided by OSD, print dated March 11, 2014. The plan proposes to marginally increase the thickness of the existing spread footings. The estimated capacities provided in Table 2 (above) are still considered applicable to the proposed foundation modification.

If any changes are made to the proposed retrofit, our office should be notified and modification of our recommendations may be necessary.

The recommendations contained in this report are based on specific project information provided by OSD. If any conceptual changes are made during final project design, the Office of Geotechnical Design South-2, should review those changes to determine if the foundation recommendations provided in this report are still applicable. Any questions regarding the above recommendations should be directed to attention of Farzad Qmehr (916) 227-4519 or Angel Perez-Cobo (916) 227-7167, Office of Geotechnical Design South-2.

Prepared by: Date: 4-18-14

_____

Farzad Qmehr
Transportation Engineer
Geotechnical Design-South 2
Design Branch A

Attachments: Site Map, ARS Curve, Draft General Plan (dated 3/11/14)

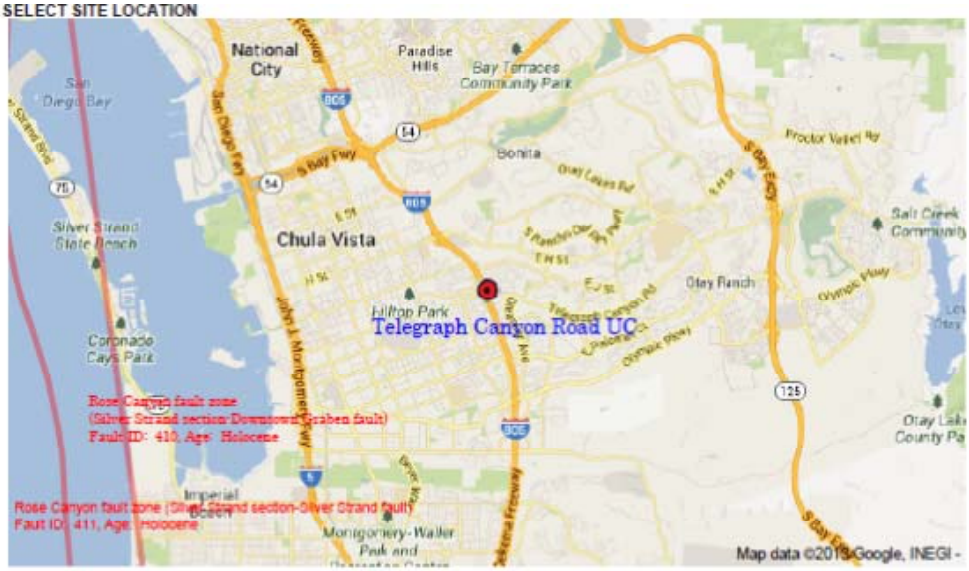
cc: Geotechnical Archive
Bruce Lambert- District Project Manager
Art Padilla - District Materials Engineer
HQ Geotechnical Design South-2 – Abbas Abghari
HQ Geotechnical Design South-2 – Angel Perez-Cobo
R.E. Pending File
Lauren Kemp - District Env. Planning
Angela Ezekiel - Project Coordination. Engr
Specs & Estimates - Ofelia P. Alcantara

CALIFORNIA DEPARTMENT OF
TRANSPORTATION

Caltrans ARS Online (v2.2.06)

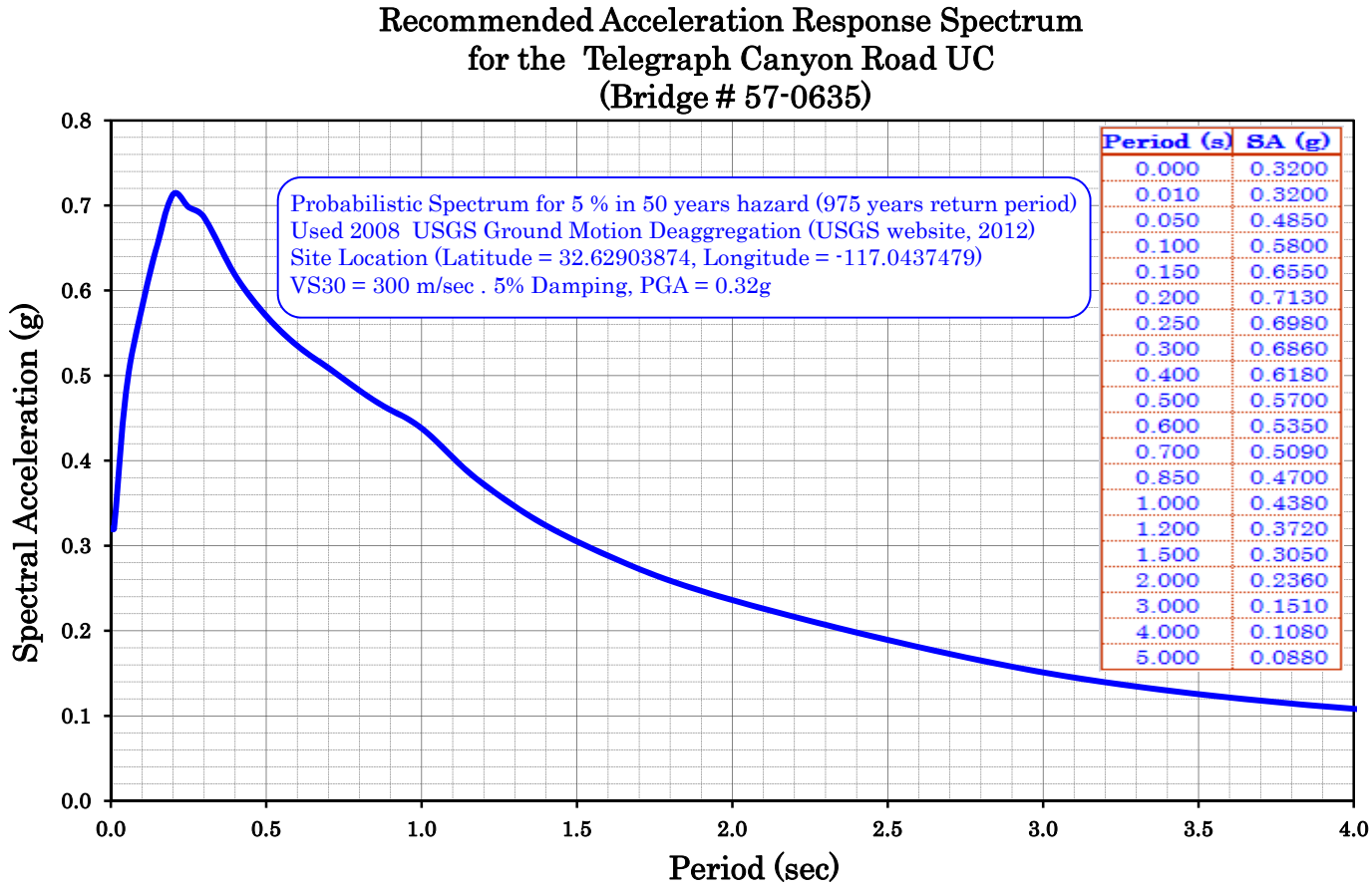
This web-based tool calculates both deterministic and probabilistic acceleration response spectra for any location in California based on criteria provided in *Appendix B of Caltrans Seismic Design Criteria*. More...

SELECT SITE LOCATION



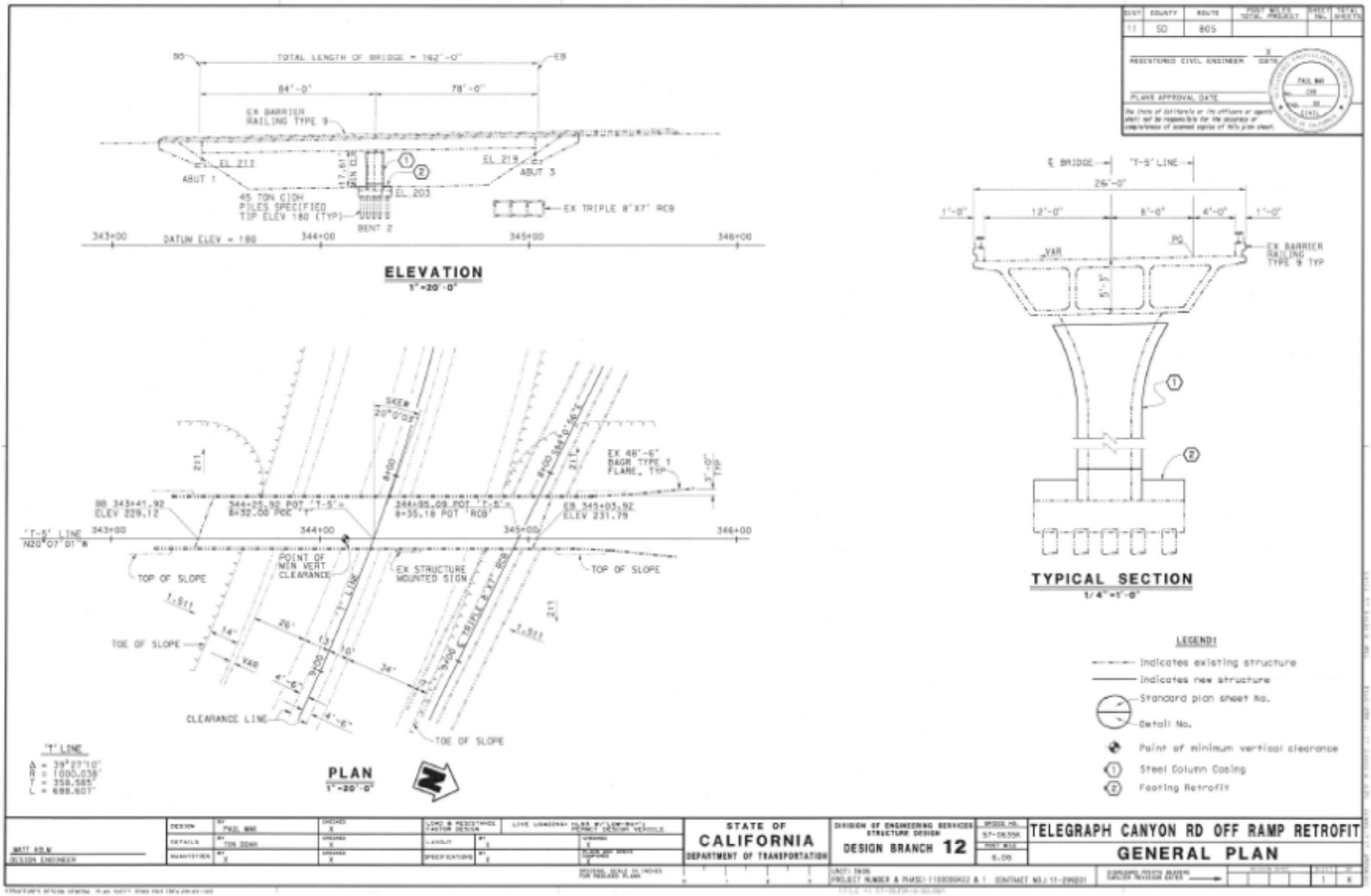
Latitude: 32.62903874 Longitude: -117.0437479 V_{S30}: 270 m/s Calculate

Figure 1. Project site and the nearby faults



Period (s)	SA (g)
0.000	0.3200
0.010	0.3200
0.050	0.4850
0.100	0.5800
0.150	0.6550
0.200	0.7130
0.250	0.6980
0.300	0.6860
0.400	0.6180
0.500	0.5700
0.600	0.5350
0.700	0.5090
0.850	0.4700
1.000	0.4380
1.200	0.3720
1.500	0.3050
2.000	0.2360
3.000	0.1510
4.000	0.1080
5.000	0.0880

Figure 2. Recommended Acceleration Response Spectrum (ARS) Curve


TOTAL LENGTH OF BRIDGE = 162'-0"
84'-0"
78'-0"
EX BARRIER RAILING TYPE 9
EL 217
ABUT 1
EL 215
ABUT 3
45 TON CIDH PILES SPECIFIED TIP ELEV 180 (TYP)
EL 203
BENT 2
EX TRIPLE 8'X7' RCB
343+00
DATUM ELEV = 180
344+00
345+00
346+00
ELEVATION
1"=20'-0"
SKEW 20°07'01"
EX 48'-6" BAGR TYPE 1 FLARE, TYP
BB 343+41.92 ELEV 229.12
344+95.92 POT 'T-5' 8=32.08 POC 'T'
344+95.09 POT 'T-5' 8=35.16 POT 'RCB'
EB 345+03.92 ELEV 231.79
'T-5' LINE N20°07'01"W
TOP OF SLOPE
POINT OF MIN VERT CLEARANCE
EX STRUCTURE MOUNTED SIGN
TOE OF SLOPE
CLEARANCE LINE
'T' LINE
Δ = 39°27'10"
D = 1000.038'
T = 358.585'
L = 688.607'
PLAN
1"=20'-0"
E BRIDGE
'T-5' LINE
26'-0"
1'-0"
12'-0"
8'-0"
4'-0"
1'-0"
VAR
EX BARRIER RAILING TYPE 9 TYP
TYPICAL SECTION
1/4"=1'-0"
LEGEND:
Indicates existing structure
Indicates new structure
Standard plan sheet no.
Detail No.
Point of minimum vertical clearance
Steel Column Casing
Footing Retrofit
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN
DESIGN BRANCH 12
TELEGRAPH CANYON RD OFF RAMP RETROFIT
GENERAL PLAN

THE CITY OF SAN DIEGO

January 29, 2015

Mr. Kenny Mah
Project Landscape Architect
Department of Transportation
District 11
4050 Taylor Street, MS 231
San Diego, CA 92110

Dear Mr. Mah:

Subject: I-805 Bridge Retrofit Project (EA 299201)

This is in response to your letter dated December 16, 2014 regarding water availability for the above subject project. Based upon the volume and duration of the project you provided, the City of San Diego has sufficient and available potable water capacity to serve your project. Note that segments of the existing landscape that will be impacted by the proposed bridge retrofit will not be in City of San Diego's jurisdiction.

Please note that effective July 1, 2014, the City of San Diego moved to Level 1 Drought Alert per the attached memo dated June 24, 2014 (see attachment 1). The Level 1 Drought Watch Condition lists voluntary water conservation measures that are added to the City's existing permanent restrictions. Additionally, effective November 1, 2014, the City of San Diego enacted a Drought Alert status, the second phase of citywide conservation that calls for mandatory water use restrictions in response to the severe drought conditions statewide (see attachment 2).

Please also note that utilizing existing potable water and/or irrigation meters City-wide will be subject to any City of San Diego City Council drought actions to conserve water, if enacted by City Council.

If you have any questions, please call me at 619-446-5420 or email me at Mrastakhiz@sandiego.gov.

Sincerely,

Mehdi Rastakhiz, PE
Associate Civil Engineer
Development Services Department
Water and Sewer Development Review
1222 First Avenue, MS 401
San Diego, CA 92101

Attachment 1: Level 1 Drought Alert memo dated June 24, 2014
Attachment 2: Drought Alert status, the second phase of citywide mandatory water use restrictions Dated, October 21, 2014

THE CITY OF SAN DIEGO

MEMORANDUM

DATE: June 24, 2014

TO: All Department Directors

FROM: Halla Razak, Director of Public Utilities

SUBJECT: Level 1 Drought Alert starting July 1, 2014

The City of San Diego was in a Stage 2 Drought Alert Condition from June 1, 2009, through May 26, 2011. During that time, City departments played a vital role in saving water and setting a good example for the citizens in our community. During the height of that drought, City departments reduced metered water consumption by 31.4% from pre-drought levels.

The City Council recently approved moving the City to a Level 1 Drought Watch Condition starting July 1, 2014. This memo is provided to assist Departments in identifying water saving opportunities, creating water conservation plans and complying with permanent and voluntary water use regulations.

PRIOR WATER CONSERVATION EFFORTS

From 1992 to 1999, the Water Department implemented a City Facilities Retrofit Program that installed more than 2,384 ultra-low flush toilets and 702 urinals in 494 City owned and operated facilities. The City wanted to show its commitment to water conservation by installing the water conserving plumbing fixtures in our own facilities. That program was completed in 1999 and the biggest retrofit job, that of Qualcomm Stadium in 1998 (365 toilets and 196 urinals) in time for Super Bowl XXXII, was used in a national water conservation publication/article.

The Public Utilities Department has also worked for many years with the Park and Recreation Department to create water use budgets for City parks. Water budgets are estimates of how much water existing landscapes need based on weather information, plant watering needs, type of soil and irrigation systems used, and these estimates are translated into run times per irrigation valve to allow them to use water efficiently. Throughout the last drought, Park and Recreation staff closely monitored water consumption in all its irrigated areas, and this diligence was evident in the achieved 31% water use reduction.

PERMANENT WATER USE RESTRICTIONS

Before the City lifted Level 2 mandatory restrictions in 2011, City Council and City staff agreed that some of these restrictions should remain in place. Hence the San Diego Municipal Code Section SDMC §67.3803 was revised to reflect the permanent water use restrictions that are in effect every day in San Diego. These include the following limitations:

a) No runoff/excessive irrigation leaving the property;
b) Repair leaks upon discovery or within seventy-two hours of notification;
c) No watering of paved areas;
d) No overfilling swimming pools and spas;
e) No non-recirculating decorative water fountains;
f) Car washing only in a commercial car wash or using a hose with shutoff nozzle or a bucket;
g) New buildings must recycle cooling system water and car wash water;
h) Restaurants will only serve and refill water upon request;
i) Hotel guests must have the option of not laundering towels and linens daily; and
j) No watering after 10 am and before 4 pm (winter)/before 6 pm (summer).

Please ensure that staff within your Department is aware of these permanent water use restrictions.

VOLUNTARY WATER USE RESTRICTIONS

The Level 1 Drought Watch Condition lists voluntary water conservation measures that are added to the City's existing permanent water restrictions. These voluntary measures go into effect on July 1, 2014. Although these measures are voluntary for citizens, it is advised that City Departments take the lead and treat them as mandatory:

1) Landscape irrigation limited to three days per week;
2) When watering without an irrigation system a shut-off nozzle or garden hose sprinkler system on a timer is required;
3) Washing vehicles limited to the same schedule as irrigation (except for: boats which may be washed after use; vehicles with health/safety issues; at a commercial carwash that recycles water);
4) Use recycled or non-potable water for construction purposes;

5) Fire hydrants for firefighting only;

6) Construction operations can use water only as required by regulatory agencies; and

7) Irrigation is not permitted during rain event.

RECOMMENDED CONSERVATION MEASURES

Indoor Water Use

If the facility is one of those that received water conserving plumbing fixtures through the City Facilities Retrofit Program, City staff can inspect these fixtures for proper operation and leaks. Self-closing faucets should shut off after a determined amount of seconds. Make sure the valves are not sticking, which would prevent the faucet from shutting off automatically. If faucet aerators have been removed, install new ones that use 1.0 gallons per minute. If the facility has tank style toilets, place dye tablets or food coloring inside the tank and observe if the coloring makes it way to the bowl. This would indicate a leak and would require an adjustment or replacement of the toilet flapper mechanism. Always repair leaks, as even small ones can waste hundreds of gallons of water.

If the facility still has high volume plumbing fixtures, replace them with water efficient ones, such as high-efficiency toilets and urinals, and faucets with self-closing features. There may be some incentives available for replacing these older fixtures. Check with the Water Conservation Program (Luis Generoso at 619-533-5258) for up-to-date information on incentives for public facilities.

Here are a few other measures City staff can take:

- Increase employee awareness of the need to conserve water. The Water Conservation Program (contact Luis Generoso at 619-533-5258) has various brochures and reference materials that can help you.
- Install signs encouraging water conservation in employee and customer restrooms.
- Assign an employee to monitor water use and waste within the facility. Read your water meter weekly to monitor the success of your water conservation efforts, and to detect leaks. Monitor water usage when reviewing water bills. Information on your historic water usage can be obtained calling our Water Conservation Program.
- Check for obvious leaks, where there are consistent water puddles.
- Repair dripping faucets and showers, and continuously running toilets.
- Install faucet aerators where possible.
- Shut off water supply to equipment rooms not in use.
- Shut off cooling equipment when not in use, and minimize water used in cooling units. There may be a need to replace the cooling tower conductivity controller. Check for incentives offered for these controllers.
- Review rebates available in Southern California at http://www.bewaterwise.com .

If there are other function areas like cafeterias/food preparation areas, please contact our Water Conservation Program for tips on how to conserve water specific to those areas.

Outdoor Consumption

Significant water savings can be realized if attention is given to how much water we use outdoors. Here are things City staff can readily implement to help reduce outdoor water consumption:

- Stop hosing down sidewalks, driveways and parking lots. If you need to do so for health and safety reasons, consider using a water broom or a water efficient power washer. For more information, visit our website at www.sandiego.gov/water/conservation.
- Operate your irrigation system to water before 10 a.m. or after 6:00 p.m. to minimize water loss from evaporation or windy conditions.
- Water landscape only when needed. Usually two to three times a week is sufficient. Or you can use the Landscape Watering Calculator at the website mentioned above to prepare a water efficient irrigation schedule based on your plants watering needs, weather date, soil type, and irrigation system used. This easy-to-use tool developed by the Public Utilities Department has been recognized with multiple awards, and is endorsed by a number of landscape industry professionals.
- Consider installing a weather based irrigation controller. These "smart controllers" automatically adjust irrigation run times as the season/weather changes and can shut off your system when it rains. Check with our Water Conservation Program for incentives that may be available.
- Make sure your sprinklers irrigate only the landscape area and not driveways and parking lots. Avoid irrigation runoff that causes storm water pollution.
- Do not water on windy days.
- Should landscape conversion be an option, consider water efficient plants and irrigation systems. These plants provide color and beauty, and the plant choices are numerous. Check our website or visit the Water Conservation Garden at Cuyamaca College (www.thegarden.org) for more information. Rebates for landscape and irrigation system conversions are also available.

More information on how you can save water at home and at work can be found on the following websites:

City of San Diego
http://www.WasteNoWater.org

San Diego County Water Authority
http://www.sdcwa.org/whenindrought

Metropolitan Water District of Southern California
http://www.bewaterwise.com/

RECYCLED WATER OPTION

If the facility is located along the existing recycled water pipeline route you might consider retrofitting your irrigation system to accept recycled water. Irrigation retrofit rebates are now available under a Metropolitan Water District pilot program. For an interactive "recycled water availability zone map" visit http://www.sandiego.gov/water/recycled/availability/index.shtml or contact Dawnn Jackson at 619-533-4264.

Thank you for the cooperation in conserving water at City facilities and for providing a good example to the public. Please let me know if you should have any questions.

Halla Razak
Director of Public Utilities

LSG/lsg

THE CITY OF SAN DIEGO
PUBLIC UTILITIES

FOR IMMEDIATE RELEASE
October 21, 2014

MEDIA CONTACT:
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City Enters Drought Alert Status

New Mandatory Water Use Restrictions Go Into Effect Nov. 1

SAN DIEGO – At the recommendation of Mayor Kevin L. Faulconer, the City Council voted Monday to enact a Drought Alert status, the second phase of citywide conservation that calls for mandatory water use restrictions to begin Nov. 1 in response to the severe drought conditions statewide.

"Working together as a community, San Diego has done a tremendous job in the past in responding to the call for water conservation," Mayor Faulconer said. "For that, we say thank you, and now we must ask for your continued help as we face the uncertainty of future rainfall and water supplies at critical levels."

The City implemented its voluntary Drought Watch stage on July 1, 2014. Earlier this month, Mayor Faulconer recommended moving to the next level of water conservation based on several factors, including a significant decline in ground water reserves throughout California, a drop in water reservoirs for the San Diego region, a lack of rainfall and diminished prospects for a strong El Niño, and a severe heat wave for the San Diego region in August and September.

The Drought Alert stage doesn't contain a sunset clause and will stay in effect as long as the City deems necessary.

Relevant to most residents under the Drought Alert stage are the restrictions that mandate assigned watering days, which are dependent on your address. There are also restrictions on what time of day residents can water and how long they can water:

Assigned Watering Days

Residences with odd-numbered addresses	Water only on Sundays, Tuesdays & Thursdays
Residences with even-numbered addresses	Water only on Saturdays, Mondays & Wednesdays
Apartments, condos & businesses	Water only on Mondays, Wednesdays & Fridays

Time of Day and Time Limits

- From November 1 through May 31, water only between 4 p.m. and 10 a.m. for only 7 minutes at each station when using a standard sprinkler system.
- From June 1 through October 31, water only between 6 p.m. and 10 a.m. for only 10 minutes at each station when using a standard sprinkler system.

Other water use restrictions that become effective under Drought Alert status are:

- Use a hand-held hose equipped with a positive shut-off nozzle or timed sprinkler system to water landscaped areas.
- Stop operation of ornamental fountains, except to the extent needed for maintenance purposes.
- The washing of automobiles, trucks, trailers, airplanes and other types of transportation equipment is only allowed during the following times:
  - Between 4 p.m. and 10 a.m. from November 1 to May 31.
  - Between 6 p.m. and 10 a.m. from June 1 through October 31.
- Washing is permitted at any time at a commercial car wash.
- No irrigation is allowed during rain events.
- Potted plants, non-commercial vegetable gardens and fruit trees may be irrigated on any day during the following times:
  - Between 4 p.m. and 10 a.m. from November 1 through May 31
  - Between 6 p.m. and 10 a.m. from June 1 through October 31.
- Irrigation is permitted any day at any time as follows:
  - As required by a landscape permit.
  - For erosion control.
  - For establishment, repair or renovation of public use fields for schools and parks.
  - For landscape establishment following a disaster.
- Use recycled or non-potable water for construction purposes when available.
- Use of water from fire hydrants will be limited to firefighting, meter installation by the Water Department or other activities necessary to maintain the health, safety and welfare of San Diegans.

- Constructions operations receiving water from a fire hydrant or water truck will not use water beyond normal activities.

These restrictions are in addition to permanent, mandatory water use restrictions in effect at all times since 2011. For a list of all current restrictions, as well as conservation resources, rebate programs and other valuable information, visit www.wastenowater.org.

The City of San Diego's Water Conservation Program reduces water demand through promoting or providing incentives for the installation of hardware that provides permanent water savings, and by providing services and information to help San Diegans make better decisions about water use. For more information about Water Conservation, visit www.wastenowater.org or call (619) 515-3500.

Craig Gustafson
Press Secretary & Director of Media Relations

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